**PLANNING BOARD**
**PORTSMOUTH, NEW HAMPSHIRE**

**EILEEN DONDERO FOLEY COUNCIL CHAMBERS**
**CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE**

**7:00 PM Public Hearings begin** **December 21, 2023**

# AGENDA

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## REGULAR MEETING 7:00pm

## I. PRESENTATIONS

**A.** Receive a presentation and consider a recommendation to the City Council to adopt the proposed **FY 2025-2030 Capital Improvement Plan**.

## II. APPROVAL OF MINUTES

**A.** Approval of the November 16, 2023 meeting minutes.

## III. DETERMINATIONS OF COMPLETENESS

### SITE PLAN REVIEW

**A.** The request of **Pease Development Authority (Owner)**, for property located at **360 Corporate Drive** requesting Site Plan Review approval for construction of a three-story Healthcare Complex with approximately 52,000 GSF. to allow space for up to 10 tenants which include an Ambulatory Surgical Center, Imaging Center and Plastic Surgery Center. The project includes (125) vehicle parking spaces, (2) loading docks as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is located on Assessor Map 315 Lot 5 and lies within the Airport Business Commercial (ABC) District.

**B.** The request of **Maureen Oakman** and **Michael A. Valinski (Owners)**, for property located at **1155 Sagamore Avenue** requesting Site Plan Review Approval for the demolition of the existing building and construction of a 4-unit residential condominium with the associated paving, stormwater, lighting, utilities and landscaping. Said property is located on Assessor Map 224 Lot 18 and lies within the Mixed Residential Office (MRO) District.

## IV. PUBLIC HEARINGS – NEW BUSINESS

*The Board's action in these matters has been deemed to be quasi-judicial in nature.*
*If any person believes any member of the Board has a conflict of interest,*
*that issue should be raised at this point or it will be deemed waived.*

**A.** The request of **Pease Development Authority (Owner),** for property located at **360 Corporate Drive** requesting Site Plan Review approval for the construction of a three-story Healthcare Complex with approximately 52,000 GSF. to allow space for up to 10 tenants which include an Ambulatory Surgical Center, Imaging Center and Plastic Surgery Center. The project includes (125) vehicle parking spaces, (2) loading docks as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is located on Assessor Map 315 Lot 5 and lies within the (Airport Business Commercial (ABC) District. (LU-23-135)

**B.** The request of **120-0 Wild Rose Lane LLC (Owner),** for property located at **60 Pleasant Point Drive** requesting Wetland Conditional Use Permit Approval a Wetland Conditional Use Permit from Section 10.1017.50 of the Zoning Ordinance for the demolition of the existing home and construction of a new dwelling. The project consists of 5,368 sf of impervious surface including a dock, two sets of stairs, a pool, patio, cabana, and a portion of the home, which results in a reduction of 31 sf from the existing conditions. The project includes pervious pavers within the buffer, a long-term storm-water maintenance plan, landscaping plan within the buffer, a bank restoration plan, replacement of the existing lawn with a micro-clover seed mix and the removal of invasive species on site. Said property is located on Assessor Map 207 Lot 13 and lies within the Single Residence B (SRB) District. (LU-23-180)

**C.** The request of **Maureen Oakman** and **Michael A. Valinski (Owners)**, for property located at **1155 Sagamore Ave** requesting Site Plan Review Approval for the demolition of the existing building and construction of a 4-unit residential condominium with the associated paving, stormwater, lighting, utilities and landscaping. Said property is located on Assessor Map 224 Lot 18 and lies within the Mixed Residential Office (MRO) District. (LU-23-178)

## V. OTHER BUSINESS

**A.** Chairman updates and discussion items

**B. Planning Board Rules and Procedures**: The Planning Board will consider general amendments to the Planning Board Rules & Procedures. The proposed rules may be reviewed in the Planning Department at City Hall, or online by visiting the Planning Board meeting date on the City's Municipal Meetings Calendar here: https://www.cityofportsmouth.com/planportsmouth/events/planning-board-meeting-57

**C.** Board discussion of Regulatory Amendments, Master Plan Scope & other matters

## VI. ADJOURNMENT

https://us06web.zoom.us/webinar/register/WN_FTyb1m4nSlmZUWiD8STCuw

City of Portsmouth
Planning Department
1 Junkins Ave, 3rd Floor
Portsmouth, NH
(603)610-7216

Memorandum

To: Planning Board

From: Peter Stith, Planning Manager

Peter Britz, Planning & Sustainability Director

Date: December 21, 2023

Re: Recommendations for the December 21, 2023 Planning Board Meeting

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## I. PRESENTATIONS

**A.** Receive a presentation and consider a recommendation to the City Council to adopt the proposed **FY2025- 2030 Capital Improvement Plan.**

**Background**

The Capital Improvement Plan (CIP) is both a financial and infrastructure planning tool that sets forth a multi-year schedule and financing strategies for accomplishing public capital projects that both maintain safe quality city infrastructure and assist in the achievement of Citywide Goals. Careful development of and adherence to the CIP ensures that needed capital projects are accomplished within the City's financial capability. In combination with the annual City budget, the Capital Improvement Plan has a significant impact on the planned allocation of fiscal resources, and is thus one of the most important documents considered by the City Council.

**State/Local Regulatory Context**

*RSA 674.5: Capital Improvement Program*

*"674:5 Authorization. – In a municipality where the planning board has adopted a master plan, the local legislative body may authorize the planning board to prepare and amend a recommended program of municipal capital improvement projects projected over a period of at least 6 years.*

*…*

*The capital improvements program may encompass major projects being currently undertaken or future projects to be undertaken with federal, state, county and other public funds. The sole purpose and effect of the capital*

*improvements program shall be to aid the mayor or selectmen and the budget committee in their consideration of the annual budget."*

*City Charter*

*City Charter Section 7.6 - Capital Program:*

*The Manager shall prepare and submit to the Council a six (6) year capital program at least three (3) months prior to the final date for submission of the budget. The program shall include:*

- *A general summary of its content;*
- *A list of all capital improvements proposed during the next six (6) fiscal years;*
- *Cost estimates, methods of financing, recommended time schedules for each improvement; and*
- *Estimating annual operating and maintenance costs.*

The purposes of the CIP is to:

1. Implement needed improvements on a scheduled basis
   - Provides a complete picture of the City's major development needs
   - Coordinates activities of various City departments and agencies
   - Assists in implementing recommendations of the City's Master Plan
2. Forecast future allocation of fiscal resources
   - Establishes fiscal priorities for projects
   - Aids in the proper utilization of funding sources
3. Help plan for future City expenditures
   - Discourages piecemeal improvements and duplication of expenditures
4. Ensure capital project needs are provided within the City's financial capability
   - Informs the taxpayers of anticipated future improvements
   - Helps to schedule major projects to avoid large fluctuations in the tax rate

## Plan Development Process

The capital planning process is coordinated by the Finance and Planning Departments under the direction of the City Manager. Capital project requests are initially formulated by City Department Heads and submitted to the Finance Department. Members of the public may also submit project requests, which are reviewed by City Departments and incorporated into the departmental project submissions as appropriate.

CIP projects originate from three sources.

- Capital Improvement Plan from the Prior Fiscal Year
- City Staff

- Citizen Requests

## Citizen Requests

This year the City received 95 citizen requests. Of the 95 requests, staff combined duplicative requests to come up with 47 unique project requests. Staff further sorted the requests into those that were CIP eligible (6), requests that were already in existing projects in the CIP (24), and those requests that were better served by other processes (17). At their November 9th meeting, the City Council CIP Subcommittee took some time to review the citizen requests and receive additional public input on those requests. The Subcommittee provided preliminary feedback on citizen requests to be considered in the draft CIP. The Finance Department has incorporated the Subcommittee's recommendations into the revised CIP before the Planning Board. Citizen Requests can be found in Appendix I of the CIP.

## Staff Submittals and Updates

Staff works to update the prior year's CIP projects to reflect the current status, project needs and costing. After city departments and residents submit their new requests for capital project, staff works with the City Manager to prioritize them by utilizing the following criteria:

- **Project requirements** – Is the project required to meet legal, compliance, or regulatory requirements?
- **Timing** – How soon does the project need to be implemented to address the needs identified?
- **Strategic alignment** – To what extent is the project aligned with other city projects, policies, processes?
- **Public value** – How much value does the outcome of this project provide to the general public? How much public support is there for implementing this project?
- **Finance planning** – Is the project fundable in the time frame identified, are there available funding sources for this project?

Although the factors above are consistently utilized in the prioritization process, other factors, such as urgent community needs or public health and safety, may also contribute to the final project placement, allowing the process to be nimble and responsive to emerging community needs.

## Planning Board Advisory Committee and City Council Adoption

The Planning Board has appointed a three member Advisory Committee to review the projects in the draft CIP. The Advisory Committee met on December 12, 2023 to review the proposed staff CIP projects with staff representatives from each department. The Finance Department has incorporated the Advisory Committee's recommendations into the draft CIP before the Planning Board. The Planning Board should invite additional public comment and vote to recommend the adoption of the document to the City Council. The City Council will review

the proposed CIP, hold a public hearing, and adopt the CIP in accordance with City Charter requirements. Once adopted, the CIP is utilized in the development of the annual budget in accordance with RSA 674.5.

### Timeline

- August 17, 2023. Planning Board Presentation regarding CIP Process and Schedule *Completed*
- August 21, 2023. City Council Presentation regarding CIP Process and Schedule *Completed*
- September 15, 2023. Deadline for citizen project suggestions to be submitted. These citizen requests will be circulated to the appropriate department for consideration. *Completed*
- October 6, 2023. City Departments submit CIP project requests (new and updated) to Finance *Completed*
- November 9, 2023. City Council Subcommittee meets to review Citizens Request Projects *Completed*
- December 12, 2023. Planning Board CIP Advisory Committee meets with *each department to review and prioritize capital requests Completed*
- ***December 21, 2023. Planning Board votes to recommend the CIP to City Council for adoption***
- January City Council Work Session on the CIP (with Presentation) on CIP
- February City Council Public Hearing on CIP
- March City Council votes to adopt CIP

### *Planning Department Recommendation*

*1) Receive additional public comment and vote to recommend adoption of the Capital Improvement Plan to the City Council.*

## II. APPROVAL OF MINUTES

**A.** Approval of the November 16, 2023 minutes.

***Planning Department Recommendation***

*1) Board members should determine if the draft minutes include all relevant details for the decision making process that occurred at the November 16, 2023 meeting and vote to approve meeting minutes with edits if needed.*

## III. DETERMINATION OF COMPLETENESS

### SITE PLAN REVIEW

**A.** The request of **Pease Development Authority (Owner)**, for property located at **360 Corporate Drive** requesting Construction of a three-story Healthcare Complex with approximately 52,000 GSF. to allow space for up to 10 tenants which include an Ambulatory Surgical Center, Imaging Center and Plastic Surgery Center. The project includes (125) vehicle parking spaces, (2) loading docks as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is located on Assessor Map 315 Lot 5 and lies within the Airport Business Commercial (ABC) District. (LU-23-135)

***Planning Department Recommendation***

*1) Vote to determine that these applications are complete according to the Pease Site Plan Review Regulations, and to accept the application for consideration.*

**B.** The request of **Maureen Oakman** and **Michael A. Valinski (Owners)**, for property located at **1155 Sagamore Ave** requesting Site Plan Review Approval for the demolition of the existing building and construction of a 4-unit residential condominium with the associated paving, stormwater, lighting, utilities and landscaping. Said property is located on Assessor Map 224 Lot 18 and lies within the Mixed Residential Office (MRO) District. (LU-23-178)

***Planning Department Recommendation***

*2) Vote to determine that Item A is complete according to the Site Plan Review Regulations, (contingent on the granting of any required waivers under Sections III and/or IV of the agenda) and to accept the applications for consideration.*

## IV. PUBLIC HEARINGS – NEW BUSINESS

*The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.*

**A.** The request of **Pease Development Authority (Owner)**, for property located at **360 Corporate Drive** requesting Construction of a three-story Healthcare Complex with approximately 52,000 GSF. to allow space for up to 10 tenants which include an Ambulatory Surgical Center, Imaging Center and Plastic Surgery Center. The project includes (125) vehicle parking spaces, (2) loading docks as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is located on Assessor Map 315 Lot 5 and lies within the Airport Business Commercial (ABC) District. (LU-23-135)

**Project Background**

The applicant is proposing to construct a three-story complex that will provide space for an ambulatory surgical center, imaging and plastic surgery center. The applicant has worked with the PDA to remain outside of the 25 foot wetland buffer, thus the reason for the unique shape of the building and the parking areas.

**Project Review, Decisions, and Recommendations**

Projects that are in the Industrial, Business/Commercial, Natural Resource Protection Zones will go through the approval process in which municipality it is located for a recommendation back to the PDA Board. This includes site plan, subdivision, variances, special exceptions, and conditional use permits (including wetlands). For wetland conditional use permits, the application is referred to the local planning board. The planning board may refer it to the conservation commission for further review and recommendation before making a final recommendation back to the PDA Board.

All decisions from the City of Portsmouth related to land use applications are recommendations to the PDA Board. After a local land use board makes a recommendation, there is a time from the date of the decision when the applicant or a member of the PDA Board can request a hearing. If a request is not made within the time, the application is deemed approved by the Board. If a hearing is requested, the Board will hold a hearing and has the option to approve as recommended, with conditions or to deny the application. A flow chart that helps visualize the application process can be found here.

Technical Advisory Committee

The applicant was before TAC for at their regularly scheduled meeting of Tuesday, November 7, 2023 meeting and recommended approval with the following conditions to be completed prior to submission to the Planning Board:

1) *The sidewalk on International Drive be extended to the neighbor's driveway as previously requested.*
2) *Tactile pads be installed at all driveways.*
3) *Work with City staff to coordinate the installation of signage along the wetland buffer edge that indicates the area as a 'low' or 'no-mow' area.*
4) *Add a note to landscape plan indicating buffer and wetland area "to remain natural and undisturbed".*

***All four conditions above have been satisfied in the applicant's submission to the Planning Board.***

The recent amendments to RSA 676:3 with regards to adopting findings of fact for a project apply to local planning boards making decisions based on the municipality's regulations. Pease falls exclusively under RSA 12-G and the Pease Land Use Controls, therefore the requirement to vote on and adopt findings of fact do not apply for this application.

## ***Planning Department Recommendation***

***Site Plan Approval***

1) *Vote to recommend Site Plan Approval to the PDA Board.*

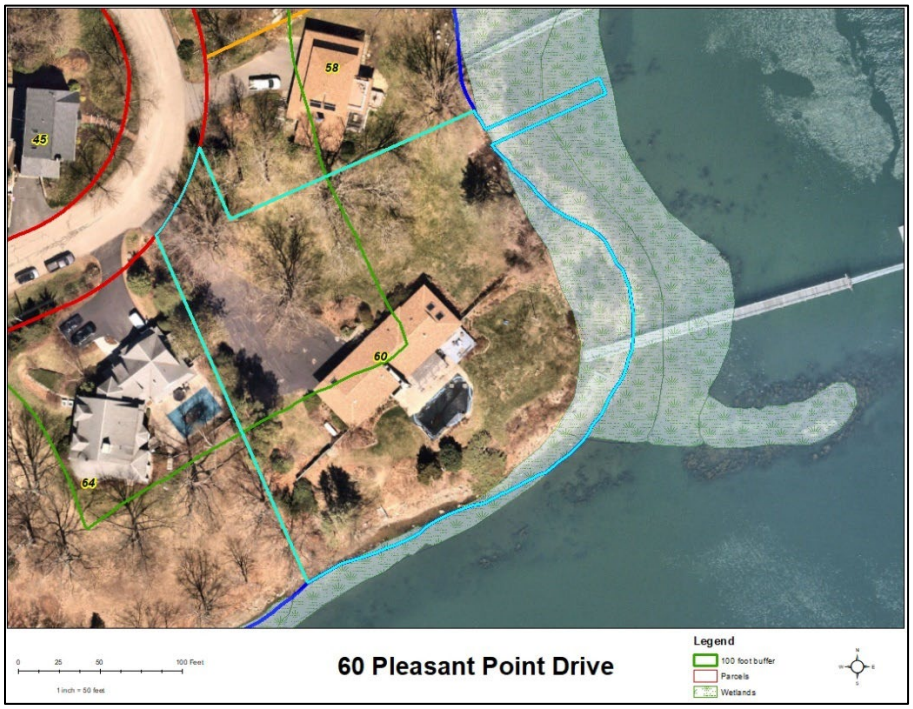
## IV. PUBLIC HEARINGS – NEW BUSINESS

*The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.*

**B.** The request of **120-0 Wild Rose Lane LLC (Owner),** for property located at **60 Pleasant Point Drive** requesting Wetland Conditional Use Permit Approval a Wetland Conditional Use Permit from Section 10.1017.50 of the Zoning Ordinance for the demolition of the existing home and construction of a new dwelling. The project consists of 5,368 sf of impervious surface including a dock, two sets of stairs, a pool, patio, cabana, and a portion of the home, which results in a reduction of 31 sf from the existing conditions. The project includes pervious pavers within the buffer, a long-term storm-water maintenance plan, landscaping plan within the buffer, a bank restoration plan, replacement of the existing lawn with a micro-clover seed mix and the removal of invasive species on site. Said property is located on Assessor Map 207 Lot 13 and lies within the Single Residence B (SRB) District. (LU-23-180)

**Project Background**

This application is requesting a Wetland Conditional Use Permit for the demolition and redevelopment of a residential home that lies within the City's tidal buffer of the Piscataqua River and the State's shoreland and tidal buffer impact zones. The applicant is proposing to place all new infrastructure outside of the 50' buffer, where impervious surfaces currently exist, except for a set of stairs down to the dock and proposed underground utilities. Within the City's 100' buffer, the applicant is proposing a total of 5,368 sf of impervious surface including the dock, two sets of stairs, a pool, patio, cabana, and a portion of the home, this is a reduction of 31 sf from the existing site. The applicant is proposing the addition of pervious pavers for various patios and walkways within the buffer. This application includes a long-term stormwater maintenance plan, an extensive landscaping plan that will add a variety of new plantings on the property and within the buffer, including a plan to restore vegetation on the eroding bank, the replacement of existing lawn with a micro-clover seed mix and the removal of invasive species on site.




**Project Review, Discussion, and Recommendations**

The project has been before the Conservation Commission. See below for details.

Conservation Commission

The Conservation Commission, at their regularly scheduled meeting of Wednesday, November 8, 2023, voted to recommend approval to the Planning Board with the following conditions:

1. *In accordance with Section 10.1018.40 of the Zoning Ordinance, applicant shall install permanent wetland boundary markers along the 25' vegetative buffer during project construction. These can be purchased through the City of Portsmouth Planning and Sustainability Department.*

2. *Applicant shall provide monthly invasive management and planting updates to the Planning and Sustainability Department once removal begins and until the end of the restoration process (see Management Calendar for Treatment and Planting). These updates shall be a report summarizing the activities performed, the success rates, any proposed plan changes, and any upcoming activities involving the 25' vegetative buffer on site. If plants have not achieved an 80% success rate or greater after one year, applicants will replant and report back to the Planning & Sustainability Department one year after planting is complete and each subsequent year until an 80% planting success rate has been achieved.*

Staff Analysis

**1. The land is reasonably suited to the use activity or alteration.**

The existing lot has been used for residential use which already had a significant amount of impervious surface within the buffer. This application proposes to remove all impervious within 50' of the wetland resource while pushing much of the home and associated infrastructure farther back and away from the resource. While there is still impervious within the buffer, the applicant is proposing to restabilize the bank with native vegetation, replace all the grass with an eco-friendly micro clover mix, and there is extensive landscaping to help redirect and infiltrate stormwater on the property to reduce erosion, ponding and impacts to abutting properties.

**2. There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.**

The applicant is proposing to build the home and other structures outside of the 50' buffer, which will be an improvement from the existing site. The grading of this site does not allow for a lot of room to build without needing to bring in fill and regrade the site. While this proposal does include a large amount of impervious within the 100' buffer, the applicants are proposing to increase the health of the buffer with new plantings, stormwater control and bank stabilization.

**3. There will be no adverse impact on the wetland functional values of the site or surrounding properties.**

The applicant is proposing to redirect stormwater, revegetate the bank, increase buffer plantings, and replace grass with an eco-friendly micro clover mix. These additions will help mitigate the impacts of proposed impervious within the buffer.

**4. Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.**

The applicant will be restoring the natural vegetated state of the bank and buffer, which will increase the vegetative state of the buffer compared to the existing site. The applicant has proposed an extensive land management plan which will address buffer health through invasive species removal and native plantings.

**5. The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.**

The applicant is proposing a slight reduction to impervious impacts in the buffer

but has implemented a robust landscaping plan which includes an invasive species removal program and revegetation and stabilization of the bank.

**6. Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.**

The applicant is proposing to restore areas previously disturbed in the vegetative buffer with a revegetation of the bank which will help reduce erosion and stormwater sheet flow.

## ***Planning Department Recommendation***

### ***Wetland CUP***

*1) Vote to find that the Conditional Use Permit application meets the criteria set forth in Section 10.1017.50 and to adopt the findings of fact as presented.*

*(Alt.) Vote to find that the Conditional Use Permit application meets the criteria set forth in Section 10.1017.50 and to adopt the findings of fact as amended and read into the record.*

*2) Vote to grant the Wetland Conditional Use permit with the following conditions:*

*2.1) In accordance with Section 10.1018.40 of the Zoning Ordinance, applicant shall install permanent wetland boundary markers along the 25' vegetative buffer during project construction. These can be purchased through the City of Portsmouth Planning and Sustainability Department.*

*2.2) Applicant shall provide monthly invasive management and planting updates to the Planning and Sustainability Department once removal begins and until the end of the restoration process (see Management Calendar for Treatment and Planting). These updates shall be a report summarizing the activities performed, the success rates, any proposed plan changes, and any upcoming activities involving the 25' vegetative buffer on site. If plants have not achieved an 80% success rate or greater after one year, applicants will replant and report back to the Planning & Sustainability Department one year after planting is complete and each subsequent year until an 80% planting success rate has been achieved.*

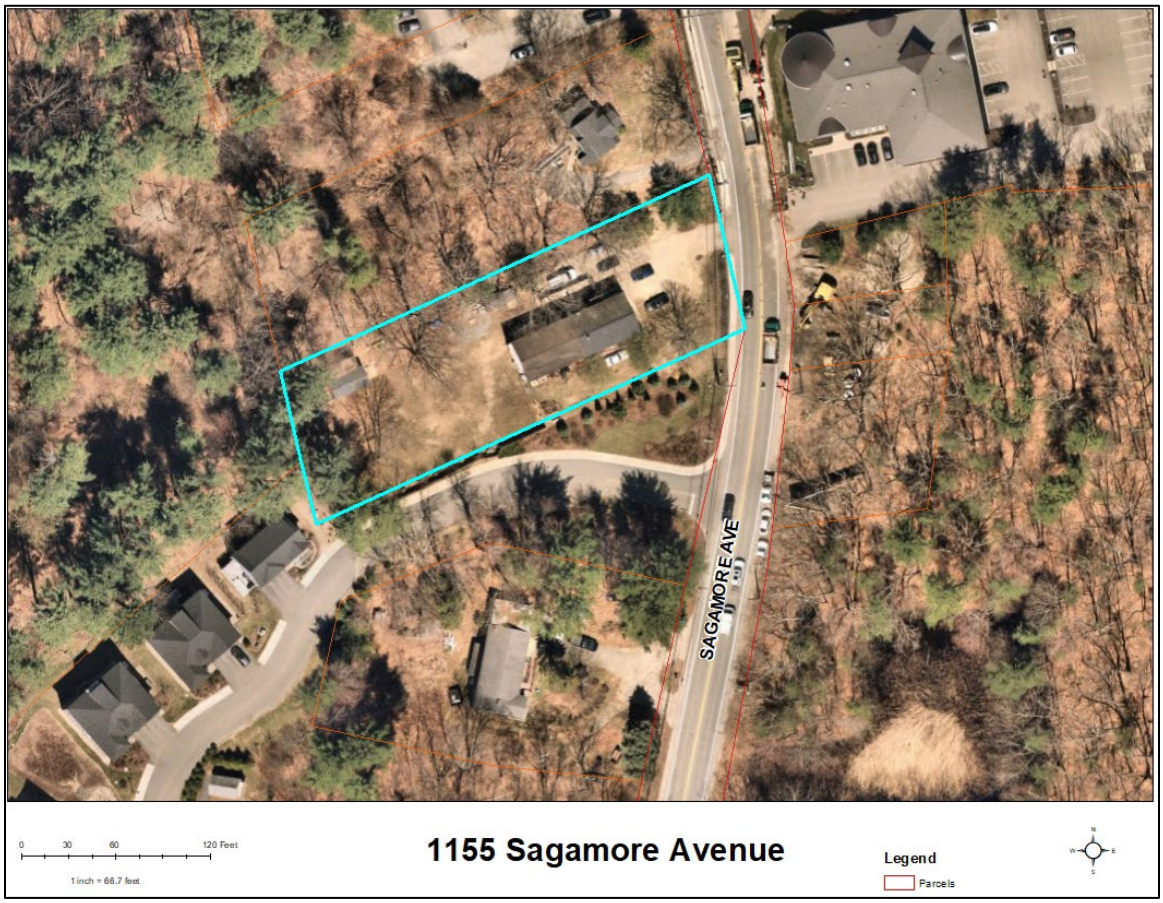
## IV. PUBLIC HEARINGS – NEW BUSINESS

*The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.*

**C.** The request of **Maureen Oakman** and **Michael A. Valinski (Owners)**, for property located at **1155 Sagamore Ave** requesting Site Plan Review Approval for the demolition of the existing building and construction of a 4-unit residential condominium with the associated paving, stormwater, lighting, utilities and landscaping. Said property is located on Assessor Map 224 Lot 18 and lies within the Mixed Residential Office (MRO) District. (LU-23-178)

**Project Background**

The project consists of the demolition of the existing structure and construction of a 4-unit multifamily building. The lot is in the Mixed Residential Office (MRO) district where a four-unit multifamily building is permitted by right. The proposal conforms to all zoning requirements in the MRO district.




**Project Review Discussion and Recommendations**

The application has been before the Technical Advisory Committee. See below for more details.

Technical Advisory Committee

The Technical Advisory Committee, at its regular meeting of Tuesday, November 7, 2023, recommended approval to the Planning Board with the following conditions:

**To be completed prior to submission to Planning Board:**

*1) Provide a more detailed grading plan.*
*2) Provide more information on how drainage will be entering the rain garden.*
*3) Water lines running under units will be installed in sleeves.*
*4) There will be one domestic water line servicing the building. Update line size that will be running down the front appropriately.*
*5) Provide drawings/details for the duplex pump system and the alarm system need to be provided and approved.*
*6) Provide cross-section of rain garden including soil layers of test pits.*
*7) Provide an easement deed detailing the water valve and metering access and leak detection easement.*

***To be submitted to the Planning Board:***

*1) An elevation view of the proposed structures.*
*2) A cross-section view of the proposed rain garden.*
*3) A green building checklist.*
*4) Coordinate with NHDOT on Sagamore Avenue sight lines for the northern section of the site.*
*5) Remove Note #31 from the Utility Plan about third party requirements.*

**The conditions above have been satisfied with the Planning Board application.**

***Planning Department Recommendation***

***Site Plan Approval***

*1) Vote to find that the Site Plan Application meets the requirements set forth in the Site Plan Regulations Section 2.9 Evaluation Criteria and adopt the findings of fact as presented.*

*(Alt.) Vote to find that the Site Plan Application meets the requirements set forth in the Site Plan Regulations Section 2.9 Evaluation Criteria and adopt the findings of fact as amended.*

*2.) Vote to grant Site Plan Approval with the following conditions:*

*Conditions to be satisfied subsequent to final approval of site plan but prior to the issuance of a building permit or the commencement of any site work or construction activity:*

*2.1) The site plan, and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.*

*2.2) The applicant shall provide an access easement to the City for water valve access and leak detection. The easement shall be reviewed and approved by the Planning and Legal Departments prior to acceptance by the City Council.*

*2.3) Any site development (new or redevelopment) resulting in 15,000 square feet or greater ground disturbance will require the submittal of a Land Use Development Tracking Form through the Pollutant Tracking and Accounting Program (PTAP) online portal. For more information visit https://www.cityofportsmouth.com/publicworks/stormwater/ptap*

*Prior to the issuance of a Certificate of Occupancy or release of the bond:*

*2.4) The Engineer of Record shall submit a written report (with photographs and engineer stamp) certifying that the stormwater infrastructure was constructed to the approved plans and specifications and will meet the design performance.*

*2.5) A stormwater inspection and maintenance report shall be completed annually, and copies shall be submitted for review to the City's Stormwater Division/ Public Works Department.*

## V. CITY COUNCIL REFERRALS

Discussion of the EV Charging amendments will continue in January. The Board should confirm the work session on January 25, 2024, to continue discussion of the amendments.

## VI. OTHER BUSINESS

**A.** Chairman's Updates and Discussion Items

**B.** Planning Board Rules & Procedures

Discuss the recent draft amendments to the Rules & Procedures.

***Planning Department Recommendation***

*Vote to adopt the Planning Board Rules & Procedures as amended.*

**C.** Board Discussion of Regulatory Amendments and Other Matters

## VII. ADJOURNMENT

City of Portsmouth, New Hampshire

# Capital Improvement Plan

**Planning Board: December 21, 2023**
**City Council Public Hearing: February 5, 2024**
**City Council Adoption: March 4, 2024**

## FY 2025 - FY 2030

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# CAPITAL IMPROVEMENT PLAN

## FY 2025 to FY 2030

## *CITY OF PORTSMOUTH, N.H.*

**CITY COUNCIL**
Deaglan McEachern, Mayor
JoAnna "Jo" Kelley, Assistant Mayor
John Tabor
Josh Denton
Beth Moreau
Andrew Bagley
Vincent Lombardi
Rich Blalock
Kate Cook

**CITY MANAGER**
Karen Conard

**PLANNING BOARD MEMBERS**

Rick Chellman, Chair, and Member of the CIP Advisory Committee
Corey Clark, Vice Chair
Beth Moreau, City Council Representative
Jayne Begala
James Hewitt, Member of the CIP Advisory Committee
Greg Mahanna, Member of the CIP Advisory Committee
Andrew Samonas, Alternate
William (Bill) Bowen, Alternate

Karen Conard, City Manager, Ex-officio
Joe Almeida, Facilities Manager
Peter Stith, Planning Board Liaison

**Prepared By**
Peter Britz, Director of Planning and Sustainability
Andrew Purgiel, Finance Department
Abby Mills, Finance Department

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# CAPITAL IMPROVEMENT PLAN

## FY 2025 to FY 2030

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## Acronyms

| | |
|---|---|
| ADA | Americans with Disabilities Act |
| BI | Buildings and Infrastructure |
| BWC | Body Worn Cameras |
| CIP | Capital Improvement Plan |
| CISA | Cybersecurity and Infrastructure Security Agency |
| CMAQ | Congestion Mitigation Air Quality |
| CMS | Content Management System |
| COAST | Cooperative Alliance for Seacoast Transportation |
| COM | Combined Funding Projects |
| COOP | Continuity of Operations |
| CPR | Cardiopulmonary resuscitation |
| CSO | Combined Sewer Overflow |
| CTE | Career & Technical Education |
| DOT | Department of Transportation |
| DPW | Department of Public Works |
| DSL | Data Subscriber Line |
| ED | Economic and Community Development Department |
| EF | Enterprise Fund |
| EPA | Environmental Protection Agency |
| EV | Electric Vehicle |
| FD | Fire Department |
| FED | Federal |
| FEMA | Federal Emergency Management Association |
| FI | Finance Department |
| FY | Fiscal Year |
| GASB | Governmental Accounting Standards Board |
| GF | General Fund |
| GPM | Gallons Per Minute |
| HDMI | High-Definition Multimedia |
| HDPE | High-Density Polyethylene |
| HVAC | Heating, Ventilation, and Air Conditioning |
| HL | Health Department |
| IAFIS | Integrated Automated Fingerprinting Information System |
| IS | Information System |
| IT | Information Technology |
| LCN | Liquid Crystal Display |
| LEACT | Law Enforcement Accountability |
| LEED | Leadership in Energy and Environmental Design |
| LF | Linear Foot/Feet |
| LI | Public Library |
| LRTP | Long Range Transportation Plan |
| LTCP | Long Term Control Plan |
| LUCAS | Lund University Cardiac Assist System |
| LWAN | Local Wide Area Network |
| MG | Million Gallons |

| | |
|---|---|
| MPS | Megabytes per Second |
| MS WS | Microsoft Windows Server |
| MS4 | Municipal Separate Storm Sewer System |
| MOU | Memorandum of Understanding |
| MUTCD | Manual on Uniform Traffic Control Devices |
| NFPA | National Fire Prevention Association |
| NH | New Hampshire |
| NHDOT | New Hampshire Department of Transportation |
| NHPA | New Hampshire Port Authority |
| NH RSA | New Hampshire Revised Statute Annotated |
| NPDES | National Pollutant Discharge Elimination System |
| PD | Police Department |
| PDA | Pease Development Authority |
| PDF/A | Portable Document Format/Archival |
| PIT | Pease International Tradeport |
| PL | Planning and Sustainability Department |
| PPP | Public Private Partnership |
| PTS | Parking and Traffic Safety (Committee) |
| PW | Public Works Department |
| PY | Past Year(s)/Prior Year(s) |
| RC | Recreation Department |
| RDC | Redundant |
| RFP | Request for Proposal |
| RISC | Reduced Instruction Set Computing |
| RMS/CAD | Records Management System/Computer Aided Dispatch |
| RPC | Rockingham Planning Commission |
| RSA | Revised Statute Annotated |
| RTE | Route |
| SC | School Department |
| SCADA | Supervisory Control and Data Acquisition |
| SCBA | Self-contained Breathing Apparatus |
| SCP | Supplemental Compliance Plan |
| SD | Sewer Division |
| SIPP | Save the Indoor Portsmouth Pool |
| SMPO | Seacoast Metropolitan Planning Organization |
| SRLF | State Revolving Loan Fund |
| STIP | State Transportation Improvement Plan |
| STYP | State Ten Year Transportation Plan |
| TBD | To Be Determined |
| TIP | Transportation Improvement Plan |
| TMA | Transportation Management Agency |
| TSM | Transportation System Management |
| VDI | Virtual Desktop Interface |
| VE | Vehicles and Equipment |
| WD | Water Division |
| WWTF | Wastewater Treatment Facility |

# Impact on the Operating Budget

Description of box labeled “Impact on Operating Budget” is as follows:

1. **Reduce: Will Generate Revenue and/or Reduce Operating Cost**
   The project will generate some revenue to offset expenses and/or will reduce operating costs.

2. **Negligible: < $5,001**
   The project will generate less than $5,001 per year in increased operating expenditures.

3. **Minimal: $5,001 to $50,000**
   The project will generate between $5,001 and $50,000 per year in increased operating expenditures.

4. **Moderate: $50,001 to $100,000**
   The project will generate between $50,001 and $100,000 per year in increased operating expenditures.

5. **High: $100,001+**
   The project will generate $100,001 or more per year in increased operating expenditures.

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**RESERVED FOR PLANNING BOARD LETTER PAGE 1**

**RESERVED FOR PLANNING BOARD LETTER PAGE 2**

**RESERVED FOR PLANNING BOARD CERTIFICATE**

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*A Quick Guide to the*

# FY2025 – 2030 Capital Improvement Plan (CIP)

*for the City of Portsmouth, New Hampshire*

## *How does a project go from idea to finished?*

*Many projects in the Implementation Phase can be found on the City's Project Webpage as they progress.* ***CityofPortsmouth.com/publicworks/projects***

**#1 Project Need Identified**

**#2 CIP Project Submitted**

**#3 Project Funded (Budget/ Bond Authorization)**

*Planning Phase (CIP) (Timeline approximately 6 years)*

**#4**

**** PROJECT TRANSITION ****

Project Moves *from* the **Planning Phase (CIP)** *to the* **Project Implementation Phase** .

**#5 Feasibility Study/ Plan**

**#6 Design**

**#7 Coordinate with Synergistic Projects**

**#8 Project Construction**

*Project Implementation (Timeline Varies by Project)*

## Where do I find Information On . . . . ?

- Acronyms utilized in the CIP → Acronyms *(beginning on page 3)*
- Explanation of the Project Element Sheet → Introduction *(beginning on page 15)*
- Pay-as-you-go Funding Details → Section II: Method of Financing *(beginning on page 26)*
- Bonding/Debt Schedules → Section II: Method of Financing *(beginning on page 26)*
- Citizen Project Requests with Staff Analysis → Appendix I
- NHDOT Projects Occurring in Portsmouth (But not under control of City Staff) → Appendix II

*A Quick Guide to the*

# FY2025 – 2030 Capital Improvement Plan (CIP)

*for the City of Portsmouth, New Hampshire*

## CIP FY25 – FY30 By the Numbers

**99** *Projects in the FY25-30 CIP*

**11** *Vehicles and Equipment Projects (VE)*

**41** *Buildings and Infrastructure Projects (BI)*

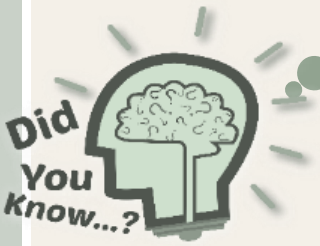
**3** *Information System Projects (IS)*

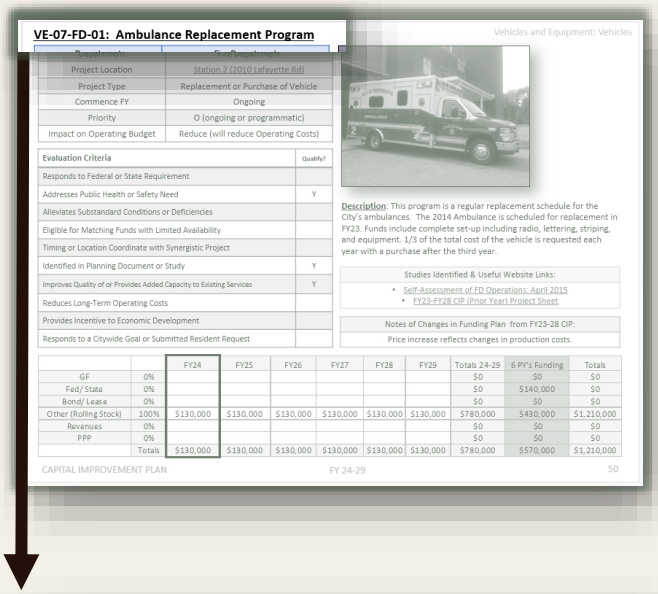
**25** *Transportation Systems Management Projects (TSM)*

**13** *Enterprise Funds (Water & Sewer) Projects (EF)*

**6** *Combined Funding Projects (COM)*

## Did you know the CIP Project Names Have Meaning?



**VE-07-FD-01: Ambulance Replacement Program**

| | |
|---|---|
| Project Location | Station 2 (2010 Lafayette Rd) |
| Project Type | Replacement or Purchase of Vehicle |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Reduce (will reduce Operating Costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive to Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

Vehicles and Equipment: Vehicles



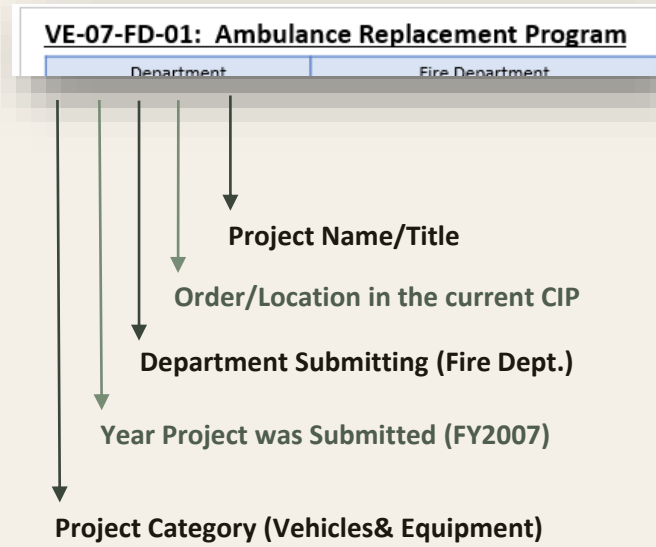
**Description**: This program is a regular replacement schedule for the City's ambulances. The 2014 Ambulance is scheduled for replacement in FY23. Funds include complete set-up including radio, lettering, striping, and equipment. 1/3 of the total cost of the vehicle is requested each year with a purchase after the third year.

Studies Identified & Useful Website Links:
- Self-Assessment of FD Operations: April 2015
- FY23-FY28 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY23-28 CIP:
Price increase reflects changes in production costs.

| | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | Totals 24-29 | 6 FY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $140,000 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 100% | $130,000 | $130,000 | $130,000 | $130,000 | $130,000 | $130,000 | $780,000 | $430,000 | $1,210,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $130,000 | $130,000 | $130,000 | $130,000 | $130,000 | $130,000 | $780,000 | $570,000 | $1,210,000 |

CAPITAL IMPROVEMENT PLAN FY 24-29 50




Numbers as of 11/15/2022

# SECTION I: INTRODUCTION

## What is the CIP?

The Capital Improvement Plan (CIP) is both a financial and infrastructure planning tool that sets forth a multi-year schedule and financing strategies for accomplishing public capital projects that both maintain safe, quality city infrastructure and assist in the achievement of Citywide Goals.

Careful development of and adherence to the CIP ensures that needed facilities are provided within the City's financial capability. In combination with the annual City budget, the CIP has a significant impact on the allocation of fiscal resources and is thus one of the most important documents considered by both the Planning Board and the City Council.

## What is the Purpose of the CIP?

- Implement needed improvements on a scheduled basis by:
  - Providing a comprehensive picture of the City's major development needs;
  - Coordinating activities of various City departments and agencies; and
  - Assisting with implementing recommendations of the City's Master Plan.
- Guides the allocation of fiscal resources by:
  - Establishing fiscal priorities for projects; and
  - Balancing the use of funding sources.
- Help plan for future City expenditures by:
  - Discouraging piecemeal improvements and duplication of expenditures.
- Ensure that needed facilities are provided within the City's financial capability by:
  - Informing the taxpayers of anticipated future improvements; and
  - Helping to schedule major projects to reduce fluctuations in the tax rate.
- Maintains an accessible and inclusive process for City residents by:
  - Welcoming residents to submit project requests during the CIP process;
  - The 6-year plan lays out upcoming capital needs and informs residents to proposed future major capital expenditures; and
  - Public input opportunities allow the public to comment on how capital monies are spent.

## What qualifies as a CIP project?

A capital improvement project is defined as a major fiscal expenditure that typically falls into one or more of the following categories:

- ✓ Land acquisition;
- ✓ Construction or expansion of a public facility, street, utility, or public infrastructure;
- ✓ Rehabilitation of a public facility or public infrastructure provided the cost is $50,000 or more;
- ✓ Design work or planning study related to a capital project or implementation of the Master Plan;
- ✓ Any item or piece of equipment, non-vehicular in nature, that costs more than $50,000 and has a life expectancy of five (5) or more years; or
- ✓ Replacement and purchase of vehicles that have a life expectancy of more than five (5) years or cost more than $50,000.

### What is Infrastructure?

Infrastructure is the basic physical structures and facilities (i.e. city buildings, roads, sewer pipes, water systems, parks, etc.) needed for the operation of a municipality. Infrastructure impacts the public health, safety, and quality of life of the City's Community.

## How is the CIP organized?

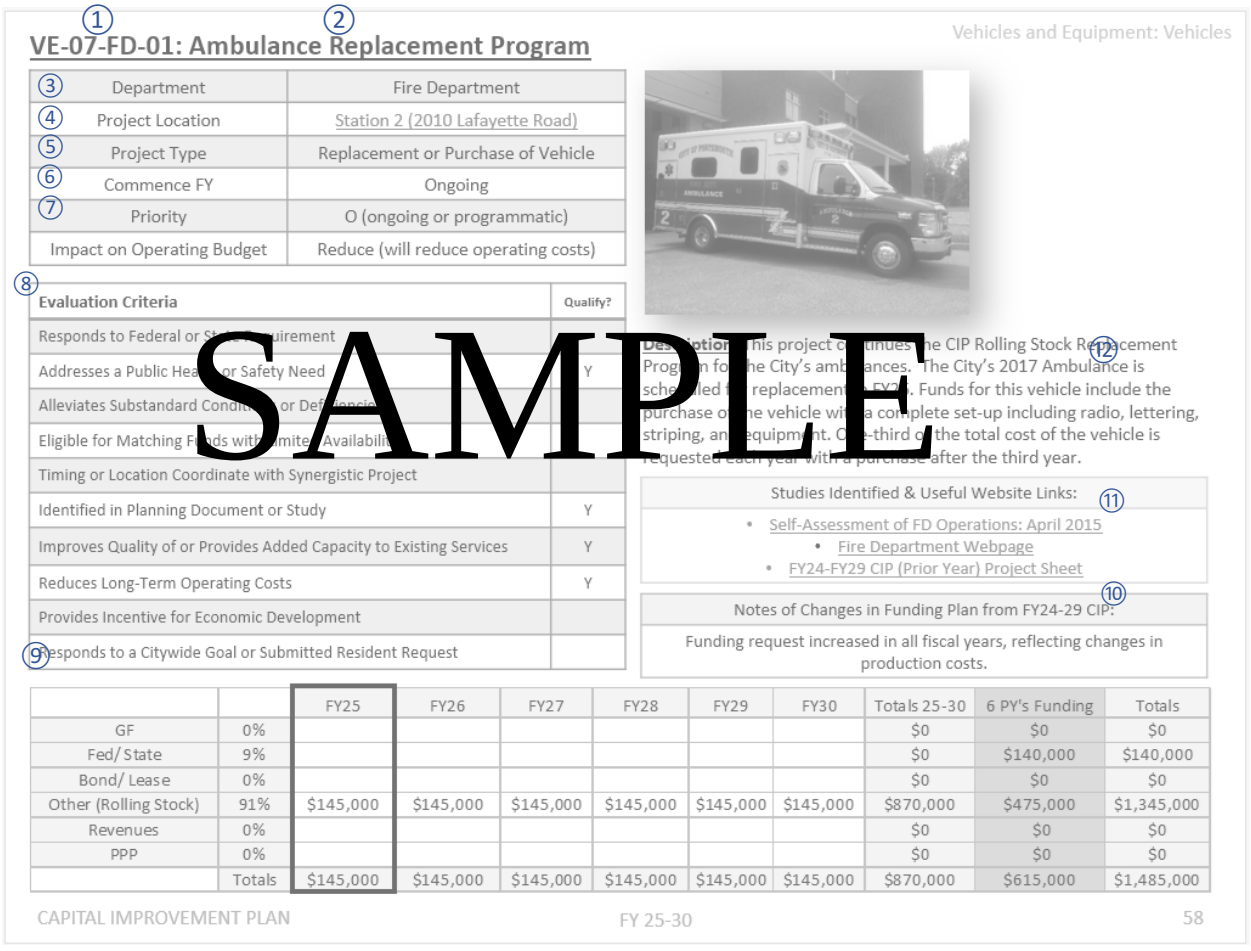
- Introduction – Introduces the document and its content to the reader and assists them in locating the information they desire for each proposed project.
- Method of Financing – Describes each of the funding sources proposed to enable the completion of each CIP Project.
- Financial Summary – Detail financial summaries of the proposed projects within this document including an overall summary, capital outlay (general fund, pay-as-you-go funding), and debt schedule (borrowing).
- Project Element Sheets – Each project is featured in a one-to-two-page element sheet that details key information such as project timing, cost, and funding source. Projects are divided into six (6) different categories.
- Appendices:
  - *Appendix I - Citizen Requests* - All Citizen requested projects are listed in this appendix and feature, the Submitter's name and Project Requested as well as Staff Assessments regarding that request.
  - *Appendix II - NHDOT Portsmouth Projects* – This appendix features a list of projects occurring within the Portsmouth city limits but are funded and operated by the State of New Hampshire.
  - *Appendix III - Studies Listed within the CIP* – This appendix is a list of the studies cited throughout the document (many of which are linked to the studies posted online).
  - *Appendix IV - Historic Document Restoration Index* – A list of the City's Permanent Financial Documents requiring restoration as well as their proposed costing for restoration and preservation.
  - *Appendix V - Ward Maps* – Maps of each of the five (5) city wards: Each ward features a Facilities & Parks Map and a Sewer & Water Facilities Map as well as a list of streets in each ward.

**Capital Improvement Plan Projects -** the CIP Projects are split into six (6) distinct sections:

| | | | |
|---|---|---|---|
| **(VE)** | **Vehicles and Equipment**<br>Projects that fund the purchase of a vehicle or piece of non-vehicular equipment. | **(BI)** | **Buildings and Infrastructure**<br>Projects that support or augment the infrastructure of the City's buildings, parks, playgrounds, and more. |
| **(IS)** | **Information System**<br>Projects that include the purchase or improvement of the information technology needs of the City. | **(TSM)** | **Transportation Systems Management**<br>Projects that invest in the City's vehicular, bicycle and pedestrian throughways. |
| **(EF)** | **Enterprise Funds**<br>Projects that support or expand the City's infrastructure to provide high quality drinking water and/or collect wastewater. | **(COM)** | **Combined Funding Projects**<br>Projects that require more than one funding source (General Fund, Enterprise Fund). |

## What information is on the Project Elements Sheet?

Each projects has its own Project Elements Sheet featuring a wealth of information about each individual project proposal. The sample sheet below has numbers indicating specific features about the elements sheet that are described in detail below.



① ②

VE-07-FD-01: Ambulance Replacement Program

Vehicles and Equipment: Vehicles

| | |
|---|---|
| ③ Department | Fire Department |
| ④ Project Location | Station 2 (2010 Lafayette Road) |
| ⑤ Project Type | Replacement or Purchase of Vehicle |
| ⑥ Commence FY | Ongoing |
| ⑦ Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

⑧

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or S[illegible]quirement | |
| Addresses a Public Hea[illegible]or Safety Need | Y |
| Alleviates Substandard Condi[illegible] or Def[illegible] | |
| Eligible for Matching F[illegible]ds with [illegible]mited Availabili[illegible] | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| ⑨ esponds to a Citywide Goal or Submitted Resident Request | |

SAMPLE



⑫ [illegible]his project c[illegible]tinues the CIP Rolling Stock R[illegible]acement Prog[illegible]m fo[illegible]he City's amb[illegible]ances. The City's 2017 Ambulance is sche[illegible]led f[illegible] replacement [illegible]FY[illegible]. Funds for this vehicle include the purchase o[illegible]he vehicle wi[illegible]a co[illegible]plete set-up including radio, lettering, striping, an[illegible]equipm[illegible]t. O[illegible]-third o[illegible] the total cost of the vehicle is requested each year with a purchase after the third year.

⑪ Studies Identified & Useful Website Links:

- Self-Assessment of FD Operations: April 2015
- Fire Department Webpage
- FY24-FY29 CIP (Prior Year) Project Sheet

⑩ Notes of Changes in Funding Plan from FY24-29 CIP:

Funding request increased in all fiscal years, reflecting changes in production costs.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 9% | | | | | | | $0 | $140,000 | $140,000 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 91% | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $870,000 | $475,000 | $1,345,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $870,000 | $615,000 | $1,485,000 |

CAPITAL IMPROVEMENT PLAN FY 25-30 58

Each project request includes the following information:

① **Project Number** The project number is broken down into four (4) parts:

- Project Category
  - VE – Vehicles and Equipment
  - BI – Buildings and Infrastructure
  - IS – Information Systems Management
  - TSM – Transportation System Management
  - EF – Enterprise Funds
  - COM- Combined Funding

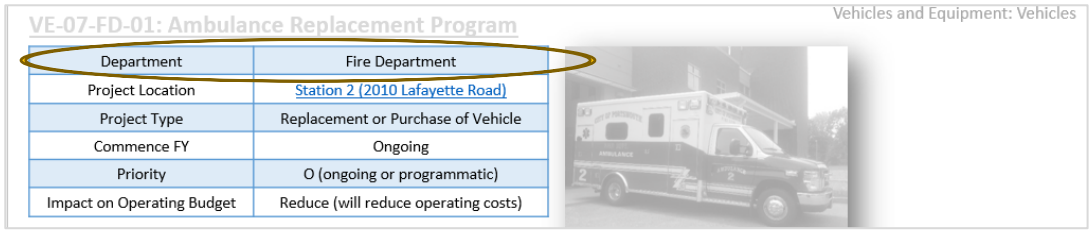
- Year of Project Submission
  - i.e., -07 → FY2007 Submission

  - Submitting Department
  - ED – Economic Development
  - FD – Fire Department
  - FI – Finance Department
  - HL – Health Department
  - IT – Information Technology
  - LI – Public Library
  - PD – Police Department
  - PL – Planning and Sustainability Department
  - PL/NH – Planning Department & State of New Hampshire
  - PW – Public Works Department
  - PW/NH – Public Works & State of New Hampshire
  - RC – Recreation Department
  - SC – School Department
  - SD – Sewer Division
  - WD – Water Division

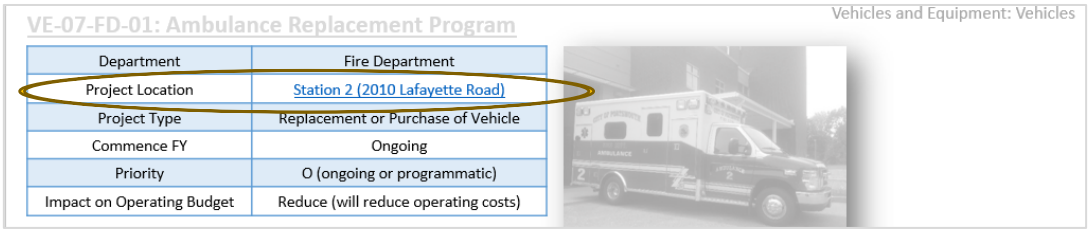
- Location within the CIP
  - Projects are given a sequential number throughout the document (these will change year over year).

② **Project Name**

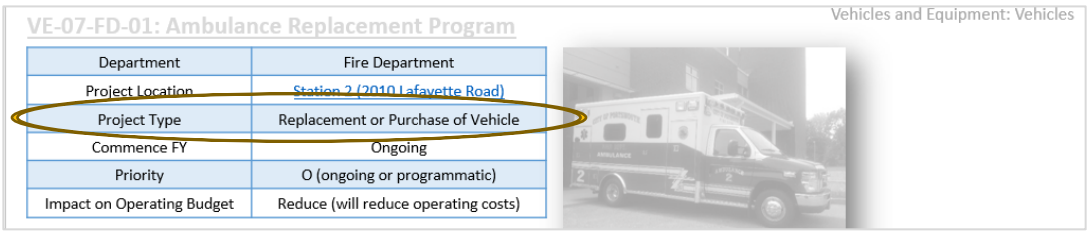
## ③ Submitting Department(s)




## ④ Project Location

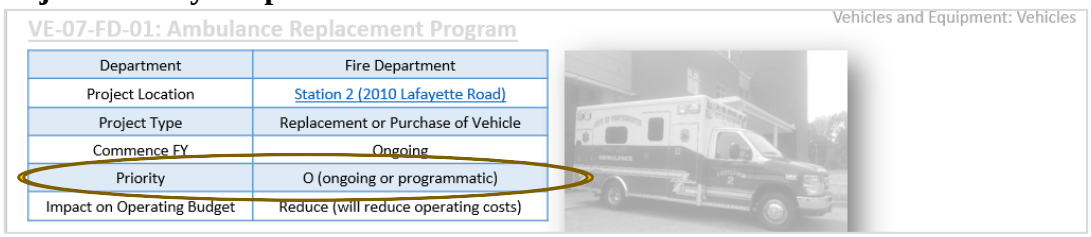



## ⑤ Project Type



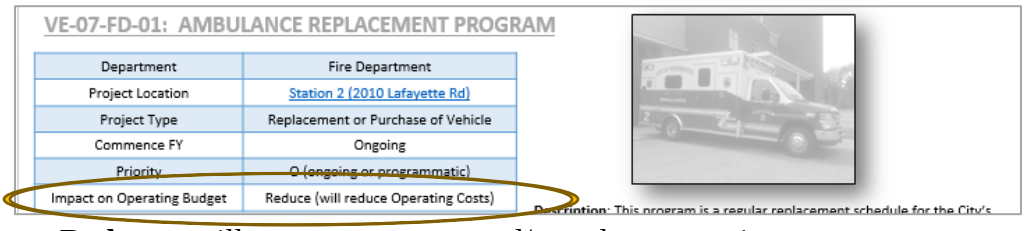

a. Land acquisition;
b. Construction or expansion of a new public facility or public infrastructure;
c. Non-recurring rehabilitation of a public facility or public infrastructure provided the cost is $50,000 or more;
d. Design work or planning study related to a capital project or implementation of the Master Plan;
e. Any item or piece of equipment, non-vehicular in nature, that costs more than $50,000 and has a life expectancy of five (5) or more years; or
f. Replacement and purchase of vehicles which have a life expectancy of more than five (5) years or cost more than $50,000.

## ⑥ Project Priority/Proposed Time Frame:




- (A) Implement within three (3) years
- (B) Implement within four (4) to six (6) years
- (C) Implement after six (6) years
- (O) Ongoing allocations of funding are required for this project

## ⑦ Impact on Operating Budget



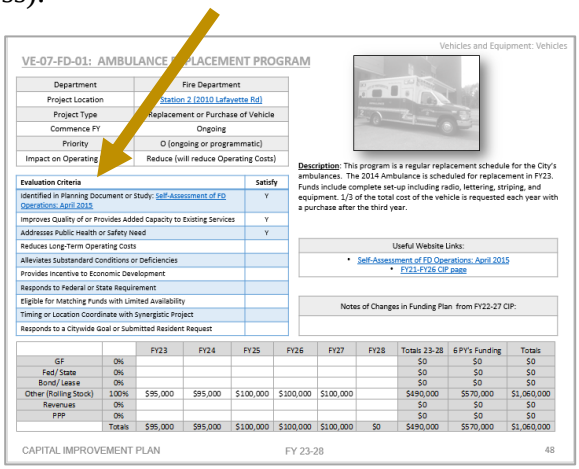
VE-07-FD-01: AMBULANCE REPLACEMENT PROGRAM

| Department | Fire Department |
|---|---|
| Project Location | Station 2 (2010 Lafayette Rd) |
| Project Type | Replacement or Purchase of Vehicle |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Reduce (will reduce Operating Costs) |

**Description**: This program is a regular replacement schedule for the City's

- **Reduce** – will generate revenue and/or reduce operating cost;
- **Negligible** – < $5,001 Impact;
- **Minimal** – $5,001 to $50,000;
- **Moderate** – $50,001 to $100,000; or
- **High** – $100,001 or more.

## ⑧ Evaluation Criteria (utilized in the prioritization process):



Vehicles and Equipment: Vehicles

VE-07-FD-01: AMBULANCE REPLACEMENT PROGRAM

| Department | Fire Department |
|---|---|
| Project Location | Station 2 (2010 Lafayette Rd) |
| Project Type | Replacement or Purchase of Vehicle |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating | Reduce (will reduce Operating Costs) |

| Evaluation Criteria | Satisfy |
|---|---|
| Identified in Planning Document or Study: Self-Assessment of FD Operations, April 2015 | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Addresses Public Health or Safety Need | Y |
| Reduces Long-Term Operating Costs | |
| Alleviates Substandard Conditions or Deficiencies | |
| Provides Incentive to Economic Development | |
| Responds to Federal or State Requirement | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This program is a regular replacement schedule for the City's ambulances. The 2014 Ambulance is scheduled for replacement in FY23. Funds include complete set-up including radio, lettering, striping, and equipment. 1/3 of the total cost of the vehicle is requested each year with a purchase after the third year.

Useful Website Links:
- Self-Assessment of FD Operations: April 2015
- FY21-FY26 CIP page

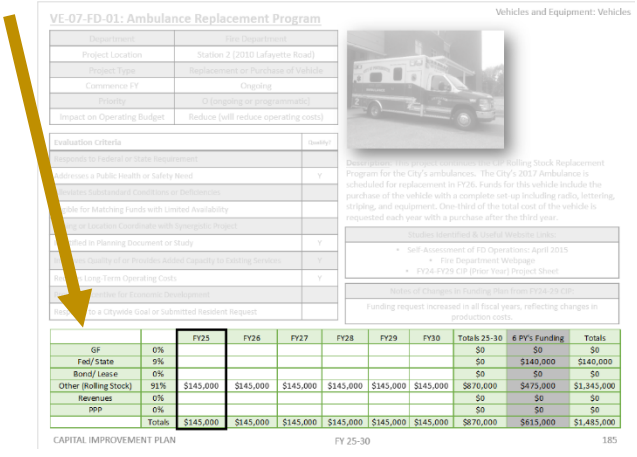
Notes of Changes in Funding Plan from FY22-27 CIP:

| | | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | Totals 23-28 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 100% | $95,000 | $95,000 | $100,000 | $100,000 | $100,000 | | $490,000 | $570,000 | $1,060,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $95,000 | $95,000 | $100,000 | $100,000 | $100,000 | $0 | $490,000 | $570,000 | $1,060,000 |

CAPITAL IMPROVEMENT PLAN FY 23-28 48

- Responds to Federal or State Requirement
- Addresses a Public Health or Safety Need
- Alleviates Substandard Conditions or Deficiencies
- Eligible for Matching Funds with Limited Availability
- Timing or Location Coordinate with Synergistic Project
- Identified in Planning Document or Study
- Improves Quality of or Provides Added Capacity to Existing Services
- Reduces Long-Term Operating Costs
- Provides Incentive for Economic Development
- Responds to a Citywide Goal or a Submitted Resident Request

## ⑨ Cost Estimate and Proposed Funding Sources



Vehicles and Equipment: Vehicles

VE-07-FD-01: Ambulance Replacement Program

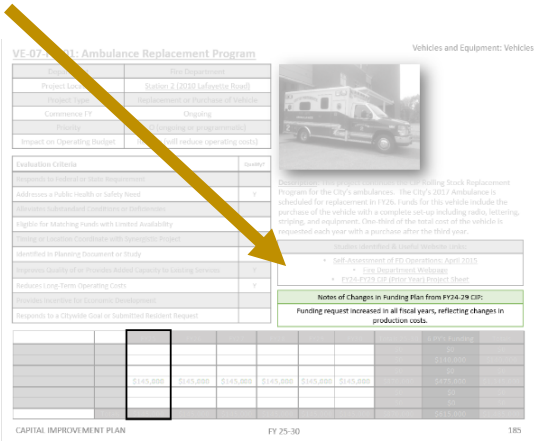
| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 9% | | | | | | | $0 | $140,000 | $140,000 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 91% | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $870,000 | $475,000 | $1,345,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $870,000 | $615,000 | $1,485,000 |

CAPITAL IMPROVEMENT PLAN FY 25-30 185

- **GF (General Fund)** – Funded by Capital Outlay (Budgeted Cash) Funds;
- **Fed/State** – Federal and/or State Funding;
- **Bond/Lease** – Bond/Lease Borrowing;
- **Other (Rolling Stock)** – Non-Operating Budget Funding;
- **Revenues** – Revenues (Income) From Special Revenue (Parking) and/or Enterprise (Water/Sewer) Funds; and
- **PPP (Public Private Partnership)** – Partnership funding through a private entity.

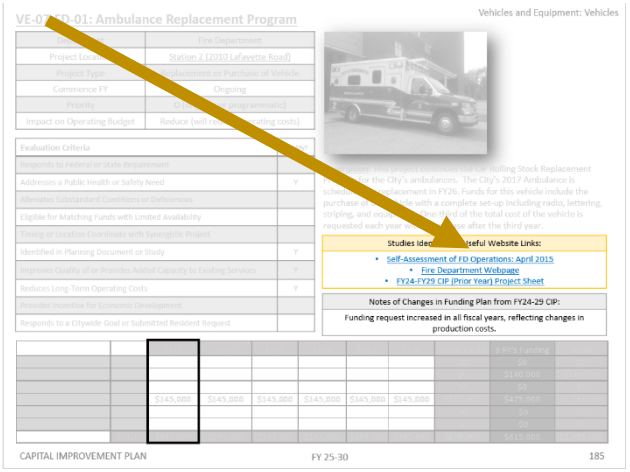
## ⑩ Notes of Changes in Funding Plan from Prior Year CIP

These are quick notes made by staff to identify funding or timing request changes for a specific project from the prior year's published Capital Improvement Plan.



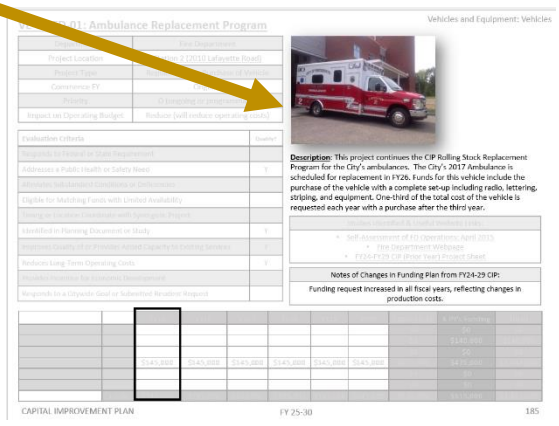

## ⑪ Useful Website Links

This box provides links to pertinent project web pages, identified studies, prior year funding pages and more in an effort to provide ample resources of information for the residents on potential future capital investments.




## ⑫ Project Description and Photo

This area of the project element sheet provides a brief description of the project as well as pertinent timing or funding information. The majority of projects also display a photo.



**Indicates a public input opportunity.**

# The FY25 Capital Improvement Plan (CIP) Process

## August

Presentations explaining the CIP process and schedule are held before the Planning Board and City Council.

## September

Citizen Project Request Submissions are due to the City.

## October

City Departments submit new project requests and update existing project element sheets.

## November

The City Council CIP Citizens Request Subcommittee meets to review the Citizens Requests with staff.

## December

The Planning Board CIP Advisory Committee meets and reviews projects with staff.

The Planning Board receives a CIP presentation by staff, holds a public comment session, and votes to recommend adoption to the City Council.

## January

The City Council holds a Work Session on the CIP and recieves a presentation on the projects by staff.

## February

The City Council holds a public hearing on the CIP.

## March

The City Council Adopts the CIP.

## May

The final funded project list is determined as part of the budget process.

# The CIP Process

The Capital Planning process is coordinated by the Finance and Planning Departments under the direction of the City Manager.

## Who develops the CIP?

**Portsmouth Residents**

City of Portsmouth residents are invited to submit projects to the Capital Improvement Plan. Submissions are analyzed by applicable departments and are submitted for review by a subcommittee of the City Council. The Subcommittee determines which projects should be placed in the capital plan within the allotted time frame. All Citizens Requests are listed in Appendix I of the CIP.

**Departments and Divisions**

City staff utilize studies, master plans, needs assessments and other Capital Planning documents to determine capital needs. Staff also review regulatory requirements and the public health needs of the City and submit appropriate projects to ensure compliance.

**Why are projects removed from the Capital Improvement Plan?**

CIP projects remain in the document while they still require funding. Projects are removed from the document for two reasons:

1) The Project has been fully funded. No fully funded projects remain in the document.
2) The project is no longer feasible, desired within the timeline, or needs a re-evaluation/rework before being part of the Capital Improvement Plan.

As the majority of projects move forward from planning (CIP) to implementation they are placed on the City's project page on the website: portsnh.co/projects

In addition to submitting new capital projects, staff reassess all existing and/or ongoing CIP projects on an annual basis. Each year, every project is updated as needed for changes to project costs, timeline or scope. Significant changes to the funding requests or timeline of a project from the prior year's CIP are noted on the project sheet.

## Prioritization of the Projects

After City Department Heads submit their capital project requests, an Advisory Committee of the Planning Board meets with department representatives to review these requests. The committee then evaluates and prioritizes each request and makes recommendations to the Planning Board.

The following factors are considered when prioritizing projects:

- **Project requirements** – Is the project required to meet legal, compliance, or regulatory requirements?
- **Timing** – How soon does the project need to be implemented to address the needs identified?
- **Strategic alignment** – To what extent is the project aligned with other City projects, policies, processes?
- **Public value** – How much value does the outcome of this project provide to the general public? How much public support is there for implementing this project?
- **Finance planning** – Is the project fundable in the time frame identified, are there available funding sources for this project?

The Finance Department incorporates the Advisory Committee's recommendations into a recommended Capital Improvement Plan which is reviewed and recommended to the City Council for Adoption by the Planning Board.

The CIP is conveyed to the City Council for a work session, a public hearing, and adoption in accordance with City Charter requirements. Projects are reviewed and prioritized in accordance with state and federal laws, public health and safety needs, City infrastructure plans and the City Council's Citywide Goals. After adoption, all applicable projects (those that affect the upcoming budget cycle) are conveyed from the Capital Improvement Plan to the City Manager's Proposed Budget. These Capital items are then reviewed and prioritized throughout the budget process and finalized in tandem with the Budget adoption process.

All projects that are in the Capital Improvement Plan but are not fully funded in the upcoming budget year may change in the subsequent Capital Plan due to changes in the project's cost, timeline, scope, or priorities.

## Changing the CIP

It is vital to remember that the CIP is both a budgeting tool and a planning tool that looks well into the future. The document is not static, even after its adoption, but remains fluid and nimble to adjust with each passing year for a number of reasons (i.e. project costs change, timeline change due to other projects, policy changes, funding capabilities, priority changes, etc.). In order for the CIP to remain relevant and effective, it must reflect these changes.

**How is the CIP changed?**

*Changes Made by Department Heads/City Staff:*

- Before the start of the new CIP cycle, the City Manager asks the departments to review every project and adjust the costs, timeline or other parameters with up-to-date information. If the changes are drastic, they are noted on the project's element sheet.

*Changes Made by the Planning Board*

- The Planning Board Advisory Committee may recommend changes to the Capital Improvement Plan after they review the projects with the departments.
- The Planning Board may request changes of the departments during their work session. These changes must be voted on and agreed to by a majority of the Board Members.

*Changes Made by the City Council*

- The City Council may vote on changes to the CIP during their Work Session or Adoption of the CIP. A councilor can make a motion to change, add, or subtract a project in any way but it must be adopted by a majority of the council in order to amend the document.
- The City Council may make adjustments to the CIP during the budget process, especially to those projects that affect the budget year in question, through a majority vote of the council.

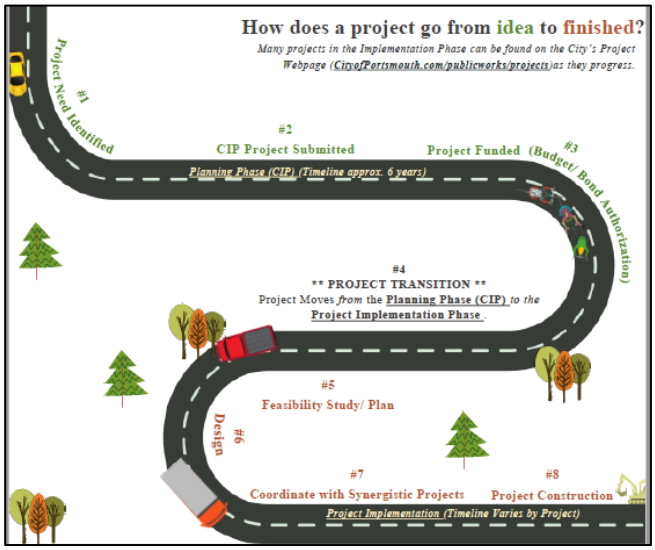
### The CIP's Relation to the Budget

The Capital Improvement Plan is a vital part of the City's budget process. It is important to note that the document itself does not appropriate nor promise any funding to any projects. Approval of the CIP by the Planning Board or the City Council does not grant final approval for any, or all, of the projects contained in the plan. Instead, these actions demonstrate acknowledgement of the plan for these upcoming community capital needs by the Planning Board and City Council. Future year appropriations will be revisited in subsequent capital plans and budget processes.

The capital plan is instrumental to the development of the annual budget. Projects proposed for funding by the General Fund for the upcoming fiscal year are included in the budget process for review by the staff and, eventually, by the City Council. The City Council can add, subtract or alter the capital plan throughout the budget process through a majority vote of the Council. The capital plan is finalized after the passing of the budget in June. This finalized capital plan only speaks to the funding and plans for the upcoming fiscal year, no funds are committed to future fiscal years. Projects that require bonding (borrowing) are required to come back before the council for additional borrowing authorizations and two-thirds (2/3) vote by the City Council.

## What Happens to a Project after the CIP?

- After a project is fully funded through the Capital Planning process, its element sheet is removed from the Capital Improvement Plan.
- Projects that are funded transition to the implementation phase (see the Quick Guide for more explanation on next steps). The implementation phase includes a multitude of phases including the planning/feasibility study phase, design, permitting, coordination with other projects and/or entities, and project construction. Not every project is able to seamlessly travel this path without sometimes going back for further funding or repeating a phase (such as planning/studies) for necessary information.
- Many projects then receive their own project page on the City's website that allow residents to sign up for project updates. portsnh.co/projects



**New Projects Added to the CIP in FY25**

These are projects that are being introduced for the first time in this FY25 CIP. Not all of the new FY25 projects are proposed to be funded in FY25.

| FY25 Project Number | Project Name |
|---|---|
| Vehicles and Equipment (VE) | |
| VE-25-FD-03 | Vehicle Replacement - Marine 1 |
| VE-25-FD-06 | Vehicle Replacement - Engine 3 |
| VE-25-PD-09 | Taser Replacement Cycle |
| VE-25-PD-10 | In-Cruiser & Handheld Radars |
| Buildings and Infrastructure (BI) | |
| BI-25-FD-13 | Fire Station 1 - Roof Replacement |
| BI-25-SC-18 | Renovation of Portsmouth Career & Technical Education Center |
| BI-25-LI-22 | Historic Artifact Conservation and Storage Assessment |
| BI-25-ED-24 | Public Art Trust Fund |
| BI-25-HL-25 | Sheltering & Public Health Resources |
| BI-25-PW-36 | Peirce Island Recreation Improvements |
| BI-25-PW-52 | Hanover Garage Structural Improvements |
| Transportation System Management (TSM) | |
| TSM-25-PW-63 | Constitution Avenue Multi-Use Path |
| Combined Funding Projects (COM) | |
| COM-25-PW-99 | Lafayette Park and Monroe Street Drainage Improvements |

## Projects That Did Not Move Forward From FY24 → FY25

This is a list of projects that were part of the FY24 Capital Improvement Plan but are not found in the FY25 Plan. Reasons for their removal are also listed.

| FY24 Project Number | Project Name | Reason for Removal from the CIP |
|---|---|---|
| Vehicles and Equipment (VE) | | |
| VE-21-FD-06 | Self-Contained Breathing Apparatus (SCBA) Replacement | This project was funded in FY24 (Capital Outlay). |
| VE-23-FD-07 | Cardiac Monitors | This project was funded in FY24 (ARPA Funding). |
| Buildings and Infrastructure (BI) | | |
| BI-16-PD-11 | Police New Facility - Land Acquisition | All New Police Facility proposed locations are all on City-owned Property thus land acquisition funds are not needed. This project page featured no funding (past or future) and was removed. |
| BI-24-LI-14 | Library Courtyard Renovation | This project was funded in FY24 (ARPA Funding). |
| BI-24-SC-17 | Fit-up of Community Campus Space for Robert J Lister Academy | Funding authorized in July of 2023 but not yet bonded. |
| BI-21-PL-23 | Trail Development Projects | This project was funded in FY24 (Capital Outlay). |
| BI-05-PL-24 | McIntyre Federal Office Building Development | This project was removed, as no future funding was needed. |
| BI-24-PW-48 | Foundry Place Parking Offices | Funding authorized in July of 2023. |
| Information Systems (IS) | | |
| IS-24-IT-51 | Expansion and Improvement of Network | This project was funded in FY24 (ARPA Funding). |
| IS-24-IT-53 | Document Management System | This project is no longer moving forward. |
| IS-24-FD-54 | Fire Department Software Upgrades | This project was funded in FY24 (Non-Operating/General Fund) |
| Transportation System Management (TSM) | | |
| TSM-17-PL-63 | Elwyn Park Traffic Calming and Pedestrian Improvements | Funding authorized in July of 2023. |
| TSM-23-PL-64 | Borthwick Avenue Bike Path | Funding authorized in July of 2023. |
| TSM-19-PW-68 | Sagamore Avenue Sidewalk | Funding authorized in July of 2023. |
| Enterprise Funds (EF) | | |
| EF-18-WD-86 | Water Division - New Groundwater Source | Funding authorized in July of 2023. |
| EF-24-WD-89 | Water Division - Greenland Well Treatment | Funding authorized in July of 2023. |
| EF-24-WD-90 | Water Division - Dover Water Emergency Interconnection | Funding authorized in July of 2023. |
| EF-20-SD-97 | Sewer Division - Woodbury Avenue Sewer Separation | Funding authorized in July of 2023. |
| Combined Funding Projects (COM) | | |
| COM-23-PW-102 | Edmond Avenue | Funding authorized in July of 2023. |
| COM-03-PW-107 | Islington Street Improvements | Funding authorized in July of 2023. |
| COM-17-PW-108 | Union Street Reconstruction | Funding authorized in July of 2023. |

## SECTION II: METHOD OF FINANCING
## (Where the Money Comes From)

Capital improvement projects are funded from a variety of sources. These funding sources include: General Fund (GF) Capital Outlay; Federal/State Grants; Bond or Lease; Revenues (Parking, Water and Sewer); State Revolving Loan Fund (SRF), and Public Private Partnerships (PPP).

### General Fund (Capital Outlay) (GF)

- Funded from General Fund Revenues, includes the money raised by the local property tax for a given year;
- Its entire cost is paid off within the year; and
- The intent is to budget approximately 2% of the previous Fiscal Year General Fund total Budget to address City General Fund priorities.

### Federal/State Grants (Fed/State)

- One source of grants is from other levels of government, for example, the Environmental Protection Agency, the NH Department of Health and Human Services, U.S. Housing and Urban Development, NH Department of Environmental Services, and the NH Department of Transportation;
- Generally, these Federal and State sources provide an outright grant or matching funds to go with locally raised funds; and
- The City also pursues non-governmental private grants when applicable.

### General Obligation Bonds (Leases/Bonds)

- Bonds are used to finance major municipal capital projects;
- These are issued for a period of time generally extending from ten to thirty years during which time principal and interest payments are made;
- They are secured by the full faith and credit of the Municipal Government;
- This type of payment has the advantage of allowing the costs to be amortized over the life of the project and of allowing taxpayers or rate payers to pay a smaller amount of the project's cost at a time;
- However, they do commit the City's resources over a long period of time and decrease the flexibility of how yearly revenues can be utilized;
- The City's bonding capacity is a limited resource;
- All projects that are to be bonded should meet minimum eligibility criteria and must have a useful life of at least equal to the bond terms; and
- **Projects that are funded through bonds must go through an additional process, after the adoption of the CIP and the budget, of authorization by the City Council after a public hearing.**

**Revenues (Enterprise Funds)**

- The City has two established Enterprise Funds (Water and Sewer);
- The needs for these two divisions are met through the revenues raised from providing that particular service; and
- Utilizing this funding source has no impact on the City's tax rate.

**Revenues (Special Revenue Funds)**

- The City has a Parking and Transportation Fund (Special Revenue Fund);
- Revenues derived from the City's parking functions are transferred to this fund in order to operate the City's parking and traffic related activities; and
- Utilizing this funding source has no impact on the City's tax rate.

**State Revolving Loan Fund (SRF/SRLF)**

- This is a program offered through the NH Department of Environmental Services for the purpose of providing low interest rate funding for approved water pollution control projects;
- State approval of applications does not bind the City to any of the individual projects but does lock into a low interest rate loan;
- Upon completion of projects, the loan becomes a serial bond payable by the City of Portsmouth Sewer or Water Fund to the State of NH; and
- In addition, the City applies for State Aid Grant (SAG) funding to assist in repaying SRF loans up to 30% of the total project cost.

**Public Private Partnership (PPP)**

- This method of financing involves joint funding of a particular project between the City and one or more private sector or non-governmental partners; and
- This method is used for projects that will benefit the partners and help to minimize costs to local taxpayers.

## It Is Important To Note . . .

Deciding on which method of financing should be selected for a given project is dependent on a number of factors.

These include the cost of the project, its useful life, the eligibility of the project to receive funds from other than local taxes, long-term and short-term financial obligations of the City and a project's relative priority in terms of implementation.

The Capital Improvement Plan seeks to maximize the potential benefits from all revenue sources.

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# SECTION III: FINANCIAL SUMMARY

Section III contains useful summary information detailing the specifics of the Capital Plan. These include the following:

1. Overview
2. Capital Improvement Plan Summary, all funds (FY 25-30);
3. A graph displaying the FY 2025 Distribution of Capital Improvement Plan Funding (Non-Enterprise Funds);
4. General Fund, Capital Outlay Projects only (FY 19-25);
5. Computation of Legal Debt Margin as of June 30, 2023;
6. Long-Term Debt Service Forecast Model (General Fund);
7. Projected Net Long-Term Debt Service as a Percentage of the General Fund Budget;
8. Long-Term Debt Service Forecast Model (Parking Fund);
9. Long-Term Debt Service Forecast Model (Debt Service Fund);
10. Long-Term Debt Service Forecast Model (Water Fund);
11. Long-Term Debt Service Forecast Model (Sewer Fund); and
12. Long-Term Debt – Outstanding Balance (All Funds).

## Capital Improvement Plan Summary FY25-FY30

**CIP Book** * Year is the Fiscal Year initially introduced in CIP not the first Fiscal Year Funded

**Page** *Type* **Year* *Dept.* *#*

| | | | | | | | | | | FY25 Distribution | | | | | | | FY26 to FY30 Schedule | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | GF | Enterprise | Bond/Lease | Federal/State | Other/Revenues | PPP | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Total Cost |
| | **I. VEHICLES AND EQUIPMENT SCHEDULE** | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | **VEHICLES** | | | | | | | | | | | | | |
| 62 | VE- | 07- | FD- | 01 | Ambulance Replacement (Funded through Rolling Stock Line Item) | | | | | | | $145,000 | | | **$145,000** | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | **$870,000** |
| 63 | VE- | 14- | FD- | 02 | Vehicle Replacement - Fire Engine #4 | | | | | | | $800,000 | | | **$800,000** | | | | | | **$800,000** |
| 64 | VE- | 25- | FD- | 03 | Vehicle Replacement - Marine #1 | | | | | | | | | | **$0** | | $250,000 | | | | **$250,000** |
| 65 | VE- | 24- | FD- | 04 | Vehicle Replacement - Tower #5 | | | | | | | | | | **$0** | | | $1,500,000 | | | **$1,500,000** |
| 66 | VE- | 24- | FD- | 05 | Vehicle Replacement - Fire Engine #6 | | | | | | | | | | **$0** | | | | $800,000 | | **$800,000** |
| 67 | VE- | 25- | FD- | 06 | Vehicle Replacement - Fire Engine #3 | | | | | | | | | | **$0** | | | | | $800,000 | **$800,000** |
| | | | | | | | | | **EQUIPMENT** | | | | | | | | | | | | | |
| 68 | VE- | 18- | FD- | 07 | Personal Protective Clothing Replacement | $70,000 | | | | | | | | | **$70,000** | | | $80,000 | $80,000 | $80,000 | **$310,000** |
| 69 | VE- | 24- | PD- | 08 | Police Body Cameras | | | | | $1,237,000 | $50,000 | | | | **$1,287,000** | | | | | $2,073,000 | **$3,360,000** |
| 70 | VE- | 25- | PD- | 09 | Taser Replacement Cycle | | | | | $533,500 | | | | | **$533,500** | | | | | $860,000 | **$1,393,500** |
| 71 | VE- | 25- | PD- | 10 | In-Cruiser and Handheld Radars | $53,000 | | | | | | | | | **$53,000** | | | | | | **$53,000** |
| 72 | VE- | 23- | PW- | 11 | Brine Equipment | | | | | | | $55,000 | | | **$55,000** | | | | | | **$55,000** |
| | | | | | **I. TOTAL VEHICLES AND EQUIPMENT SCHEDULE** | **$123,000** | **$0** | | **$2,570,500** | **$50,000** | **$200,000** | **$0** | **$2,943,500** | **$145,000** | **$395,000** | **$1,725,000** | **$1,025,000** | **$3,958,000** | **$10,191,500** |
| | **II. BUILDINGS AND INFRASTRUCTURE** | | | | | | | | | | | | | | | | | | | | | |
| 74 | BI- | 24- | FD- | 12 | Fire Station Security Upgrade | $150,000 | | | | | | | | | **$150,000** | | | | | | **$150,000** |
| 75 | BI- | 25- | FD- | 13 | Fire Station 1 - Roof Replacement | | | | | | | | | | **$0** | | | $170,000 | | | **$170,000** |
| 76 | BI- | 15- | PD- | 14 | New Police Department Facility | | | | | $38,000,000 | | | | | **$38,000,000** | | | | | | **$38,000,000** |
| 77 | BI- | 21- | PD- | 15 | Police Deficiencies and Repair Project | | | | | $400,000 | | | | | **$400,000** | | | | | | **$400,000** |
| 78 | BI- | 07- | SC- | 16 | School Facilities Capital Improvements | | | | | $650,000 | | | | | **$650,000** | $650,000 | $1,000,000 | | | $1,000,000 | **$3,300,000** |
| 80 | BI- | 08- | SC- | 17 | Elementary Schools Upgrade | | | | | | | | | | **$0** | $3,000,000 | | | $2,500,000 | | **$5,500,000** |
| 81 | BI- | 25- | SC- | 18 | Renovation of Portsmouth Career and Technical Education Center | | | | | | | | | | **$0** | | | | | $10,000,000 | **$10,000,000** |
| 82 | BI- | 17- | FI- | 19 | Permanent Records Storage Facilities | $25,000 | | | | | | | | | **$25,000** | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | **$525,000** |
| 83 | BI- | 18- | FI- | 20 | Permanent/Historic Document Restoration, Preservation, and Scanning | $100,000 | | | | | | | | | **$100,000** | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | **$850,000** |
| 84 | BI- | 24- | FI- | 21 | Disposition of Municipal Records | $25,000 | | | | | | | | | **$25,000** | $25,000 | $25,000 | | | | **$75,000** |
| 85 | BI- | 25- | LI- | 22 | Historic Record Artifact Conservation and Storage Assessment | $150,000 | | | | | | | | | **$150,000** | $75,000 | | | | | **$225,000** |
| 86 | BI- | 25- | ED- | 23 | Public Art Trust Fund | $25,000 | | | | | | | | | **$25,000** | $25,000 | $25,000 | $25,000 | $25,000 | $25,000 | **$150,000** |
| 87 | BI- | 25- | HL- | 24 | Sheltering and Public Health Resources | $250,000 | | | | | | | | | **$250,000** | $750,000 | | | | | **$1,000,000** |
| 88 | BI- | 95- | PL- | 25 | Land Acquisition | | | | | $500,000 | | | | | **$500,000** | | | | $500,000 | | **$1,000,000** |
| 89 | BI- | 22- | PL- | 26 | Historic District Guidelines Part 2 | $50,000 | | | | | | | | | **$50,000** | | | | | | **$50,000** |
| 90 | BI- | 23- | PL- | 27 | Groundwater Study to Identify Impacts | $50,000 | | | | | | | | | **$50,000** | | | | | | **$50,000** |
| 91 | BI- | 24- | PL- | 28 | City of Portsmouth Master Plan Update | $150,000 | | | | | | | | | **$150,000** | | | | | | **$150,000** |
| 92 | BI- | 24- | RC- | 29 | Indoor Pool Facility Needs | $32,500 | | | | | | $17,500 | | | **$50,000** | $50,000 | $50,000 | $50,000 | $550,000 | $50,000 | **$800,000** |
| 93 | BI- | 24- | RC- | 30 | South Mill Pond Playground | | | | | $600,000 | | | | | **$600,000** | | | | $900,000 | | **$1,500,000** |
| 94 | BI- | 12- | RC- | 31 | Existing Outdoor Recreation Field and Facility Improvements | $75,000 | | | | | | | | | **$75,000** | $150,000 | $150,000 | $175,000 | $150,000 | $150,000 | **$850,000** |
| 95 | BI- | 12- | RC- | 32 | Additional Outdoor Recreation Fields | | | | | $3,000,000 | | | | | **$3,000,000** | | | | $100,000 | $3,000,000 | **$6,100,000** |

## Capital Improvement Plan Summary FY25-FY30

**CIP Book** * Year is the Fiscal Year initially introduced in CIP not the first Fiscal Year Funded

**Page** *Type* **Year* *Dept.* *#*

| | | | | | | FY25 Distribution | | | | | | | FY26 to FY30 Schedule | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | GF | Enterprise | Bond/Lease | Federal/State | Other/Revenues | PPP | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | |
| 96 | BI- | 20- | RC- | 33 | **Greenland Road Recreational Facility** | | | | | | $146,534 | **$146,534** | | | | $100,000 | $6,100,000 | **$6,346,534** |
| 97 | BI- | 02- | RC- | 34 | **Citywide Playground Improvements** | | | | | | | **$0** | $85,000 | $200,000 | | $10,000 | $200,000 | **$495,000** |
| 98 | BI- | 15- | RC- | 35 | **Leary Field - Bleachers/Grandstands** | $50,000 | | | | | | **$50,000** | $1,000,000 | | | | | **$1,050,000** |
| 99 | BI- | 25- | PW- | 36 | **Peirce Island Recreation Improvements** | $150,000 | | | | | | **$150,000** | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | **$900,000** |
| 100 | BI- | 15- | PW- | 37 | **Outdoor Pool Aquatics Upgrade and Pool House** | | | | | | | **$0** | | | $100,000 | $3,250,000 | | **$3,350,000** |
| 101 | BI- | 23- | PW- | 38 | **Community Campus Facility Needs** | $50,000 | | | | | | **$50,000** | $200,000 | $200,000 | $200,000 | $200,000 | $200,000 | **$1,050,000** |
| 102 | BI- | 02- | PW- | 39 | **Citywide Park and Monument Improvements** | $50,000 | | | | | | **$50,000** | | $100,000 | | $100,000 | | **$250,000** |
| 103 | BI- | 04- | PW- | 40 | **Citywide Tree and Public Greenery Program** | $20,000 | | | | | | **$20,000** | $20,000 | $20,000 | $20,000 | $20,000 | $20,000 | **$120,000** |
| 104 | BI- | 19- | PW- | 41 | **Prescott Park Master Plan Implementation** | | | $4,500,000 | | | | **$4,500,000** | $125,000 | $125,000 | $1,875,000 | $1,875,000 | $125,000 | **$8,625,000** |
| 105 | BI- | 11- | PW- | 42 | **Prescott Park Facilities Capital Improvements** | $100,000 | | | | | | **$100,000** | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | **$350,000** |
| 106 | BI- | 21- | PW- | 43 | **City Hall HVAC Improvements** | $200,000 | | | | | | **$200,000** | $500,000 | | | $1,000,000 | | **$1,700,000** |
| 107 | BI- | 18- | PW- | 44 | **Recycling and Solid Waste Transfer Station** | | | | | | | **$0** | | | | $7,500,000 | | **$7,500,000** |
| 108 | BI- | 05- | PW- | 45 | **Historic Cemetery Improvements** | $40,000 | | | | | | **$40,000** | $40,000 | $40,000 | $40,000 | $40,000 | $40,000 | **$240,000** |
| 110 | BI- | 15- | PW- | 46 | **Citywide Retaining Walls Repairs and Improvements** | | | | | | | **$0** | $50,000 | $50,000 | | $50,000 | | **$150,000** |
| 111 | BI- | 07- | PW/NH- | 47 | **Sound Barriers in Residential Area Along I-95** | $50,000 | | | | | | **$50,000** | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | **$550,000** |
| 112 | BI- | 01- | PW- | 48 | **Citywide Facilities Capital Improvements** | | | $850,000 | | | | **$850,000** | $1,100,000 | $550,000 | $550,000 | $1,100,000 | $550,000 | **$4,700,000** |
| 114 | BI- | 21- | PW- | 49 | **Downtown Aerial Utilities Undergrounding** | | | | | | | **$0** | | | | $5,000,000 | | **$5,000,000** |
| 115 | BI- | 20- | PW- | 50 | **Level 2 (120/208 Volt Single Phase) and Level 3 (480 Volt Three Phase) EV Charging Stations** | | | | $100,000 | $50,000 | | **$150,000** | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | **$900,000** |
| 116 | BI- | 24- | PW- | 51 | **Mechanic Street Wharf/Pier** | | | $1,300,000 | | | | **$1,300,000** | | | | | | **$1,300,000** |
| 117 | BI- | 25- | PW- | 52 | **Hanover Garage Structural Improvements** | | | | | $600,000 | | **$600,000** | | | | | | **$600,000** |
| | | | | | **II. TOTAL BUILDINGS AND INFRASTRUCTURE** | **$1,792,500** | **$0** | **$49,800,000** | **$100,000** | **$667,500** | **$146,534** | **$52,506,534** | **$8,545,000** | **$3,235,000** | **$3,905,000** | **$25,670,000** | **$22,160,000** | **$116,021,534** |

### III. INFORMATION SYSTEMS

| | | | | | | | | | | | | | | | | | | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 120 | IS- | 06- | IT- | 53 | **Information Technology Upgrades and Replacements** | | | | | $829,038 | | **$829,038** | $759,608 | $749,108 | $900,158 | $1,044,108 | $830,058 | **$5,112,078** |
| | | | | | **(Funded through General Fund-Other General Non-Operating)** | | | | | | | | | | | | | |
| 126 | IS- | 24- | IT- | 54 | **Cybersecurity Enhancements** | | | | | $125,000 | | **$125,000** | $125,000 | | | | | **$250,000** |
| | | | | | **(Funded through General Fund-Other General Non-Operating)** | | | | | | | | | | | | | |
| 127 | IS- | 21- | FI- | 55 | **Financial Software Upgrade** | | | | | $300,000 | | **$300,000** | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | **$1,800,000** |
| | | | | | **(Funded through General Fund-Other General Non-Operating)** | | | | | | | | | | | | | |
| | | | | | **III. TOTAL INFORMATION SYSTEMS** | **$0** | **$0** | **$0** | **$0** | **$1,254,038** | **$0** | **$1,254,038** | **$1,184,608** | **$1,049,108** | **$1,200,158** | **$1,344,108** | **$1,130,058** | **$7,162,078** |

## Capital Improvement Plan Summary FY25-FY30

**CIP Book** * Year is the Fiscal Year initially introduced in CIP not the first Fiscal Year Funded

| Page | Type | *Year | Dept. | # | | FY25 Distribution: GF | Enterprise | Bond/Lease | Federal/State | Other/Revenues | PPP | FY25 | FY26 to FY30 Schedule: FY26 | FY27 | FY28 | FY29 | FY30 | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **IV. TRANSPORTATION SYSTEM MANAGEMENT** | | | | | | | | | | | | | |
| | | | | | **PARKING** | | | | | | | | | | | | | |
| 130 | TSM- | 12- | PW- | 56 | Parking Lot Paving | | | | | $150,000 | | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $900,000 |
| 131 | TSM- | 08- | PW- | 57 | Parking Meters | | | | | $50,000 | | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 |
| | | | | | **BICYCLE/PEDESTRIAN** | | | | | | | | | | | | | |
| 132 | TSM- | 15- | PL/NH- | 58 | Hampton Branch Rail Trail (NH Seacoast Greenway) | | | | | | | $0 | $203,000 | $200,000 | | $880,000 | | $1,283,000 |
| 133 | TSM- | 15- | PL- | 59 | Bicycle/Pedestrian Plan Implementation | | | | | $50,000 | | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 |
| 134 | TSM- | 21- | PL- | 60 | Market Street Sidepath | | | | | | | $0 | $160,000 | $2,000,000 | | | | $2,160,000 |
| 135 | TSM- | 08- | PL/NH- | 61 | US Route 1 New Sidepath Construction | | | | | | | $0 | $295,000 | $1,000,000 | | | | $1,295,000 |
| 136 | TSM- | 16- | PL/NH- | 62 | US Route 1 Crosswalks and Signals | | | | | | | $0 | $135,000 | $135,000 | | | | $270,000 |
| 137 | TSM- | 25- | PW- | 63 | Constitution Avenue Multi-Use Path | | | | | | | $0 | | | $1,200,000 | | | $1,200,000 |
| 138 | TSM- | 08- | PW- | 64 | Wayfinding System | | | | | $350,000 | | $350,000 | | | | | | $350,000 |
| 139 | TSM- | 21- | PW- | 65 | Greenland Road/Middle Road Corridor Bicycle/Pedestrian Improvements | | | | | | | $0 | $300,000 | | | $1,000,000 | | $1,300,000 |
| 140 | TSM- | 15- | PW- | 66 | Market Square Upgrade | | | | | | | $0 | $1,000,000 | | $1,000,000 | | $1,000,000 | $3,000,000 |
| 141 | TSM- | 95- | PW- | 67 | Citywide Sidewalk Reconstruction Program | | | | | | | $0 | $400,000 | | $400,000 | | $400,000 | $1,200,000 |
| | | | | | **INTERSECTION/SIGNALS** | | | | | | | | | | | | | |
| 143 | TSM- | 10- | PW- | 68 | Citywide Traffic Signal Upgrade Program | $100,000 | | | | | | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $600,000 |
| 144 | TSM- | 11- | PW- | 69 | Citywide Intersection Improvements | $100,000 | | | | | | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $600,000 |
| 145 | TSM- | 16- | PL- | 70 | Russell/Market Intersection Upgrade | | | $365,000 | | | | $365,000 | $240,193 | | $64,573 | $1,145,070 | | $1,814,836 |
| 146 | TSM- | 16- | PW- | 71 | Railroad Crossings | $172,500 | | | | | | $172,500 | | | | | | $172,500 |
| | | | | | **BRIDGES** | | | | | | | | | | | | | |
| 147 | TSM- | 18- | PW- | 72 | Citywide Bridge Improvements | $100,000 | | | | | | $100,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $350,000 |
| 148 | TSM- | 08- | PW- | 73 | Cate Street Bridge Replacement | | | | | | | $0 | | | $1,750,000 | | | $1,750,000 |
| | | | | | **ROADWAY** | | | | | | | | | | | | | |
| 149 | TSM- | 20- | PW- | 74 | Coakley-Borthwick Connector Roadway | | | | | | | $0 | $1,000,000 | | | | | $1,000,000 |
| 150 | TSM- | 21- | PW- | 75 | Traffic Calming | | | | | $50,000 | | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 |
| 151 | TSM- | 94- | PW- | 76 | Street Paving, Management, and Rehabilitation | | | | | | | $0 | $4,000,000 | | $4,000,000 | | $4,000,000 | $12,000,000 |
| 153 | TSM- | 11- | PW- | 77 | Pease International Tradeport Roadway Rehabilitation | | | | | | | $0 | | | $1,000,000 | $500,000 | | $1,500,000 |
| 155 | TSM- | 15- | PW- | 78 | Junkins Avenue Improvements | | | | | | | $0 | | | $150,000 | $1,100,000 | | $1,250,000 |
| 156 | TSM- | 20- | PW- | 79 | Pinehurst Road Improvements | | | | | | | $0 | | | | | $300,000 | $300,000 |
| 157 | TSM- | 20- | PW- | 80 | Madison Street Roadway Improvements | | | | | | | $0 | | | | $350,000 | | $350,000 |
| | | | | | **IV. TOTAL TRANSPORTATION SYSTEM MANAGEMENT** | $472,500 | $0 | $365,000 | $0 | $650,000 | $0 | $1,487,500 | $8,283,193 | $3,885,000 | $10,114,573 | $5,525,070 | $6,250,000 | $35,545,336 |

**Capital Improvement Plan Summary FY25-FY30**

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| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **FY25 Distribution** | | | | | | | **FY26 to FY30 Schedule** | | | | | |
| | | | | | | **GF** | **Enterprise** | **Bond/Lease** | **Federal/State** | **Other/Revenues** | **PPP** | **FY25** | **FY26** | **FY27** | **FY28** | **FY29** | **FY30** | **Total Cost** |
| | **V. ENTERPRISE FUNDS** | | | | | | | | | | | | | | | | | |
| | **Water** | | | | | | | | | | | | | | | | | |
| 160 | EF- | 02- | WD- | 81 | **Annual Water Line Replacement** | | | | | | | **$0** | $1,500,000 | | $1,500,000 | | $1,500,000 | **$4,500,000** |
| 161 | EF- | 08- | WD- | 82 | **Well Station Improvements** | | | | | | | **$0** | $700,000 | | | | | **$700,000** |
| 162 | EF- | 15- | WD- | 83 | **Reservoir Management** | | | | | | | **$0** | $1,000,000 | | | | | **$1,000,000** |
| 163 | EF- | 22- | WD- | 84 | **Water Storage Tanks Improvements** | | | $400,000 | | | | **$400,000** | | $4,000,000 | | | | **$4,400,000** |
| 164 | EF- | 22- | WD- | 85 | **Madbury Water Treatment Plant - Facility Repair and Improvements** | | | $650,000 | | | | **$650,000** | $125,000 | $125,000 | | | | **$900,000** |
| | | | | | **Water Subtotals:** | **$0** | **$0** | **$1,050,000** | **$0** | **$0** | **$0** | **$1,050,000** | **$3,325,000** | **$4,125,000** | **$1,500,000** | **$0** | **$1,500,000** | **$11,500,000** |
| | **Sewer** | | | | | | | | | | | | | | | | | |
| 166 | EF- | 12- | SD- | 86 | **Annual Sewer Line Replacement** | | | | | | | **$0** | $1,500,000 | | $1,500,000 | | $1,500,000 | **$4,500,000** |
| 167 | EF- | 12- | SD- | 87 | **Pease Wastewater Treatment Facility** | | | $20,000,000 | $5,000,000 | | | **$25,000,000** | | | | | | **$25,000,000** |
| 168 | EF- | 23- | SD- | 88 | **Wastewater Reuse at Pease Wastewater Treatment Facility** | | | | | | | **$0** | | $2,000,000 | | $6,300,000 | | **$8,300,000** |
| 169 | EF- | 16- | SD- | 89 | **Long Term Control Plan Related Projects** | | | | | | | **$0** | $1,000,000 | $1,000,000 | $1,000,000 | | | **$3,000,000** |
| 170 | EF- | 17- | SD- | 90 | **Wastewater Pumping Station Improvements** | | | $700,000 | | | | **$700,000** | | $500,000 | | $500,000 | | **$1,700,000** |
| 171 | EF- | 22- | SD- | 91 | **Sewer Service Funding for Sagamore Avenue Area Sewer Extension** | | | $365,000 | | | | **$365,000** | $365,000 | $365,000 | $365,000 | $365,000 | $365,000 | **$2,190,000** |
| 172 | EF- | 13- | SD- | 92 | **Mechanic Street Pumping Station Upgrade** | | | $3,000,000 | | | | **$3,000,000** | | $20,000,000 | | | | **$23,000,000** |
| 173 | EF- | 24- | SD- | 93 | **Peirce Island Wastewater Treatment Facility** | | | $1,900,000 | | | | **$1,900,000** | $1,500,000 | $1,500,000 | | | | **$4,900,000** |
| | | | | | **Sewer Subtotals:** | **$0** | **$0** | **$25,965,000** | **$5,000,000** | **$0** | **$0** | **$30,965,000** | **$4,365,000** | **$25,365,000** | **$2,865,000** | **$7,165,000** | **$1,865,000** | **$72,590,000** |
| | **V. TOTAL ENTERPRISE FUNDS** | | | | | **$0** | **$0** | **$27,015,000** | **$5,000,000** | **$0** | **$0** | **$32,015,000** | **$7,690,000** | **$29,490,000** | **$4,365,000** | **$7,165,000** | **$3,365,000** | **$84,090,000** |

**Capital Improvement Plan Summary FY25-FY30**

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| | | | | | | | | | FY25 Distribution | | | | | | | FY26 to FY30 Schedule | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | GF | Enterprise | Bond/Lease | Federal/State | Other/Revenues | PPP | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | |
| **VI. COMBINED FUNDING PROJECTS (General Fund-Water Fund-Sewer Fund)** | | | | | | | | | | | | | | | | | | | | | |
| 172 | COM- | 20- | PW- | 94 | **Fleet Street Utilities Upgrade and Streetscape** | | | | | | | | | | | | | | | | |
| | | | | | General Government | | | | | | $1,000,000 | | | | **$1,000,000** | $2,000,000 | | | | | **$3,000,000** |
| | | | | | Water Fund | | | | | | $1,000,000 | | | | **$1,000,000** | $2,000,000 | | | | | **$3,000,000** |
| | | | | | Sewer Fund | | | | | | $1,000,000 | | | | **$1,000,000** | $3,000,000 | | | | | **$4,000,000** |
| | | | | | **Total Project** | **$0** | **$0** | **$3,000,000** | **$0** | **$0** | **$0** | **$3,000,000** | $7,000,000 | $0 | $0 | $0 | $0 | **$10,000,000** | | | |
| 174 | COM- | 15- | PW- | 95 | **Citywide Storm Drainage Improvements** | | | | | | | | | | | | | | | | |
| | | | | | General Government | | | | | | $500,000 | | | | **$500,000** | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | **$3,000,000** |
| | | | | | Water Fund | | | | | | | | | | **$0** | | | | | | **$0** |
| | | | | | Sewer Fund | | | | | | $500,000 | | | | **$500,000** | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | **$3,000,000** |
| | | | | | **Total Project** | **$0** | **$0** | **$1,000,000** | **$0** | **$0** | **$0** | **$1,000,000** | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | **$6,000,000** | | | |
| 176 | COM- | 23- | PW- | 96 | **Chapel Street** | | | | | | | | | | | | | | | | |
| | | | | | General Government | | | | | | | | | | **$0** | | | | | | **$0** |
| | | | | | Water Fund | | | | | | | | | | **$0** | $750,000 | | | | | **$750,000** |
| | | | | | Sewer Fund | | | | | | | | | | **$0** | $750,000 | | | | | **$750,000** |
| | | | | | **Total Project** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | $1,500,000 | $0 | $0 | $0 | $0 | **$1,500,000** | | | |
| 178 | COM- | 20- | PW- | 97 | **DPW Complex Improvements** | | | | | | | | | | | | | | | | |
| | | | | | General Government | | | | | | | | | | **$0** | | | | | | **$0** |
| | | | | | Water Fund | | | | | | $1,500,000 | | | | **$1,500,000** | | | | | | **$1,500,000** |
| | | | | | Sewer Fund | | | | | | $1,500,000 | | | | **$1,500,000** | | | | | | **$1,500,000** |
| | | | | | **Total Project** | **$0** | **$0** | **$3,000,000** | **$0** | **$0** | **$0** | **$3,000,000** | $0 | $0 | $0 | $0 | $0 | **$3,000,000** | | | |
| 180 | COM- | 22- | PW- | 98 | **The Creek Neighborhood Reconstruction** | | | | | | | | | | | | | | | | |
| | | | | | General Government | | | | | | $500,000 | | | | **$500,000** | | $800,000 | | $1,000,000 | | **$2,300,000** |
| | | | | | Water Fund | | | | | | $500,000 | | | | **$500,000** | | $800,000 | | $1,000,000 | | **$2,300,000** |
| | | | | | Sewer Fund | | | | | | $500,000 | | | | **$500,000** | | $800,000 | | $1,000,000 | | **$2,300,000** |
| | | | | | **Total Project** | **$0** | **$0** | **$1,500,000** | **$0** | **$0** | **$0** | **$1,500,000** | $0 | $2,400,000 | $0 | $3,000,000 | $0 | **$6,900,000** | | | |
| 182 | COM- | 25- | PW- | 99 | **Lafayette Park and Monroe Street Drainage Improvements** | | | | | | | | | | | | | | | | |
| | | | | | General Government | | | | | | | | | | **$0** | | | $75,000 | $1,000,000 | | **$1,075,000** |
| | | | | | Water Fund | | | | | | | | | | **$0** | | | | | | **$0** |
| | | | | | Sewer Fund | | | | | | | | | | **$0** | $1,750,000 | | | | | **$1,750,000** |
| | | | | | **Total Project** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | $1,750,000 | $0 | $75,000 | $1,000,000 | $0 | **$2,825,000** | | | |
| | | | | | **TOTAL COMBINED FUNDING PROJECTS (General Fund-Water Fund-Sewer Fund)** | | | | | | | | | | | | | | | | | |
| | | | | | General Government | $0 | $0 | $2,000,000 | $0 | $0 | $0 | **$2,000,000** | $2,500,000 | $1,300,000 | $575,000 | $2,500,000 | $500,000 | **$9,375,000** | | | |
| | | | | | Water Fund | $0 | $0 | $3,000,000 | $0 | $0 | $0 | **$3,000,000** | $2,750,000 | $800,000 | $0 | $1,000,000 | $0 | **$7,550,000** | | | |
| | | | | | Sewer Fund | $0 | $0 | $3,500,000 | $0 | $0 | $0 | **$3,500,000** | $6,000,000 | $1,300,000 | $500,000 | $1,500,000 | $500,000 | **$13,300,000** | | | |
| | | | | | **Total Project** | **$0** | **$0** | **$8,500,000** | **$0** | **$0** | **$0** | **$8,500,000** | $11,250,000 | $3,400,000 | $1,075,000 | $5,000,000 | $1,000,000 | **$30,225,000** | | | |

## Capital Improvement Plan Summary FY25-FY30

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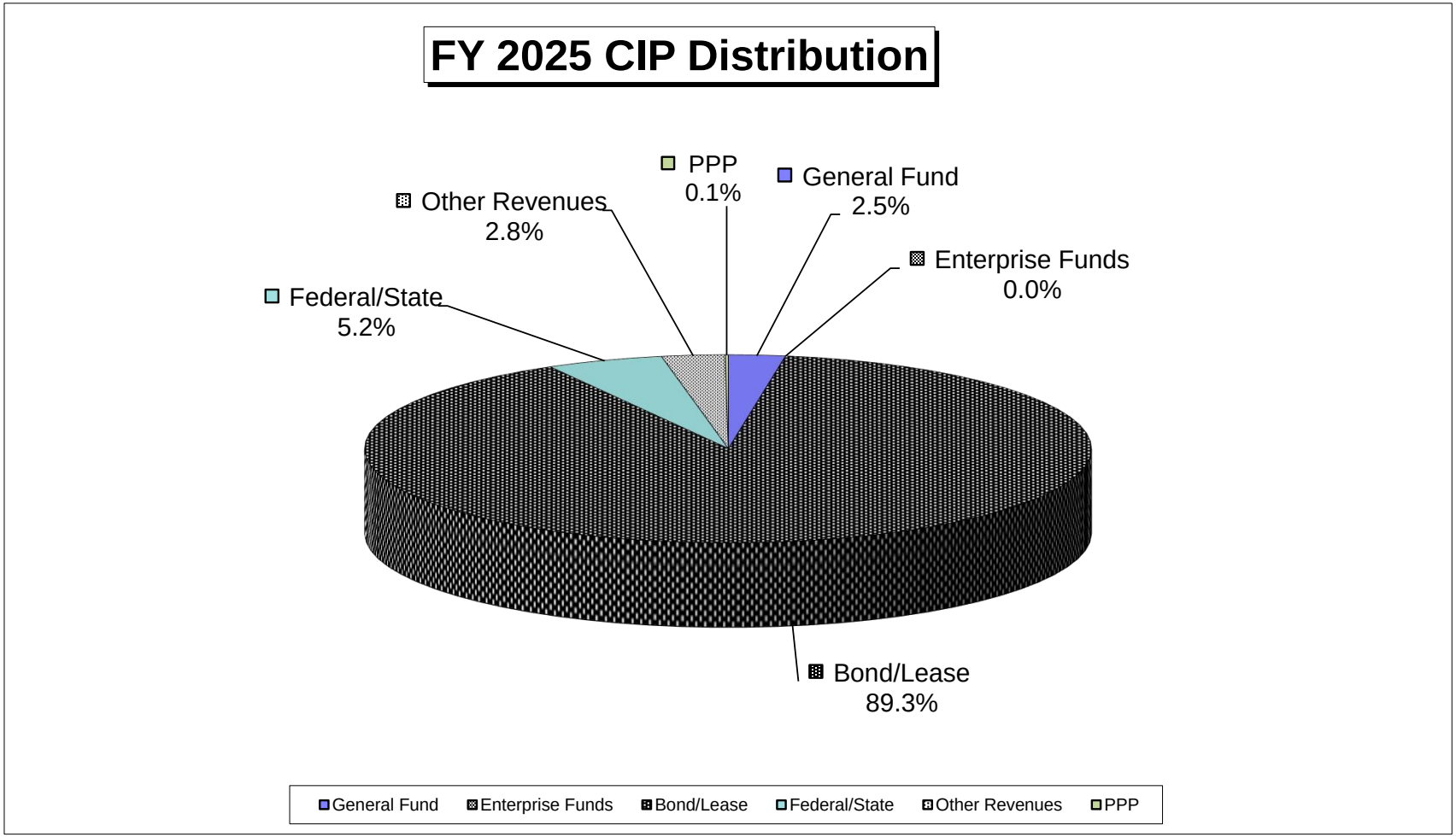
**FY25 Distribution** | **FY26 to FY30 Schedule**

| | | GF | Enterprise | Bond/Lease | Federal/State | Other/Revenues | PPP | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SUMMARY** | **TOTALS BY SECTION** | | | | | | | | | | | | | |
| I. | VEHICLES AND EQUIPMENT | $123,000 | $0 | $2,570,500 | $50,000 | $200,000 | $0 | **$2,943,500** | $145,000 | $395,000 | $1,725,000 | $1,025,000 | $3,958,000 | **$10,191,500** |
| II. | BUILDINGS AND INFRASTRUCTURE | $1,792,500 | $0 | $49,800,000 | $100,000 | $667,500 | $146,534 | **$52,506,534** | $8,545,000 | $3,235,000 | $3,905,000 | $25,670,000 | $22,160,000 | **$116,021,534** |
| III. | INFORMATION SYSTEMS | $0 | $0 | $0 | $0 | $1,254,038 | $0 | **$1,254,038** | $1,184,608 | $1,049,108 | $1,200,158 | $1,344,108 | $1,130,058 | **$7,162,078** |
| IV | TRANSPORTATION SYSTEM MANAGEMENT | $472,500 | $0 | $365,000 | $0 | $650,000 | $0 | **$1,487,500** | $8,283,193 | $3,885,000 | $10,114,573 | $5,525,070 | $6,250,000 | **$35,545,336** |
| V | ENTERPRISE FUNDS | $0 | $0 | $27,015,000 | $5,000,000 | $0 | $0 | **$32,015,000** | $7,690,000 | $29,490,000 | $4,365,000 | $7,165,000 | $3,365,000 | **$84,090,000** |
| VI | COMBINED FUNDING PROJECTS | $0 | $0 | $8,500,000 | $0 | $0 | $0 | **$8,500,000** | $11,250,000 | $3,400,000 | $1,075,000 | $5,000,000 | $1,000,000 | **$30,225,000** |
| | CAPITAL CONTINGENCY | $100,000 | $0 | $0 | $0 | $0 | $0 | **$100,000** | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | **$600,000** |
| | **TOTALS** | **$2,488,000** | **$0** | **$88,250,500** | **$5,150,000** | **$2,771,538** | **$146,534** | **$98,806,572** | **$37,197,801** | **$41,554,108** | **$22,484,731** | **$45,829,178** | **$37,963,058** | **$283,835,448** |
| | **TOTALS BY FUNDING TYPE:** | | | | | | | | | | | | | |
| | GOVERNMENTAL FUNDS | $2,488,000 | $0 | $54,735,500 | $150,000 | $2,771,538 | $146,534 | **$60,291,572** | $20,757,801 | $9,964,108 | $17,619,731 | $36,164,178 | $34,098,058 | **$178,895,448** |
| | WATER FUND | $0 | $0 | $4,050,000 | $0 | $0 | $0 | **$4,050,000** | $6,075,000 | $4,925,000 | $1,500,000 | $1,000,000 | $1,500,000 | **$19,050,000** |
| | SEWER FUND | $0 | $0 | $29,465,000 | $5,000,000 | $0 | $0 | **$34,465,000** | $10,365,000 | $26,665,000 | $3,365,000 | $8,665,000 | $2,365,000 | **$85,890,000** |
| | **TOTAL BY FUNDING TYPE** | **$2,488,000** | **$0** | **$88,250,500** | **$5,150,000** | **$2,771,538** | **$146,534** | **$98,806,572** | **$37,197,801** | **$41,554,108** | **$22,484,731** | **$45,829,178** | **$37,963,058** | **$283,835,448** |

**Other/Revenue**

| | |
|---|---|
| Rolling Stock | $145,000 |
| IT Upgrades/Replacements | $1,254,038 |
| Parking Capital Outlay | $1,317,500 |
| Stormwater | $55,000 |
| **Total Other/Revenue** | **$2,771,538** |




| | General Fund | Enterprise Funds | Bond/Lease | Federal/State | Other Revenues | PPP | Totals |
|---|---|---|---|---|---|---|---|
| Amount | $2,488,000 | $0 | $88,250,500 | $5,150,000 | $2,771,538 | $146,534 | $98,806,572 |
| % of Total | 2.5% | 0.0% | 89.3% | 5.2% | 2.8% | 0.1% | |

**General Fund - Capital Outlay**
**Six Year Funding History and Proposed FY2025 Funding**
**Capital Improvement Plan FY2025-FY2030**

| PAGE | | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 | Total FY19-FY24 | Proposed Department Request FY25 |
|---|---|---|---|---|---|---|---|---|---|
| **I. VEHICLES AND EQUIPMENT SCHEDULE (VE)** | | | | | | | | | |
| **68** | Personal Protective Clothing Replacement | $60,000 | $60,000 | $0 | $0 | $0 | $0 | **$120,000** | **$70,000** |
| **71** | In-Cruiser and Handheld Radars | | | | | | | **$0** | **$53,000** |
| | Self Contained Breathing Apparatus (SCBA) Replacement Program | | | | | $0 | $185,000 | **$185,000** | |
| | Brine Equipment | | | | | | $55,000 | **$55,000** | |
| | Hydraulic Rescue Tool Replacement | | $0 | $30,000 | $30,000 | $0 | $0 | **$60,000** | |
| | Emergency Generator Replacement - Station 1 | | $100,000 | $0 | $0 | $0 | $0 | **$100,000** | |
| | Vehicle Replacement - Fire Engine Repair | $60,000 | $0 | $0 | $0 | $0 | $0 | **$60,000** | |
| | Thermal Imaging Camera | $24,000 | $0 | $0 | $0 | $0 | $0 | **$24,000** | |
| | Police Gym Equipment | $20,000 | $0 | $0 | $0 | $0 | $0 | **$20,000** | |
| | **Total Vehicles and Equipment** | **$164,000** | **$160,000** | **$30,000** | **$30,000** | **$0** | **$240,000** | **$624,000** | **$123,000** |
| **II. BUILDINGS AND INFRASTRUCTURE (BI)** | | | | | | | | | |
| **74** | Fire Station Security Upgrade | $0 | $0 | $0 | $0 | $0 | $20,000 | **$20,000** | **$150,000** |
| **82** | Permanent Records Storage Facilities | $50,000 | $50,000 | $0 | $50,000 | $0 | | **$150,000** | **$25,000** |
| **83** | Permanent/Historic Document Restoration, Preservation and Scanning | $88,000 | $100,000 | $0 | $50,000 | $100,000 | $50,000 | **$388,000** | **$100,000** |
| **84** | Disposition of Municipal Records | $0 | $0 | $0 | $0 | $0 | $25,000 | **$25,000** | **$25,000** |
| **85** | Historic Records Artifact Conservation and Storage Assessment | | | | | | | | **$150,000** |
| **86** | Public Art Trust Fund | | | | | | | | **$25,000** |
| **87** | Sheltering and Public Health Resources | | | | | | | **$0** | **$250,000** |
| **89** | Historic District Guidelines Part 2 | | | | | | | **$0** | **$50,000** |
| **90** | Groundwater Study to Identify Impacts | | | | | | | **$0** | **$50,000** |
| **91** | City of Portsmouth Master Plan Update | | | | | | $150,000 | **$150,000** | **$150,000** |
| **92** | Indoor Pool Facility Needs | | | | | | | **$0** | **$32,500** |
| **94** | Existing Outdoor Recreation Field and Facility Improvements | $75,000 | $150,000 | $0 | $0 | $0 | $75,000 | **$300,000** | **$75,000** |
| **98** | Leary Field - Bleachers/Grandstands | | | | | | | **$0** | **$50,000** |
| **99** | Pierce Island Recreation Improvements | | | | | | | **$0** | **$150,000** |
| **101** | Community Campus Facility Needs | | | | | $100,000 | $200,000 | **$300,000** | **$50,000** |
| **102** | Citywide Park and Monument Improvements | | $100,000 | $0 | $0 | $200,000 | $50,000 | **$350,000** | **$50,000** |
| **103** | Citywide Trees and Public Greenery Program | $20,000 | $20,000 | $10,000 | $20,000 | $0 | $20,000 | **$90,000** | **$20,000** |

**General Fund - Capital Outlay**
**Six Year Funding History and Proposed FY2025 Funding**
**Capital Improvement Plan FY2025-FY2030**

| PAGE | | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 | Total FY19-FY24 | Proposed Department Request FY25 |
|---|---|---|---|---|---|---|---|---|---|
| 105 | Prescott Park Facilities Capital Improvements | $50,000 | $125,000 | $0 | $50,000 | $0 | $50,000 | **$275,000** | **$100,000** |
| 106 | City Hall HVAC Improvements | | | | | | | **$0** | **$200,000** |
| 108 | Historic Cemetery Improvements | | $25,000 | $0 | $0 | $40,000 | $40,000 | **$105,000** | **$40,000** |
| 111 | Sound Barriers in Residential Area Along I-95 | | $0 | $100,000 | $0 | $0 | | **$100,000** | **$50,000** |
| | Additional Outdoor Recreation Fields | | | | | | $100,000 | **$100,000** | |
| | Bow Street Overlook | | | | | $50,000 | | **$50,000** | |
| | City Hall Complex Electrical Upgrades | $50,000 | $0 | $0 | $0 | $0 | | **$50,000** | |
| | Citywide Playground Improvements | | $100,000 | $0 | $0 | $50,000 | $75,000 | **$225,000** | |
| | Climate Resilience Planning | $25,000 | $0 | $0 | $0 | $0 | | **$25,000** | |
| | Diversity, Equity, and Inclusion Strategic Plan | | | | $25,000 | $0 | | **$25,000** | |
| | Elementary Schools Upgrade | | | $200,000 | $0 | $0 | | **$200,000** | |
| | Emergency Response Shelter | $50,000 | $50,000 | $0 | $0 | $0 | | **$100,000** | |
| | Implementation of the Peirce Island Master Plan | | $25,000 | $0 | $0 | $0 | | **$25,000** | |
| | Land Acquisition | | $25,000 | $0 | $0 | $0 | | **$25,000** | |
| | Land Use Regulation Revisions | $25,000 | $0 | $0 | $0 | $0 | | **$25,000** | |
| | Library Furniture - Seating | | | $25,000 | $0 | $0 | | **$25,000** | |
| | McIntyre Federal Office Building Redevelopment | $50,000 | $25,000 | $25,000 | $25,000 | $0 | | **$125,000** | |
| | Pannaway Manor Gateway Park | $50,000 | $0 | $0 | $0 | $0 | | **$50,000** | |
| | PHA Court Street Project Driveway | | | | $82,000 | $0 | | **$82,000** | |
| | PHA Court Street Project Electrical Infrastructure | | | $120,000 | $0 | $0 | | **$120,000** | |
| | Prescott Park Master Plan Implementation | | | | $125,000 | $0 | | **$125,000** | |
| | Recycling and Solid Waste Totes | $50,000 | $0 | $0 | $0 | $0 | | **$50,000** | |
| | Recycling and Solid Waste Transfer Station | $100,000 | $250,000 | $0 | $0 | $0 | | **$350,000** | |
| | Station 1 Overhead Door | | | $0 | $100,000 | $0 | | **$100,000** | |
| | Trail Development Projects | | | | | $25,000 | $25,000 | **$50,000** | |
| | Vaughan-Worth Bridge Strategic Vision Development | $25,000 | $25,000 | $25,000 | $0 | $0 | | **$75,000** | |
| | **Total Buildings and Infrastructure** | **$708,000** | **$1,070,000** | **$505,000** | **$527,000** | **$565,000** | **$880,000** | **$4,085,000** | **$1,792,500** |

**General Fund - Capital Outlay**
**Six Year Funding History and Proposed FY2025 Funding**
**Capital Improvement Plan FY2025-FY2030**

| PAGE | | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 | Total FY19-FY24 | Proposed Department Request FY25 |
|---|---|---|---|---|---|---|---|---|---|
| **IV. TRANSPORTATION SYSTEM MANAGEMENT (TSM)** | | | | | | | | | |
| **139** | Citywide Traffic Signal Upgrade Program | $100,000 | $100,000 | $100,000 | | $160,000 | $100,000 | **$560,000** | **$100,000** |
| **140** | Citywide Intersection Improvements | | $100,000 | $0 | | $0 | $100,000 | **$200,000** | **$100,000** |
| **146** | Railroad Crossings | | | | | | | **$0** | **$172,500** |
| **147** | Citywide Bridge Improvements | | $150,000 | $0 | $50,000 | $0 | | **$200,000** | **$100,000** |
| | Bicycle/Pedestrian Plan Implementation | $30,000 | $0 | $0 | | $0 | | **$30,000** | |
| | Cate Street Connector | | | $366,000 | | $0 | | **$366,000** | |
| | Elwyn Road Sidepath | | $0 | $170,000 | | $0 | | **$170,000** | |
| | Elwyn Road Sidewalk Extension | | $30,000 | $0 | | $0 | | **$30,000** | |
| | Greenland Road/Middle Road Corridor Traffic Calming and Bike/Ped Improvements | | | | $50,000 | $0 | | **$50,000** | |
| | Market Square Upgrade | | | | | | $100,000 | **$100,000** | |
| | PHA Court St. Pedestrian and Park Improvements | | | | $173,000 | $0 | | **$173,000** | |
| | Russell-Market Intersection Upgrades | $200,000 | $0 | $0 | $0 | $0 | | **$200,000** | |
| | Spinney Road New Sidewalk Construction | $175,000 | $0 | $0 | $0 | $0 | | **$175,000** | |
| | Traffic Calming (formerly) South St. at Middle Rd. Pedestrian Accommodations & Traffic Calming | | | | $20,000 | $100,000 | $300,000 | **$420,000** | |
| | Trail Development Projects | | $0 | $5,000 | $0 | $0 | | **$5,000** | |
| | US Route 1 New Side Path Construction | | | | $130,000 | $0 | | **$130,000** | |
| | **Total Transportation Management** | **$505,000** | **$380,000** | **$641,000** | **$423,000** | **$260,000** | **$600,000** | $2,809,000 | **$472,500** |
| **VI. COMBINED FUNDING PROJECTS (General Fund, Water Fund, and Sewer Fund)** | | | | | | | | | |
| **180** | Citywide Storm Drainage Improvements | $200,000 | $100,000.00 | $100,000 | $100,000 | $0 | $0 | **$500,000** | |
| | Edmond Avenue | | | | | $60,000 | | **$60,000** | |
| | **Total Combined Fund Projects** | **$200,000** | **$100,000** | **$100,000** | **$100,000** | **$60,000** | **$0** | $560,000 | **$0** |

**General Fund - Capital Outlay**
**Six Year Funding History and Proposed FY2025 Funding**
**Capital Improvement Plan FY2025-FY2030**

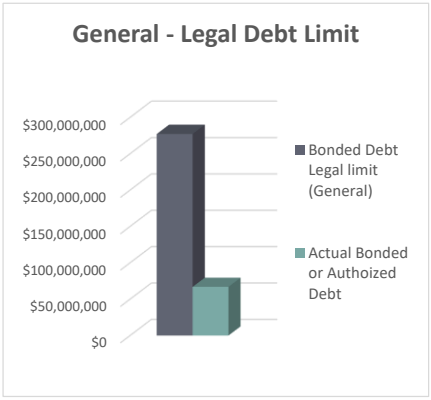
| PAGE | | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 | Total FY19-FY24 | Proposed Department Request FY25 |
|---|---|---|---|---|---|---|---|---|---|
| **SUMMARY** | | | | | | | | | |
| | **TOTALS BY SECTION** | | | | | | | | |
| **I.** | EQUIPMENT AND VEHICLE SCHEDULE | $164,000 | $160,000 | $30,000 | $30,000 | $0 | $240,000 | **$624,000** | **$123,000** |
| **II.** | BUILDING AND INFRASTRUCTURE | $708,000 | $1,070,000 | $505,000 | $527,000 | $565,000 | $880,000 | **$4,085,000** | **$1,792,500** |
| **IV.** | TRANSPORTATION SYSTEM MANAGEMENT | $505,000 | $380,000 | $641,000 | $423,000 | $260,000 | $600,000 | **$2,809,000** | **$472,500** |
| **VI.** | COMBINED FUNDING PROJECTS | $200,000 | $100,000 | $100,000 | $100,000 | $60,000 | $0 | **$560,000** | **$0** |
| **V.** | CAPITAL CONTINGENCY | $58,000 | $100,000 | $0 | $0 | $100,000 | $100,000 | **$358,000** | **$100,000** |
| | **TOTAL** | **$1,635,000** | **$1,810,000** | **$1,276,000** | **$1,080,000** | **$985,000** | **$1,820,000** | **$8,436,000** | **$2,488,000** |
| | | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Fiscal Year** | FY18 | FY19 | FY20 | FY21 | FY22 | FY23 | | FY24 |
| **Budget** | **$110,744,920** | **$114,295,207** | **$118,638,630** | **$119,115,338** | **$126,425,033** | **$132,424,911** | Average | $138,173,375 |
| **Percentage of previous FY Budget** | 1.48% | 1.58% | 1.08% | 0.91% | 0.78% | 1.37% | 1.20% | 1.80% |

CITY OF PORTSMOUTH, NEW HAMPSHIRE
Computation of Legal Debt Margin
As of June 30, 2023

| | | |
|---|---|---|
| Modified local assessed valuation | $ | 6,524,594,579 |
| Department of Revenue Administration inventory adjustment | $ | 2,717,032,514 |
| Equalized assessed valuation | $ | 9,241,627,093 |
| Adjustment: RSA 31-A | $ | - |
| **Base valuation for debt limit (1)** | **$** | **9,241,627,093** |

| | 3.0% of base (General Debt) | 7.0% of base (School Debt) (2) | 10% of base (Water Fund) (3) (4) |
|---|---|---|---|
| **Bonded debt limit -** | $277,248,813 | $646,913,897 | $924,162,709 |
| Gross bonded debt June 30 | $66,931,500 | $36,012,500 | $32,341,500 |
| Less: | | | |
| Landfill (5) | | | |
| Sub-total | $66,931,500 | $36,012,500 | $32,341,500 |
| Authorized but unissued | | | |
| 20-2017 2018 Streets and Sidewalks | 950,000 | | |
| 17-2018 2019 Streets & Sidewalks | 4,775,000 | | |
| 14-2019 FY20 Steet/sidewalks/facilites | 800,000 | | |
| 5-2020 FY20 Fire Apparatus | 58,635 | | |
| 18-2020 FY21 Outdoor Pool/Islington St | 2,000,000 | | |
| 17-2021 Prescott park and Streets/sidewalks | 2,750,000 | | |
| 6-2022 Police Facility | 1,200,000 | | |
| 7-2022 Community Campus | 8,283,833 | | |
| 19-2022 Skatepark, Citywide facilities | 5,300,000 | | |
| 23-2022 Fire Apparatus | 800,000 | | |
| 7-2023 Skateboard Park | 1,083,500 | | |
| 19-2020 Water Infrastructure original 3.6M | | | 850,000 |
| 20-2021 original 13.9M | | | 7,300,000 |
| 16-2022 Various Water Projects | | | 2,150,000 |
| Total Authorized unissued | $28,000,968 | $0 | $10,300,000 |
| **Total debt applicable to limitation** | **$94,932,468** | **$36,012,500** | **$42,641,500** |
| **% Debt used of limitation** | **34%** | **6%** | **5%** |
| Legal Debt Margin | **$182,316,345** | **$610,901,397** | **$881,521,209** |
| Legal Debt Margin % | 66% | 94% | 95% |



(1) The equalization of all taxable property in the State of New Hampshire is conducted annually by the New Hampshire Department of Revenue Administration under the provisions of RSA 21-J: 3(XIII).
(2) Subject to a separate debt limit of 7% of the City's base valuation per RSA 33:4-a
(3) Enterprise funds.
(4) Subject to a separate debt limit of 10% of the City's base valuation per RSA 33:5-a.
(5) Exempt per RSA 33:5-b.

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| | **ISSUED DEBT** | | | | | | | | | |
| | **GENERAL FUND-Issued Debt** | | | | | | | | | |
| | **General Government** | | | | | | | | | |
| AAA | **06/25/14** | **FY14 Improvements** | **5,750,000** | | | | | | | |
| | | **Principal-Last Pmt FY24** | 10 YR | 575,000 | | | | | | |
| | | **Interest** | | 28,750 | | | | | | |
| AAA | **06/20/19** | **FY18 Fire Boat** | **$180,000($164,000)** | | | | | | | |
| | | **Principal-Last Pmt FY24** | 5 YR | 25,000 | | | | | | |
| | | **Interest** | | 1,250 | | | | | | |
| AAA | **06/20/19** | **FY19 Fire Apparatus** | **$600,000($544,000)** | | | | | | | |
| | | **Principal-Last Pmt FY24** | 5 YR | 105,000 | | | | | | |
| | | **Interest** | | 5,250 | | | | | | |
| AAA | **06/23/15** | **FY15 Improvements** | **3,475,000** | | | | | | | |
| | | **Principal-Last Pmt FY25** | 10 YR | 345,000 | 345,000 | | | | | |
| | | **Interest** | | 27,600 | 13,800 | | | | | |
| AAA | **06/23/15** | **Library-Refunded** | **3,685,000** | | | | | | | |
| | | **Principal-Last Pmt FY26** | 10 YR | 320,000 | 320,000 | 315,000 | | | | |
| | | **Interest** | | 30,200 | 19,000 | 6,300 | | | | |
| AAA | **06/15/16** | **FY16 Improvements** | **6,100,000** | | | | | | | |
| | | **Principal-Last Pmt FY26** | 10 YR | 610,000 | 610,000 | 610,000 | | | | |
| | | **Interest** | | 73,200 | 48,800 | 24,400 | | | | |
| AAA | **06/23/17** | **FY17 Fire Station 3 Improvements** | **610,000** | | | | | | | |
| | | **Principal-Last Pmt FY27** | 10 YR | 60,000 | 60,000 | 60,000 | 60,000 | | | |
| | | **Interest** | | 9,600 | 7,200 | 4,800 | 2,400 | | | |
| AAA | **06/23/17** | **FY17 Improvements** | **6,850,000** | | | | | | | |
| | | **Principal-Last Pmt FY27** | 10 YR | 685,000 | 685,000 | 685,000 | 685,000 | | | |
| | | **Interest** | | 109,600 | 82,200 | 54,800 | 27,400 | | | |
| AAA | **06/20/18** | **FY18 Improvements (Part I)** | **6,200,000** | | | | | | | |
| | | **Principal-Last Pmt FY28** | 10 YR | 620,000 | 620,000 | 620,000 | 620,000 | 620,000 | | |
| | | **Interest** | | 155,000 | 124,000 | 93,000 | 62,000 | 31,000 | | |
| | | **City Field Lighting** | **600,000** | | | | | | | |
| | | **Bi-Annual Sidewalk Improvements** | **800,000** | | | | | | | |
| | | **Lafayette/Andrew Jarvis Intersection** | **800,000** | | | | | | | |
| | | **Hoover/Taft Drainage** | **250,000** | | | | | | | |
| | | **Pleasant Street** | **750,000** | | | | | | | |
| | | **Bi-Annual Citywide Street Paving** | **3,000,000** | | | | | | | |
| AAA | **06/15/16** | **Fire Station 2 Replacement-Refunded** | **1,713,000** | | | | | | | |
| | | **Principal-Last Pmt FY28** | 10 YR | 170,000 | 170,000 | 170,000 | 165,000 | 165,000 | | |
| | | **Interest** | | 27,000 | 20,200 | 13,400 | 6,600 | 3,300 | | |
| AAA | **06/15/16** | **Fire Station 2 Land-Refunded** | **619,000** | | | | | | | |
| | | **Principal-Last Pmt FY28** | 10 YR | 60,000 | 60,000 | 60,000 | 60,000 | 55,000 | | |
| | | **Interest** | | 9,500 | 7,100 | 4,700 | 2,300 | 1,100 | | |
| AAA | **06/15/16** | **Fire Station 2 Replacement-Refunded** | **708,500** | | | | | | | |
| | | **Principal-Last Pmt FY29** | 10 YR | 70,000 | 70,000 | 70,000 | 70,000 | 70,000 | 68,500 | |
| | | **Interest** | | 16,740 | 13,940 | 11,140 | 8,340 | 5,540 | 2,740 | |
| AAA | **06/20/19** | **FY18 Improvements (Part II)** | **$3,300,000($2,802,000)** | | | | | | | |
| | | **Principal-Last Pmt FY29** | 10 YR | 285,000 | 280,000 | 275,000 | 275,000 | 275,000 | 270,000 | |
| | | **Interest** | | 83,000 | 68,750 | 54,750 | 41,000 | 27,250 | 13,500 | |
| | | **McDonough Street** | **800,000** | | | | | | | |
| | | **Islington Street** | **2,500,000** | | | | | | | |
| AAA | **06/20/19** | **FY19 Improvements (Part I)** | **$2,375,000($2,018,000)** | | | | | | | |
| | | **Principal-Last Pmt FY29** | 10 YR | 205,000 | 205,000 | 200,000 | 200,000 | 195,000 | 185,000 | |
| | | **Interest** | | 59,500 | 49,250 | 39,000 | 29,000 | 19,000 | 9,250 | |
| | | **Fire Station 1 Renovation** | **325,000** | | | | | | | |
| | | **Citywide Bridge Upgrades** | **350,000** | | | | | | | |
| | | **Market St Gateway** | **1,700,000** | | | | | | | |
| AAA | **04/06/21** | **FY18 Improvements (Part III)** | **$500,000($425,600)** | | | | | | | |
| | | **Principal-Last Pmt FY31** | 10 YR | 45,000 | 45,000 | 45,000 | 40,000 | 40,000 | 40,000 | 40,000 |
| | | **Interest** | | 14,200 | 12,400 | 10,600 | 8,800 | 7,000 | 5,200 | 3,400 |
| | | **North Mill Pond Multi Use Path** | **500,000** | | | | | | | |
| AAA | **06/23/22** | **FY21 Fire Apparatus** | **$1,342,080.36($1,188,500)** | | | | | | | |
| | | **Principal-Last Pmt FY32** | 10 YR | 120,000 | 120,000 | 120,000 | 120,000 | 120,000 | 120,000 | 120,000 |
| | | **Interest** | | 52,350 | 46,350 | 40,350 | 34,350 | 28,350 | 22,350 | 16,350 |
| | | **Ladder #2** | **1,342,080** | | | | | | | |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| AAA | 04/06/21 | FY19 Improvements (Part II) | $5,900,814($5,406,700) | | | | | | | |
| | | Principal-Last Pmt FY41 | 20 YR | 275,000 | 275,000 | 275,000 | 275,000 | 275,000 | 275,000 | 275,000 |
| | | Interest | | 142,488 | 131,487 | 120,488 | 109,488 | 97,113 | 84,738 | 72,363 |
| | | Multi-Purpose Fields | 2,840,000 | | | | | | | |
| | | City Hall Electrical Upgrades | 600,000 | | | | | | | |
| | | Longmeadow Road Extension | 400,000 | | | | | | | |
| | | Senior Center | 2,060,815 | | | | | | | |
| AAA | 04/06/21 | FY20 Improvements (Part I) | $6,600,000($6,044,400) | | | | | | | |
| | | Principal-Last Pmt FY41 | 20 YR | 315,000 | 315,000 | 310,000 | 310,000 | 310,000 | 305,000 | 305,000 |
| | | Interest | | 159,688 | 147,088 | 134,488 | 122,088 | 108,138 | 94,188 | 80,463 |
| | | Citywide Facility Improvements | 1,000,000 | | | | | | | |
| | | Bi-Annual Sidewalk Improvements | 400,000 | | | | | | | |
| | | Citywide Bridge Improvements | 1,200,000 | | | | | | | |
| | | Maplewood Ave Bridge Improvements | 500,000 | | | | | | | |
| | | Cate Street Connector | 1,500,000 | | | | | | | |
| | | Bi-Annual Citywide Street Paving | 2,000,000 | | | | | | | |
| AAA | 04/06/21 | FY 21 Improvements (Part I) | $400,000($364,000) | | | | | | | |
| | | Principal-Last Pmt FY41 | 20 YR | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 |
| | | Interest | | 9,838 | 9,038 | 8,238 | 7,438 | 6,538 | 5,638 | 4,738 |
| | | Police Deficiencies and Repair Project | 400,000 | | | | | | | |
| AAA | 06/23/22 | FY19 Improvements (Part III) | $750,000($694,000) | | | | | | | |
| | | Principal-Last Pmt FY42 | 20 YR | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 |
| | | Interest | | 28,563 | 26,813 | 25,063 | 23,313 | 21,563 | 19,813 | 18,063 |
| | | Prescott Park Master Plan Implementation | 750,000 | | | | | | | |
| AAA | 06/23/22 | FY20 Improvements (Part II) | $750,000($694,000) | | | | | | | |
| | | Principal-Last Pmt FY42 | 20 YR | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 |
| | | Interest | | 28,563 | 26,813 | 25,063 | 23,313 | 21,563 | 19,813 | 18,063 |
| | | Pease Tradeport Street Rehab | 750,000 | | | | | | | |
| AAA | 06/23/22 | FY21 Improvements (Part II) | $1,640,000($1,518,500) | | | | | | | |
| | | Principal-Last Pmt FY42 | 20 YR | 80,000 | 80,000 | 80,000 | 75,000 | 75,000 | 75,000 | 75,000 |
| | | Interest | | 62,343.76 | 58,343.76 | 54,343.76 | 50,343.76 | 46,593.76 | 42,843.76 | 39,093.76 |
| | | Islington Street Phase 1B | 1,640,000 | | | | | | | |
| AAA | 06/23/22 | FY22 Improvements (Part I) | $3,100,000($2,865,100) | | | | | | | |
| | | Principal-Last Pmt FY42 | 20 YR | 155,000 | 155,000 | 150,000 | 150,000 | 145,000 | 145,000 | 145,000 |
| | | Interest | | 118,106 | 110,356 | 102,606 | 95,106 | 87,606 | 80,356 | 73,106 |
| | | Police Deficiencies and Repair Project | 400,000 | | | | | | | |
| | | Banfield Road Pedestrian Accommodations | 500,000 | | | | | | | |
| | | Willard Avenue Reconstruction | 1,200,000 | | | | | | | |
| | | Union Street Reconstruction | 1,000,000 | | | | | | | |
| AAA | 06/22/23 | FY22 Improvements (Part II) | $5,550,000($5,048,250) | | | | | | | |
| | | Principal-Last Pmt FY43 | 20 YR | 258,250 | 260,000 | 260,000 | 260,000 | 260,000 | 260,000 | 255,000 |
| | | Interest | | 235,444 | 227,200 | 214,200 | 201,200 | 188,200 | 175,200 | 162,200 |
| | | Citywide Sidewalks | 800,000 | | | | | | | |
| | | Citywide Streets | 4,000,000 | | | | | | | |
| | | Pease Tradeport Street Rehab | 750,000 | | | | | | | |
| AAA | 06/22/23 | FY23 New Police Station Feasibility (Part I) | $200,000($180,250) | | | | | | | |
| | | Principal-Last Pmt FY43 | 20 YR | 10,250 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| | | Interest | | 8,543 | 8,200 | 7,700 | 7,200 | 6,700 | 6,200 | 5,700 |
| AAA | 06/22/23 | FY23 Improvements (Part I) | $4,205,000($3,826,000) | | | | | | | |
| | | Principal-Last Pmt FY43 | 20 YR | 211,000 | 205,000 | 195,000 | 195,000 | 195,000 | 195,000 | 195,000 |
| | | Interest | | 178,510 | 171,500 | 161,250 | 151,500 | 141,750 | 132,000 | 122,250 |
| | | Police Deficiencies and Repair Project | 400,000 | | | | | | | |
| | | Skateboard Park | 1,805,000 | | | | | | | |
| | | City Fuel Station | 1,000,000 | | | | | | | |
| | | Citywide Facility Improvements | 1,000,000 | | | | | | | |
| | | Total General Fund-Gen Gov Issued Debt Principal Due | | 5,694,500 | 4,980,000 | 4,600,000 | 3,660,000 | 2,900,000 | 2,038,500 | 1,510,000 |
| | | Total General Fund-Gen Gov Issued Debt Interest Due | | 1,674,824 | 1,429,827 | 1,210,678 | 1,013,178 | 848,303 | 713,828 | 615,788 |
| | | Total General Fund-Gen Gov Issued Debt | | 7,369,324 | 6,409,827 | 5,810,678 | 4,673,178 | 3,748,303 | 2,752,328 | 2,125,788 |
| | | Schools | | | | | | | | |
| AAA | 06/23/15 | FY15 School Field Lighting | 750,000 | | | | | | | |
| | | Principal-Last Pmt FY25 | 10 Yr | 75,000 | 75,000 | | | | | |
| | | Interest | | 6,000 | 3,000 | | | | | |
| AAA | 06/15/16 | FY16 School Building Improvements | 500,000 | | | | | | | |
| | | Principal-Last Pmt FY26 | 10 Yr | 50,000 | 50,000 | 50,000 | | | | |
| | | Interest | | 6,000 | 4,000 | 2,000 | | | | |
| AAA | 06/20/18 | FY18 Athletic Field Lighting | 550,000 | | | | | | | |
| | | Principal-Last Pmt FY28 | 10 Yr | 55,000 | 55,000 | 55,000 | 55,000 | 55,000 | | |
| | | Interest | | 13,750 | 11,000 | 8,250 | 5,500 | 2,750 | | |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| AAA | 06/20/19 | FY19 School Building Improvements | $500,000($426,000) | | | | | | | |
| | | Principal-Last Pmt FY29 | 10 Yr | 45,000 | 45,000 | 40,000 | 40,000 | 40,000 | 35,000 | |
| | | Interest | | 12,250 | 10,000 | 7,750 | 5,750 | 3,750 | 1,750 | |
| AAA | 04/06/21 | FY10 Middle School Renovation-Refunding | 5,773,500 | | | | | | | |
| | | Principal-Last Pmt FY 30 | 10 YR | 645,000 | 640,000 | 640,000 | 640,000 | 640,000 | 640,000 | 640,000 |
| | | Interest | | 192,200 | 166,400 | 140,800 | 115,200 | 86,400 | 57,600 | 28,800.00 |
| AAA | 12/14/21 | FY11 Middle School Renovation-Refunding | 9,430,000 | | | | | | | |
| | | Principal-Last Pmt FY32 | 10 YR | 915,000 | 925,000 | 935,000 | 940,000 | 950,000 | 955,000 | 965,000 |
| | | Interest | | 403,625 | 357,625 | 311,125 | 264,250 | 217,000 | 169,375 | 121,375 |
| AAA | 06/25/14 | FY14 Middle School Renovation | 3,300,000 | | | | | | | |
| | | Principal-Last Pmt FY34 | 20 YR | 165,000 | 165,000 | 165,000 | 165,000 | 165,000 | 165,000 | 165,000.00 |
| | | Interest | | 75,900 | 67,650 | 59,400 | 51,150 | 46,200 | 39,600 | 33,000 |
| AAA | 06/15/16 | FY16 Elementary Schools Renovations | 5,000,000 | | | | | | | |
| | | Principal-Last Pmt FY36 | 20 YR | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 |
| | | Interest | | 95,000 | 85,000 | 75,000 | 65,000 | 60,000 | 55,000 | 50,000 |
| AAA | 06/23/17 | FY17 Elementary Schools Renovations | 5,000,000 | | | | | | | |
| | | Principal-Last Pmt FY37 | 20 YR | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 |
| | | Interest | | 110,313 | 100,313 | 90,313 | 80,313 | 70,313 | 65,313 | 60,000 |
| AAA | 06/20/18 | FY18 Elementary Schools Renovations | 5,000,000 | | | | | | | |
| | | Principal-Last Pmt FY38 | 20 YR | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 |
| | | Interest | | 142,188 | 129,688 | 117,188 | 104,688 | 92,188 | 79,688 | 72,188 |
| AAA | 06/20/19 | FY19 Elementary Schools Renovations | $5,000,000($4,508,500) | | | | | | | |
| | | Principal-Last Pmt FY39 | 20 YR | 225,000 | 225,000 | 225,000 | 225,000 | 225,000 | 225,000 | 225,000 |
| | | Interest | | 139,344 | 128,094 | 116,844 | 105,594 | 94,344 | 83,094 | 71,844 |
| AAA | 04/06/21 | FY20 Elementary Schools Renovations | $2,000,000($1,833,000) | | | | | | | |
| | | Principal-Last Pmt FY41 | 20 YR | 95,000 | 95,000 | 95,000 | 95,000 | 95,000 | 90,000 | 90,000 |
| | | Interest | | 48,300 | 44,500 | 40,700 | 36,900 | 32,625 | 28,350 | 24,300 |
| AAA | 04/06/21 | FY21 School Facilities Improvements (Part I) | $500,000($454,800) | | | | | | | |
| | | Principal-Last Pmt FY41 | 20 YR | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| | | Interest | | 12,300 | 11,300 | 10,300 | 9,300 | 8,175 | 7,050 | 5,925 |
| AAA | 06/23/22 | FY21 School Facilities Improvements (Part II) | $500,000($459,800) | | | | | | | |
| | | Principal-Last Pmt FY42 | 20 YR | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 |
| | | Interest | | 19,125 | 17,875 | 16,625 | 15,375 | 14,125 | 12,875 | 11,625 |
| AAA | 06/23/22 | FY22 Elementary Schools Renovations | $1,100,000($1,018,500) | | | | | | | |
| | | Principal-Last Pmt FY42 | 20 YR | 55,000 | 55,000 | 55,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| | | Interest | | 41,813 | 39,063 | 36,313 | 33,563 | 31,063 | 28,563 | 26,063 |
| AAA | 06/22/23 | FY23 School Improvements | $3,100,000($2,817,500) | | | | | | | |
| | | Principal-Last Pmt FY43 | 20 YR | 142,500 | 145,000 | 145,000 | 145,000 | 145,000 | 145,000 | 145,000 |
| | | Interest | | 131,517 | 127,000 | 119,750 | 112,500 | 105,250 | 98,000 | 90,750 |
| | | FY23 School Facility Improvements | 1,600,000 | | | | | | | |
| | | FY23 Elementary School Improvements | 1,500,000 | | | | | | | |
| | | **Total General Fund-School Issued Debt Principal Due** | | 3,267,500 | 3,275,000 | 3,205,000 | 3,155,000 | 3,165,000 | 3,105,000 | 3,080,000 |
| | | **Total General Fund-School Issued Debt Interest Due** | | 1,449,623 | 1,302,506 | 1,152,356 | 1,005,081 | 864,181 | 726,256 | 595,869 |
| | | **Total General Fund-School Issued Debt** | | 4,717,123 | 4,577,506 | 4,357,356 | 4,160,081 | 4,029,181 | 3,831,256 | 3,675,869 |
| | | **Total General Fund- Issued Debt Principal Due** | | 8,962,000 | 8,255,000 | 7,805,000 | 6,815,000 | 6,065,000 | 5,143,500 | 4,590,000 |
| | | **Total General Fund-Issued Debt Interest Due** | | 3,124,448 | 2,732,334 | 2,363,034 | 2,018,259 | 1,712,484 | 1,440,084 | 1,211,656 |
| | | **Total General Fund-Issued Debt** | | 12,086,448 | 10,987,334 | 10,168,034 | 8,833,259 | 7,777,484 | 6,583,584 | 5,801,656 |
| | **Issued Debt Related Revenues** | | | | | | | | | |
| | GF | Use of Unused Bond Proceeds | | | | | | | | |
| | GF | Use of Debt Reserve | | (1,700,000) | (1,500,000) | (1,500,000) | (1,500,000) | (1,500,000) | (1,232,387) | (1,000,000) |
| | GF | School Building Aid (High School 55%) | | | | | | | | |
| | GF | School Building Aid on $40.8m (Middle School 40%) | | (740,974) | (740,974) | (740,974) | (740,974) | (740,974) | (740,974) | (740,974) |
| | | **Total Issued Debt Related Revenues-General Fund** | | **(2,440,974)** | **(2,240,974)** | **(2,240,974)** | **(2,240,974)** | **(2,240,974)** | **(1,973,361)** | **(1,740,974)** |
| | | **Total Net Issued Debt-General Fund** | | **9,645,474** | **8,746,360** | **7,927,060** | **6,592,285** | **5,536,510** | **4,610,223** | **4,060,682** |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **GENERAL FUND-Projected Future Debt** | | | | | | | | | | |
| | Issued Difference Budgeted vs actual | | | | | | | | | |
| 10 yr 4.25% | FY18-Maplewood Avenue Complete Street | 450,000 | | | 64,125 | 62,213 | 60,300 | 58,388 | 56,475 | 54,563 |
| 10 yr 4.25% | FY18-New Franklin/Woodbury Corridor Improvement | 500,000 | | | 71,250 | 69,125 | 67,000 | 64,875 | 62,750 | 60,625 |
| **FY18** | **Authorized 07/10/17** | | | | | | | | | |
| | | **950,000** | | | | | | | | |
| 20 yr 4.50% | FY19-Outdoor Pool | 1,000,000 | | | 95,000 | 92,750 | 90,500 | 88,250 | 86,000 | 83,750 |
| 20 yr 4.50% | FY19-Prescott Park Master Plan Implementation | 1,575,000 | | | 149,625 | 146,081 | 142,538 | 138,994 | 135,450 | 131,906 |
| | issue $750,000 FY 22, $1,575,000 FY 22 | | | | | | | | | |
| 20 yr 4.50% | FY19-Peverly Hill Road Improvements | 2,200,000 | | | 209,000 | 204,050 | 199,100 | 194,150 | 189,200 | 184,250 |
| **FY19** | **Authorized 08/06/18** | | | | | | | | | |
| | | **4,775,000** | | | | | | | | |
| 20 yr 4.50% | FY20-Citywide Bridge Improvements | 800,000 | | | 76,000 | 74,200 | 72,400 | 70,600 | 68,800 | 67,000 |
| | issue $1,200,000 FY 21, $800,000 FY 23 | | | | | | | | | |
| **FY20** | **Authorized 07/15/19** | | | | | | | | | |
| | | **800,000** | | | | | | | | |
| 20 yr 4.50% | FY21-Outdoor Pool Upgrades | 2,000,000 | | | 190,000 | 185,500 | 181,000 | 176,500 | 172,000 | 167,500 |
| | **Authorized 12/07/20** | | | | | | | | | |
| | **Total FY 21 New Bonding** | **2,000,000** | | | | | | | | |
| 20 yr 4.50% | FY22-Prescott Park Master Plan Implementation | 1,750,000 | | | 166,250 | 162,313 | 158,375 | 154,438 | 150,500 | 146,563 |
| 20 yr 4.50% | FY22-Maplewood Avenue Bridge Replacement | 1,000,000 | | | 95,000 | 92,750 | 90,500 | 88,250 | 86,000 | 83,750 |
| | **Authorized 08/02/21** | | | | | | | | | |
| | **Total FY22 New Bonding** | **2,750,000** | | | | | | | | |
| | FY22 Community Campus | | | | | | | | | |
| | BAN Interest | | BAN Interest | | | | | | | |
| | | | 370,702 | | | | | | | |
| | Bond | 8,423,821 | BAN Principal | | | | | | | |
| | BAN Principal Paid FY23 | (139,988) | | | | | | | | |
| | BAN Principal Paid FY24 | (603,056) | 603,056 | | | | | | | |
| | Balance | 7,680,777 | | | 729,674 | 712,392 | 695,110 | 677,829 | 660,547 | 643,265 |
| | **Authorized 04/18/22** | | | | | | | | | |
| 20 yr 4.50% | FY22-New Police Department Facility | 1,400,000 | | | | | | | | |
| | Issued $200,000 FY23 | (200,000) | | | | | | | | |
| | Balance to Issue | 1,200,000 | | | 114,000 | 111,300 | 108,600 | 105,900 | 103,200 | 100,500 |
| | **Authorized 04/04/22** | | | | | | | | | |
| | **Total FY22 New Bonding** | **1,400,000** | | | | | | | | |
| 20 yr 4.50% | FY23-Outdoor Pool | 2,000,000 | | | 190,000 | 185,500 | 181,000 | 176,500 | 172,000 | 167,500 |
| 20 yr 4.50% | FY23-Downtown Aerial Utilities Undergrounding | 2,500,000 | | | 237,500 | 231,875 | 226,250 | 220,625 | 215,000 | 209,375 |
| 20 yr 4.50% | FY23-Bartlett Street Utilities Upgrades and Streetsca | 800,000 | | | 76,000 | 74,200 | 72,400 | 70,600 | 68,800 | 67,000 |
| | **Authorized 07/11/22** | **5,300,000** | | | | | | | | |
| 20 yr 4.50% | FY23-Greenland Road Recreation Facility | 1,083,500 | | | 102,933 | 100,495 | 98,057 | 95,619 | 93,181 | 90,743 |
| | (Additional Funding) | | | | | | | | | |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|
| | **Authorized 04/17/23** | | | | | | | | |
| 20 yr 4.50% | FY23-New Police Department Facility | 2,800,000 | | 266,000 | 259,700 | 253,400 | 247,100 | 240,800 | 234,500 |
| | **as of 10/16/23 not authorized** | | | | | | | | |
| | **Total FY23 New Bonding** | **9,183,500** | | | | | | | |
| 20 yr 4.50% | FY24-Police Deficiencies and Repair Project | 400,000 | | 38,000 | 37,100 | 36,200 | 35,300 | 34,400 | 33,500 |
| 20 yr 4.50% | FY24-School Facilities Capital Improvements | 550,000 | | 52,250 | 51,013 | 49,775 | 48,538 | 47,300 | 46,063 |
| 20 yr 4.50% | FY24-Fit-Up of Community Campus Space for RJLA | 1,800,000 | | 171,000 | 166,950 | 162,900 | 158,850 | 154,800 | 150,750 |
| 20 yr 4.50% | FY24-Land Acquisition | 500,000 | | 47,500 | 46,375 | 45,250 | 44,125 | 43,000 | 41,875 |
| 20 yr 4.50% | FY24-Outdoor Pool | 1,500,000 | | 142,500 | 139,125 | 135,750 | 132,375 | 129,000 | 125,625 |
| 20 yr 4.50% | FY24-Citywide Facilities Capital Improvements | 500,000 | | 47,500 | 46,375 | 45,250 | 44,125 | 43,000 | 41,875 |
| 20 yr 4.50% | FY24-Elwyn Park Sidewalks Traffic Calming | 1,500,000 | | 142,500 | 139,125 | 135,750 | 132,375 | 129,000 | 125,625 |
| 20 yr 4.50% | FY24-Borthwick Avenue Bike Path | 400,000 | | 38,000 | 37,100 | 36,200 | 35,300 | 34,400 | 33,500 |
| 20 yr 4.50% | FY24-Sagamore Avenue Sidewalk | 300,000 | | 28,500 | 27,825 | 27,150 | 26,475 | 25,800 | 25,125 |
| 20 yr 4.50% | FY24-Citywide Sidewalk Reconstruction Program | 800,000 | | 76,000 | 74,200 | 72,400 | 70,600 | 68,800 | 67,000 |
| 20 yr 4.50% | FY24-Street Paving, Management and Rehabilitation | 4,000,000 | | 380,000 | 371,000 | 362,000 | 353,000 | 344,000 | 335,000 |
| 20 yr 4.50% | FY24-Pease International Tradeport Roadway Rehab | 3,200,000 | | 304,000 | 296,800 | 289,600 | 282,400 | 275,200 | 268,000 |
| 20 yr 4.50% | FY24-Edmond Avenue | 1,050,000 | | 99,750 | 97,388 | 95,025 | 92,663 | 90,300 | 87,938 |
| 20 yr 4.50% | FY24-Islington Street | 2,500,000 | | 237,500 | 231,875 | 226,250 | 220,625 | 215,000 | 209,375 |
| 20 yr 4.50% | FY24-Union Street | 700,000 | | 66,500 | 64,925 | 63,350 | 61,775 | 60,200 | 58,625 |
| | **Authorized 07/10/23** | | | | | | | | |
| | | **19,700,000** | | | | | | | |
| 5 yr 4.0% | FY25-Vehicle Replacement - Fire Engine #4 | 800,000 | | | 192,000 | 185,600 | 179,200 | 172,800 | 166,400 |
| | **Authorized 11/14/22** | | | | | | | | |
| 5 yr 4.00% | FY25 Police Body Cameras | 1,237,000 | | | 296,880 | 286,984 | 277,088 | 267,192 | 257,296 |
| 5 yr 4.00% | FY25 Police Taser Replacement Cycle | 533,500 | | | 128,040 | 123,772 | 119,504 | 115,236 | 110,968 |
| | | | | | Ban Interest | Ban Interest | | | |
| 20 yr 4.50% | FY25-New Police Department Facility | 38,000,000 | | | 800,000 | 1,200,000 | 3,610,000 | 3,524,500 | 3,439,000 |
| 20 yr 4.50% | FY25-Police Deficiencies and Repair Project | 400,000 | | | 38,000 | 37,100 | 36,200 | 35,300 | 34,400 |
| 20 yr 4.50% | FY25-School Facilities Capital Improvements | 650,000 | | | 61,750 | 60,288 | 58,825 | 57,363 | 55,900 |
| 20 yr 4.50% | FY25-Land Acquisition | 500,000 | | | 47,500 | 46,375 | 45,250 | 44,125 | 43,000 |
| 20 yr 4.50% | FY25-South Mill Pond Playground | 600,000 | | | 57,000 | 55,650 | 54,300 | 52,950 | 51,600 |
| 20 yr 4.50% | FY25-Additional Outdoor Recreation Fields | 3,000,000 | | | 285,000 | 278,250 | 271,500 | 264,750 | 258,000 |
| 20 yr 4.50% | FY25-Prescott Park Master Plan Implementation | 4,500,000 | | | 427,500 | 417,375 | 407,250 | 397,125 | 387,000 |
| 20 yr 4.50% | FY25-Citywide Facilities Capital Improvements | 850,000 | | | 80,750 | 78,838 | 76,925 | 75,013 | 73,100 |
| 20 yr 4.50% | FY25-Mechanic Street Wharf/Pier | 1,300,000 | | | 123,500 | 120,575 | 117,650 | 114,725 | 111,800 |
| 20 yr 4.50% | FY25-Russell/Market Intersection Upgrade | 365,000 | | | 34,675 | 33,854 | 33,033 | 32,211 | 31,390 |
| 20 yr 4.50% | FY25-Fleet Street Utilities Upgrade and Streetscape | 1,000,000 | | | 95,000 | 92,750 | 90,500 | 88,250 | 86,000 |
| 20 yr 4.50% | FY25-Citywide Storm Drainage Improvements | 500,000 | | | 47,500 | 46,375 | 45,250 | 44,125 | 43,000 |
| 20 yr 4.50% | FY25-The Creek Neighborhood Reconstruction | 500,000 | | | 47,500 | 46,375 | 45,250 | 44,125 | 43,000 |
| | **Total FY25 New Bonding** | **54,735,500** | | | | | | | |
| 20 yr 4.50% | FY26-School Facilities Capital Improvements | 650,000 | | | | 61,750 | 60,288 | 58,825 | 57,363 |
| 20 yr 4.50% | FY26-Elementary Schools Upgrade | 3,000,000 | | | | 285,000 | 278,250 | 271,500 | 264,750 |
| 20 yr 4.50% | FY26-Sheltering and Public Health Resources | 750,000 | | | | 71,250 | 69,563 | 67,875 | 66,188 |
| 20 yr 4.50% | FY26-Leary Field - Bleachers/Grandstands | 1,000,000 | | | | 95,000 | 92,750 | 90,500 | 88,250 |
| 20 yr 4.50% | FY26-City Hall HVAC Improvements | 500,000 | | | | 47,500 | 46,375 | 45,250 | 44,125 |
| 20 yr 4.50% | FY26-Citywide Facilities Capital Improvements | 1,100,000 | | | | 104,500 | 102,025 | 99,550 | 97,075 |
| 20 yr 4.50% | FY26-Citywide Sidewalk Reconstruction Program | 400,000 | | | | 38,000 | 37,100 | 36,200 | 35,300 |
| 20 yr 4.50% | FY26-Coakley-Borthwick Connector Roadway | 1,000,000 | | | | 95,000 | 92,750 | 90,500 | 88,250 |
| 20 yr 4.50% | FY26-Street Paving, Management, and Rehabilitatior | 4,000,000 | | | | 380,000 | 371,000 | 362,000 | 353,000 |
| 20 yr 4.50% | FY26-Fleet Street Utilities Upgrade and Streetscape | 2,000,000 | | | | 190,000 | 185,500 | 181,000 | 176,500 |
| 20 yr 4.50% | FY26-Citywide Storm Drainage Improvements | 500,000 | | | | 47,500 | 46,375 | 45,250 | 44,125 |
| | **Total FY26 New Bonding** | **14,900,000** | | | | | | | |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|
| 5 yr 4.00% | FY27-Fire Vehicle Replacement - Marine Boat #1 | 250,000 | | | | | 60,000 | 58,000 | 56,000 |
| 20 yr 4.50% | FY27-School Facilities Capital Improvements | 1,000,000 | | | | | 95,000 | 92,750 | 90,500 |
| 20 yr 4.50% | FY27-Citywide Facilities Capital Improvements | 550,000 | | | | | 52,250 | 51,013 | 49,775 |
| 20 yr 4.50% | FY27-Market Street Sidepath | 400,000 | | | | | 38,000 | 37,100 | 36,200 |
| 20 yr 4.50% | FY27-US Route 1 New Sidepath Construction | 1,000,000 | | | | | 95,000 | 92,750 | 90,500 |
| 20 yr 4.50% | FY27-Citywide Storm Drainage Improvements | 500,000 | | | | | 47,500 | 46,375 | 45,250 |
| 20 yr 4.50% | FY27-The Creek Neighborhood Reconstruction | 800,000 | | | | | 76,000 | 74,200 | 72,400 |
| | **Total FY27 New Bonding** | **4,500,000** | | | | | | | |
| 10 yr 4.25% | FY28- Fire Vehicle Replacement - Tower #5 | 1,500,000 | | | | | | 213,750 | 207,375 |
| 20 yr 4.50% | FY28-Prescott Park Master Plan Implementation | 1,750,000 | | | | | | 166,250 | 162,313 |
| 20 yr 4.50% | FY28-Citywide Facilities Capital Improvements | 550,000 | | | | | | 52,250 | 51,013 |
| 20 yr 4.50% | FY28-Constitution Avenue Multi-Use Path | 1,200,000 | | | | | | 114,000 | 111,300 |
| 10 yr 4.25% | FY28-Citywide Sidewalk Reconstruction Program | 400,000 | | | | | | 57,000 | 55,300 |
| 20 yr 4.50% | FY28-Cate Street Bridge Replacement | 415,000 | | | | | | 39,425 | 38,491 |
| 10 yr 4.25% | FY28-Street Paving, Management, and Rehabilitatior | 4,000,000 | | | | | | 570,000 | 553,000 |
| 10 yr 4.25% | FY28-Pease International Tradeport Roadway Rehab | 1,000,000 | | | | | | 142,500 | 138,250 |
| 20 yr 4.50% | FY28-Citywide Storm Drainage Improvements | 500,000 | | | | | | 47,500 | 46,375 |
| | **Total FY28 New Bonding** | **11,315,000** | | | | | | | |
| 5 yr 4.00% | FY29- Vehicle Replacement - Fire Engine #6 | 800,000 | | | | | | | 192,000 |
| 20 yr 4.50% | FY29-Elementary Schools Upgrade | 2,500,000 | | | | | | | 237,500 |
| 20 yr 4.50% | FY29-Land Acquisition | 500,000 | | | | | | | 47,500 |
| 20 yr 4.50% | FY29-Indoor Pool Facility Needs | 325,000 | | | | | | | 30,875 |
| 20 yr 4.50% | FY29- South Mill Pond Playground | 900,000 | | | | | | | 85,500 |
| 20 yr 4.50% | FY29-Outdoor Pool Aquatics Upgrade and Pool Hous | 3,250,000 | | | | | | | 308,750 |
| 20 yr 4.50% | FY29-Prescott Park Master Plan Implementation | 1,750,000 | | | | | | | 166,250 |
| 20 yr 4.50% | FY29-City Hall HVAC Improvements | 1,000,000 | | | | | | | 95,000 |
| 20 yr 4.50% | FY29-Recycling and Solid Waste Transfer Station | 7,500,000 | | | | | | | 712,500 |
| 20 yr 4.50% | FY29-Citywide Facilities Capital Improvements | 1,100,000 | | | | | | | 104,500 |
| 20 yr 4.50% | FY29-Downtown Aerial Utilities Undergrounding | 2,500,000 | | | | | | | 237,500 |
| 20 yr 4.50% | FY29-Hampton Branch Rail Trail (NH Seacoast Gree | 880,000 | | | | | | | 83,600 |
| 10 yr 4.50% | FY26-Greenland Road/Middle Road Corridor Bicycle/ | 1,000,000 | | | | | | | 142,500 |
| 10 yr 4.25% | FY29-Pease International Tradeport Roadway Rehab | 500,000 | | | | | | | 71,250 |
| 10 yr 4.25% | FY29-Junkins Avenue Improvements | 1,100,000 | | | | | | | 156,750 |
| 10 yr 4.25% | FY29-Madison Street Roadway Improvements | 350,000 | | | | | | | 49,875 |
| 20 yr 4.50% | FY29-Citywide Storm Drainage Improvements | 500,000 | | | | | | | 47,500 |
| 10 yr 4.25% | FY29-The Creek Neighborhood Reconstruction | 1,000,000 | | | | | | | 142,500 |
| 10 yr 4.25% | FY29-Lafayette Park and Monroe Street Drainage Im | 1,000,000 | | | | | | | 142,500 |
| | **Total FY29 New Bonding** | **28,455,000** | | | | | | | |
| 5 yr 4.00% | FY30- Vehicle Replacement - Fire Engine #3 | 800,000 | | | | | | | |
| 5 yr 4.00% | FY30 Police Body Camera Replacement | 2,073,000 | | | | | | | |
| 5 yr 4.00% | FY30 Police Taser Replacement Cycle | 860,000 | | | | | | | |
| 20 yr 4.50% | FY30-School Facilities Capital Improvements | 1,000,000 | | | | | | | |
| 20 yr 4.50% | FY30-Renovation of Portsmouth Career and Technic | 3,000,000 | | | | | | | |
| 20 yr 4.50% | FY30-Additional Outdoor Recreation Fields | 3,000,000 | | | | | | | |
| 20 yr 4.50% | FY30-Greenland Road Recreation Facility | 6,100,000 | | | | | | | |
| 20 yr 4.50% | FY30-Citywide Facilities Capital Improvements | 550,000 | | | | | | | |
| 10 yr 4.25% | FY30-Citywide Sidewalk Reconstruction Program | 400,000 | | | | | | | |
| 10 yr 4.25% | FY30-Street Paving, Management, and Rehabilitatior | 4,000,000 | | | | | | | |
| 10 yr 4.25% | FY30-Pinehurst Road Improvements | 300,000 | | | | | | | |
| 20 yr 4.50% | FY30-Citywide Storm Drainage Improvements | 500,000 | | | | | | | |
| | **Total FY30 New Bonding** | **22,583,000** | | | | | | | |
| | **Total Projected CIP FY 25-30** | **136,488,500** | | | | | | | |
| | **Total Projected not Authorized FY 23** | **2,800,000** | | | | | | | |
| | **Total Authorized Unissued FY 18-24** | **47,042,333** | | | | | | | |
| | **Total Projected Debt Service** | **186,330,833** | | | | | | | |
| | **Total General Fund-Projected Future Debt** | | **973,758** | **4,703,856** | **7,354,213** | **9,005,039** | **11,680,591** | **12,788,005** | **15,507,835** |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

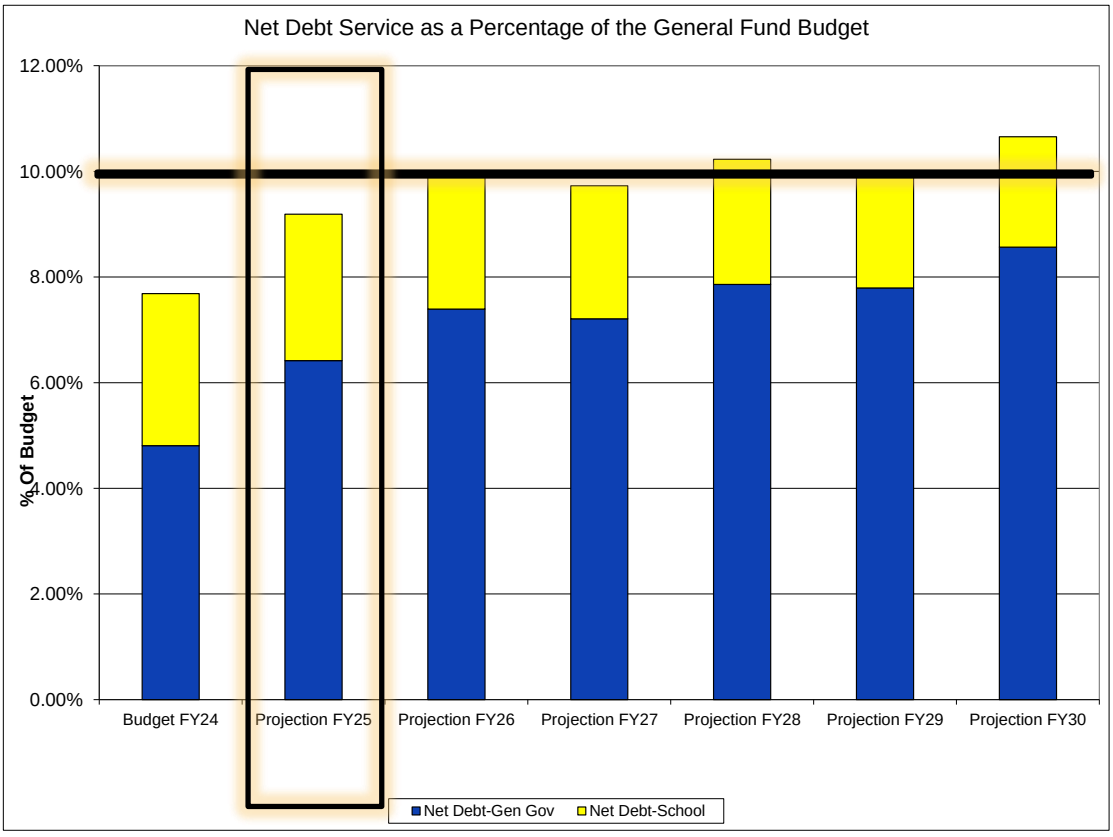
| Bond Rating | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|
| **Future Debt Related Revenues** | | | | | | | | |
| | **Total Future Debt Related Revenues-General Fund** | - | - | - | - | - | - | - |
| | **Total Net Projected Future Debt-General Fund** | 973,758 | 4,703,856 | 7,354,213 | 9,005,039 | 11,680,591 | 12,788,005 | 15,507,835 |
| | **Total Gross Issued and Projected Debt-General Fund** | **13,060,206** | **15,691,190** | **17,522,247** | **17,838,298** | **19,458,074** | **19,371,588** | **21,309,491** |
| | **Total Debt Related Revenues Actual and Projected** | **(2,440,974)** | **(2,240,974)** | **(2,240,974)** | **(2,240,974)** | **(2,240,974)** | **(1,973,361)** | **(1,740,974)** |
| **Total Net Issued and Projected Debt-General Fund** | | **10,619,232** | **13,450,216** | **15,281,273** | **15,597,324** | **17,217,100** | **17,398,228** | **19,568,517** |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG TERM DEBT SERVICE FORECAST MODEL**

**City of Portsmouth**

**Net Debt Service as a Percentage of the General Fund Budget**

| | Budget FY24 | Projection FY25 | Projection FY26 | Projection FY27 | Projection FY28 | Projection FY29 | Projection FY30 |
|---|---|---|---|---|---|---|---|
| Total Gen Fund Without Debt Service | 125,113,169 | 130,668,194 | 136,469,862 | 142,529,124 | 148,857,417 | 155,466,686 | 162,369,407 |
| Increase FY 25 and beyond: | | | | | | | |
| 4.44% | | | | | | | |
| Existing Debt Service-School | 4,717,123 | 4,577,506 | 4,357,356 | 4,160,081 | 4,029,181 | 3,831,256 | 3,675,869 |
| Existing Debt Service-Gen Gov | 7,369,324 | 6,409,827 | 5,810,678 | 4,673,178 | 3,748,303 | 2,752,328 | 2,125,788 |
| Projected Debt Service-School | - | 223,250 | 279,713 | 619,713 | 699,750 | 682,538 | 902,825 |
| Projected Debt Service-Gen Gov | 973,758 | 4,480,606 | 7,074,500 | 8,385,327 | 10,980,841 | 12,105,467 | 14,605,010 |
| **Total Gross Debt Service** | **13,060,206** | **15,691,190** | **17,522,247** | **17,838,298** | **19,458,074** | **19,371,588** | **21,309,491** |
| Debt Service Related Revenues-Schools | (740,974) | (740,974) | (740,974) | (740,974) | (740,974) | (740,974) | (740,974) |
| Debt Service Related Revenues-Gen Gov | (1,700,000) | (1,500,000) | (1,500,000) | (1,500,000) | (1,500,000) | (1,232,387) | (1,000,000) |
| Net Debt-School | 3,976,149 | 4,059,782 | 3,896,095 | 4,038,820 | 3,987,957 | 3,772,820 | 3,837,720 |
| Net Debt-Gen Gov | 6,643,082 | 9,390,434 | 11,385,178 | 11,558,504 | 13,229,143 | 13,625,408 | 15,730,797 |
| **Total Net Debt** | **10,619,232** | **13,450,216** | **15,281,273** | **15,597,324** | **17,217,100** | **17,398,228** | **19,568,517** |
| Total Projected General Fund Budget | 138,173,375 | 146,359,384 | 153,992,109 | 160,367,422 | 168,315,491 | 174,838,274 | 183,678,898 |
| Percentage Net Debt-School of Budget | **2.88%** | **2.77%** | **2.53%** | **2.52%** | **2.37%** | **2.16%** | **2.09%** |
| Percentage Net Debt-Gen Gov of Budget | **4.81%** | **6.42%** | **7.39%** | **7.21%** | **7.86%** | **7.79%** | **8.56%** |
| | Budget FY24 | Projection FY25 | Projection FY26 | Projection FY27 | Projection FY28 | Projection FY29 | Projection FY30 |
| **Total Percentage Net Debt Service of Budget:** | **7.69%** | **9.19%** | **9.92%** | **9.73%** | **10.23%** | **9.95%** | **10.65%** |



**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| | **ISSUED DEBT** | | | | | | | | | |
| | **PARKING & TRANSPORTATION FUND-Issued Debt** | | | **FY24** | **FY25** | **FY26** | **FY27** | **FY28** | **FY29** | **FY30** |
| AAA | **06/20/19** | **19 Foundry Parking Garage** | **$26,200,000($23,149,000)** | | | | | | | |
| | | **Principal-Last Pmt FY39** | 20 Yr | 1,025,000 | 1,080,000 | 1,130,000 | 1,195,000 | 1,250,000 | 1,315,000 | 1,375,000 |
| | | **Interest** | | 751,063 | 699,813 | 645,813 | 589,313 | 529,563 | 467,063 | 401,313 |
| AAA | **06/22/23** | **22 Hanover Parking Facility Upgrades** | **$6,300,000($5,723,500)** | | | | | | | |
| | | **Principal-Last Pmt FY43** | 20 Yr | 303,500 | 295,000 | 290,000 | 290,000 | 290,000 | 290,000 | 290,000 |
| | | **Interest** | | 267,324 | 257,450 | 242,700 | 228,200 | 213,700 | 199,200 | 184,700 |
| | | **Total Parking/Trans Fund Issued Debt Principal Due** | | 1,328,500 | 1,375,000 | 1,420,000 | 1,485,000 | 1,540,000 | 1,605,000 | 1,665,000 |
| | | **Total Parking/Trans Fund Issued Debt Interest Due** | | 1,018,386 | 957,263 | 888,513 | 817,513 | 743,263 | 666,263 | 586,013 |
| | | **Total Parking/TransFund-Issued Debt** | | 2,346,886 | 2,332,263 | 2,308,513 | 2,302,513 | 2,283,263 | 2,271,263 | 2,251,013 |
| | **PROJECTED FUTURE DEBT:** | | | | | | | | | |
| | Actual to Budgeted adjustment | | | 59,176 | | | | | | |
| | **PARKING/TRANSPORTATION FUND-Projected Future Debt** | | | **FY24** | **FY25** | **FY26** | **FY27** | **FY28** | **FY29** | **FY30** |
| | 20 yr 4.50% FY24-Foundry Place Parking Offices **Authorized 07/10/23** | | 1,250,000 | | 118,750 | 115,938 | 113,125 | 110,313 | 107,500 | 104,688 |
| | 20 yr 4.50% FY26-Market Square Upgrades | | 1,000,000 | | | | 95,000 | 92,750 | 90,500 | 88,250 |
| | 20 yr 4.50% FY28-Market Square Upgrades | | 1,000,000 | | | | | | 95,000 | 92,750 |
| | 20 yr 4.50% FY30-Market Square Upgrades | | 1,000,000 | | | | | | | |
| | **Total Parking/Transportation Fund-Projected Future Debt** | | | **59,176** | **118,750** | **115,938** | **208,125** | **203,063** | **293,000** | **285,688** |
| | **Future Debt Related Revenues** | | | **FY24** | **FY25** | **FY26** | **FY27** | **FY28** | **FY29** | **FY30** |
| | **Total Future Debt Related Revenues-Parking/Transportation Fund** | | | - | - | - | - | - | - | - |
| | **Total Net Projected Future Debt-Parking/Transportation Fund** | | | 59,176 | 118,750 | 115,938 | 208,125 | 203,063 | 293,000 | 285,688 |
| | **Total Net Issued and Projected Debt-Parking/Transportation Fund** | | | 2,406,062 | 2,451,013 | 2,424,450 | 2,510,638 | 2,486,325 | 2,564,263 | 2,536,700 |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **ISSUED DEBT** | | | | | | | | | | |
| | **DEBT SERVICE FUND-Issued Debt** | | | **FY24** | **FY25** | **FY26** | **FY27** | **FY28** | **FY29** | **FY30** |
| AAA | **06/15/16** | **Commerce Way-Betterment** | **1.39%** **1,524,710** | | | | | | | |
| | | **Principal-Last Pmt FY26** | | 165,000 | 170,000 | 180,000 | | | | |
| | | **Interest** | | 20,600 | 14,000 | 7,200 | | | | |
| | | **Total Debt Service Fund Issued Debt Principal Due** | | 165,000 | 170,000 | 180,000 | - | - | - | - |
| | | **Total Debt Service Fund Issued Debt Interest Due** | | 20,600 | 14,000 | 7,200 | - | - | - | - |
| | | **Total Debt Service Fund-Issued Debt** | | 185,600 | 184,000 | 187,200 | - | - | - | - |
| | | **Issued Debt Related Revenues** | | | | | | | | |
| | | Properties Subject to Commerce Way Betterment Assessment | | (185,600) | (184,000) | (187,200) | | | | |
| | | **Total Net Issued Debt Service Fund** | | - | - | - | - | - | - | - |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**
**CASH BASIS**

| | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|
| | **WATER FUND-Issued Debt** | | | | | | | | |
| **11/01/02** | **03 SRF-Constitution Avenue** | **4,800,000** | | | | | | | |
| | **Principal-Last Pmt FY23** | 20 Year | | | | | | | |
| | **Interest** | | | | | | | | |
| **12/01/02** | **03 SRF-Spinney Tank** | **1,162,560** | | | | | | | |
| | **Principal-Last Pmt FY23** | 20 Year | | | | | | | |
| | **Interest** | | | | | | | | |
| **06/01/08** | **08 SRF-Madbury Treatment Plant-Design** | **2,000,000** | | | | | | | |
| | **Principal-Last Pmt FY28** | 20 Year | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | | |
| | **Interest** | | 17,440 | 13,952 | 10,464 | 6,976 | 3,488 | | |
| **06/20/18** | **18 Pleasant St Water Line** | **600,000** | | | | | | | |
| | **Principal-Last Pmt FY28** | 10 Year | 60,000 | 60,000 | 60,000 | 60,000 | 60,000 | | |
| | **Interest** | | 15,000 | 12,000 | 9,000 | 6,000 | 3,000 | | |
| **01/15/09** | **09 Madbury Treatment Plant-Refunded** | **7,921,500** | | | | | | | |
| | **Principal-Last Pmt FY29** | 20 Year | 795,000 | 790,000 | 790,000 | 790,000 | 790,000 | 786,500 | |
| | **Interest** | | 189,660 | 157,860 | 126,260 | 94,660 | 63,060 | 31,460 | |
| **06/20/19** | **19 Annual Waterline Replacement** | **$500,000($426,000)** | | | | | | | |
| | **Principal-Last Pmt FY29** | 10 Year | 45,000 | 45,000 | 40,000 | 40,000 | 40,000 | 35,000 | |
| | **Interest** | | 12,250 | 10,000 | 7,750 | 5,750 | 3,750 | 1,750 | |
| **02/01/12** | **12 SRF-Madbury Treatment Plant** | **5,000,000** | | | | | | | |
| | **Principal-Last Pmt FY32** | 20 Year | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 |
| | **Interest** | | 61,200 | 54,400 | 47,600 | 40,800 | 34,000 | 27,200 | 20,400 |
| **06/25/14** | **14 Hobbs Hill Water Tank** | **3,500,000** | | | | | | | |
| | **Principal-Last Pmt FY34** | 20 Year | 175,000 | 175,000 | 175,000 | 175,000 | 175,000 | 175,000 | 175,000 |
| | **Interest** | | 80,500 | 71,750 | 63,000 | 54,250 | 49,000 | 42,000 | 35,000 |
| **06/23/15** | **15 Water Improvements** | **4,800,000** | | | | | | | |
| | **Principal-Last Pmt FY35** | 20 Year | 240,000 | 240,000 | 240,000 | 240,000 | 240,000 | 240,000 | 240,000 |
| | **Interest** | | 96,000 | 86,400 | 76,800 | 69,600 | 62,400 | 55,200 | 48,000 |
| **06/15/16** | **16 Water Improvements** | **4,100,000** | | | | | | | |
| | **Principal-Last Pmt FY36** | 20 Year | 205,000 | 205,000 | 205,000 | 205,000 | 205,000 | 205,000 | 205,000 |
| | **Interest** | | 77,900 | 69,700 | 61,500 | 53,300 | 49,200 | 45,100 | 41,000 |
| **06/23/17** | **17 Water Improvements** | **2,250,000** | | | | | | | |
| | **Principal-Last Pmt FY37** | 20 Year | 115,000 | 115,000 | 115,000 | 115,000 | 110,000 | 110,000 | 110,000 |
| | **Interest** | | 49,338 | 44,738 | 40,138 | 35,538 | 30,938 | 28,738 | 26,400 |
| **06/20/18** | **18 Water Improvements** | **2,500,000** | | | | | | | |
| | **Principal-Last Pmt FY38** | 20 Year | 125,000 | 125,000 | 125,000 | 125,000 | 125,000 | 125,000 | 125,000 |
| | **Interest** | | 71,094 | 64,844 | 58,594 | 52,344 | 46,094 | 39,844 | 36,094 |
| **06/20/19** | **19 Annual Waterline Replacement** | **$2,200,000($1,981,400)** | | | | | | | |
| | **Principal-Last Pmt FY39** | 20 Year | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| | **Interest** | | 61,394 | 56,394 | 51,394 | 46,394 | 41,394 | 36,394 | 31,394 |
| **04/06/21** | **20 Water System Upgrades (Part I)** | **$4,023,000($3,633,000)** | | | | | | | |
| | **Principal-Last Pmt FY41** | 20 Year | 190,000 | 190,000 | 185,000 | 185,000 | 180,000 | 180,000 | 180,000 |
| | **Interest** | | 95,425 | 87,825 | 80,225 | 72,825 | 64,500 | 56,400 | 48,300 |
| | **Annual Waterline Replacement** | **1,000,000** | | | | | | | |
| | **Madbury Well #5** | **750,000** | | | | | | | |
| | **Water Transmission Main Replacement** | **250,000** | | | | | | | |
| | **Maplewood Ave Waterline** | **1,200,000** | | | | | | | |
| | **Pleasant St Water Mains** | **823,000** | | | | | | | |
| **04/06/21** | **21 Water System Upgrades** | **$2,750,000($2,516,000)** | | | | | | | |
| | **Principal-Last Pmt FY41** | 20 Year | 135,000 | 130,000 | 130,000 | 130,000 | 130,000 | 130,000 | 130,000 |
| | **Interest** | | 66,500 | 61,100 | 55,900 | 50,700 | 44,850 | 39,000 | 33,150 |
| | **New Groundwater Source** | **500,000** | | | | | | | |
| | **Water Transmission Main Replacement** | **600,000** | | | | | | | |
| | **Islington St Phase 1B** | **1,650,000** | | | | | | | |
| **06/23/22** | **20 Water System Upgrades (Part II)** | **$600,000($552,800)** | | | | | | | |
| | **Principal-Last Pmt FY42** | 20 Year | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| | **Interest** | | 22,981.26 | 21,481.26 | 19,981.26 | 18,481.26 | 16,981.26 | 15,481.26 | 13,981.26 |
| | **Reservoir Management** | | | | | | | | |
| **06/23/22** | **22 Water System Upgrades (Part I)** | **$6,600,000($6,106,600)** | | | | | | | |
| | **Principal-Last Pmt FY42** | 20 Year | 315,000 | 315,000 | 315,000 | 315,000 | 310,000 | 305,000 | 305,000 |
| | **Interest** | | 251,131 | 235,381 | 219,631 | 203,881 | 188,131 | 172,631 | 157,381 |
| | **Annual Waterline Replacement** | **1,000,000** | | | | | | | |
| | **Islington Street Phase 2** | **2,300,000** | | | | | | | |
| | **Willard Avenue Reconstruction** | **1,800,000** | | | | | | | |
| | **Union Street Reconstruction** | **1,500,000** | | | | | | | |
| | **Total Water Fund Issued Debt Principal Due** | | 2,880,000 | 2,870,000 | 2,860,000 | 2,860,000 | 2,845,000 | 2,671,500 | 1,850,000 |
| | **Total Water Fund Issued Debt Interest Due** | | 1,167,813 | 1,047,825 | 928,237 | 811,499 | 700,786 | 591,198 | 491,100 |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**
**CASH BASIS**

| | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|
| | **Total Water Fund-Issued Debt** | | 4,047,813 | 3,917,825 | 3,788,237 | 3,671,499 | 3,545,786 | 3,262,698 | 2,341,100 |
| **PROJECTED FUTURE DEBT:** | | | | | | | | | |
| | **WATER FUND-Projected Future Debt** | | | | | | | | |
| | Issued/Refunded Difference Budgeted vs actual | | | | | | | | |
| 20 yr 4.50% | FY21-Water Storage Tanks Painting | 850,000 | | 80,750 | 78,838 | 76,925 | 75,013 | 73,100 | 71,188 |
| **FY 21** | **Authorized 12/07/20** | | | | | | | | |
| | **Total FY 21 New Bonding** | **850,000** | | | | | | | |
| 20 yr 4.50% | FY22-Water Transmission Main Replacement | 7,300,000 | | 693,500 | 677,075 | 660,650 | 644,225 | 627,800 | 611,375 |
| **FY 22** | **Authorized 08/23/21** | | | | | | | | |
| | **Total FY 22 New Bonding** | **7,300,000** | | | | | | | |
| 30 yr 5.0% | FY23-Well Station Improvements | 1,000,000 | | 83,333 | 81,667 | 80,000 | 78,333 | 76,667 | 75,000 |
| 30 yr 5.0% | FY23-Water Storage Tanks Painting | 350,000 | | 29,167 | 28,583 | 28,000 | 27,417 | 26,833 | 26,250 |
| 30 yr 5.0% | FY23-Bartlett Street Utilities Upgrades and Streets | 800,000 | | 66,667 | 65,333 | 64,000 | 62,667 | 61,333 | 60,000 |
| **FY 23** | **Authorized 07/11/22** | | | | | | | | |
| | **Total FY 23 New Bonding** | **2,150,000** | | | | | | | |
| 30 yr 5.0% | FY24-Annual Waterline Replacement | 1,000,000 | | 83,333 | 81,667 | 80,000 | 78,333 | 76,667 | 75,000 |
| 30 yr 5.0% | FY24-New Groundwater Source | 2,000,000 | | 166,667 | 163,333 | 160,000 | 156,667 | 153,333 | 150,000 |
| 30 yr 5.0% | FY24-Greenland Well PFAS Treatment | 2,500,000 | | 208,333 | 204,167 | 200,000 | 195,833 | 191,667 | 187,500 |
| 30 yr 5.0% | FY24-Dover Water Emergency Interconnection | 1,726,500 | | 143,875 | 140,998 | 138,120 | 135,243 | 132,365 | 129,488 |
| 30 yr 5.0% | FY24-Edmond Ave | 500,000 | | 41,667 | 40,833 | 40,000 | 39,167 | 38,333 | 37,500 |
| 30 yr 5.0% | FY24-Islington 2c | 850,000 | | 70,833 | 69,417 | 68,000 | 66,583 | 65,167 | 63,750 |
| 30 yr 5.0% | FY24-Union St | 700,000 | | 58,333 | 57,167 | 56,000 | 54,833 | 53,667 | 52,500 |
| **FY 24** | **Authorized 07/10/23** | | | | | | | | |
| | **Total FY 24 New Bonding** | **9,276,500** | | | | | | | |
| 30 yr 5.0% | FY25-Water Storage Tanks Improvements | 400,000 | | | 33,333 | 32,667 | 32,000 | 31,333 | 30,667 |
| 30 yr 5.0% | FY25-Madbury Water Treatment Plant Facility Imp | 650,000 | | | 54,167 | 53,083 | 52,000 | 50,917 | 49,833 |
| 30 yr 5.0% | FY25-Fleet Street Utilities Upgrades/Streetscape | 1,000,000 | | | 83,333 | 81,667 | 80,000 | 78,333 | 76,667 |
| 30 yr 5.0% | FY25-DPW Complex Improvements | 1,500,000 | | | 125,000 | 122,500 | 120,000 | 117,500 | 115,000 |
| 30 yr 5.0% | FY25-The Creek Neighborhood Reconstruction | 500,000 | | | 41,667 | 40,833 | 40,000 | 39,167 | 38,333 |
| | **Total FY 25 New Bonding** | **4,050,000** | | | | | | | |
| 30 yr 5.0% | FY26-Annual Waterline Replacement | 1,500,000 | | | | 125,000 | 122,500 | 120,000 | 117,500 |
| 30 yr 5.0% | FY26-Well Station Improvements | 700,000 | | | | 58,333 | 57,167 | 56,000 | 54,833 |
| 30 yr 5.0% | FY26-Reservoir Management | 1,000,000 | | | | 83,333 | 81,667 | 80,000 | 78,333 |
| 30 yr 5.0% | FY26-Fleet Street Utilities Upgrades/Streetscape | 2,000,000 | | | | 166,667 | 163,333 | 160,000 | 156,667 |
| 30 yr 5.0% | FY26-Chapel Street | 750,000 | | | | 62,500 | 61,250 | 60,000 | 58,750 |
| | **Total FY 26 New Bonding** | **5,950,000** | | | | | | | |
| 30 yr 5.0% | FY27-Water Storage Tanks Improvements | 4,000,000 | | | | | 333,333 | 326,667 | 320,000 |
| 30 yr 5.0% | FY27-The Creek Neighborhood Reconstruction | 800,000 | | | | | 66,667 | 65,333 | 64,000 |
| | **Total FY 27 New Bonding** | **4,800,000** | | | | | | | |
| 30 yr 5.0% | FY28-Annual Waterline Replacement | 1,500,000 | | | | | | 125,000 | 122,500 |
| | **Total FY 28 New Bonding** | **1,500,000** | | | | | | | |
| 30 yr 5.0% | FY29-The Creek Neighborhood Reconstruction | 1,000,000 | | | | | | | 83,333 |
| | **Total FY 29 New Bonding** | **1,000,000** | | | | | | | |
| 30 yr 5.0% | FY30-Annual Waterline Replacement | 1,500,000 | | | | | | | |
| | **Total FY 30 New Bonding** | **1,500,000** | | | | | | | |
| | **Total Projected FY 25-30** | **18,800,000** | | | | | | | |
| | **Total Authorized Unissued** | **19,576,500** | | | | | | | |
| | **Total Water Fund-Projected Future Debt** | | **-** | **1,726,458** | **2,026,577** | **2,478,278** | **2,824,230** | **2,887,182** | **2,905,967** |
| | **Total Issued and Projected Debt Water Fund** | | **4,047,813** | **5,644,283** | **5,814,813** | **6,149,777** | **6,370,016** | **6,149,879** | **5,247,067** |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**
**CASH BASIS**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| SRF | **05/04/05 05 SRF-Sewer Projects Phase 2** | **8,898,110** | | | | | | | | |
| | **Principal-Last Pmt FY25** | 20 Year | | 444,905 | 444,905 | | | | | |
| | **Interest**-State recalculated interest starting in FY 15 total saving $504,176 | | | 16,639 | 8,320 | | | | | |
| AAA | **06/15/16 16 Sewer System Improvements** | **1,000,000** | | | | | | | | |
| | **Principal-Last Pmt FY26** | 10 Year | | 100,000 | 100,000 | 100,000 | | | | |
| | **Interest** | | | 12,000 | 8,000 | 4,000 | | | | |
| AAA | **06/15/17 17 Goose Bay and Pumping Stations** | **900,000** | | | | | | | | |
| | **Principal-Last Pmt FY27** | 10 Year | | 90,000 | 90,000 | 90,000 | 90,000 | | | |
| | **Interest** | | | 14,400 | 10,800 | 7,200 | 3,600 | | | |
| SRF | **12/01/08 09 SRF-Sewer Projects Phase 3** | **5,508,137** | | | | | | | | |
| | **Principal-Last Pmt FY28** | 20 Year | | 275,407 | 275,407 | 275,407 | 275,407 | 275,407 | | |
| | **Interest**-State recalculated interest starting in FY 15 total saving $306,168 | | | 32,773 | 26,219 | 19,664 | 13,109 | 6,555 | | |
| SRF | **12/01/08 09 SRF-Lower Court Street Loan** | **688,562** | | | | | | | | |
| | **Principal-Last Pmt FY28** | 20 Year | | 34,428 | 34,428 | 34,428 | 34,428 | 34,428 | | |
| | **Interest-**State recalculated interest starting in FY 15 total saving $36,048 | | | 4,097 | 3,278 | 2,458 | 1,639 | 819 | | |
| AAA | **06/20/18 18 Sewer Line and Pump Station Improvements** | **1,800,000** | | | | | | | | |
| | **Principal-Last Pmt FY28** | 10 Year | | 180,000 | 180,000 | 180,000 | 180,000 | 180,000 | | |
| | **Interest** | | | 45,000 | 36,000 | 27,000 | 18,000 | 9,000 | | |
| AAA | **06/20/19 19 Consent Decree-Union St-Annual Sewerline** | **$1,600,000($1,361,100)** | | | | | | | | |
| | **Principal-Last Pmt FY29** | 10 Year | | 140,000 | 140,000 | 135,000 | 135,000 | 125,000 | 120,000 | |
| | **Interest** | | | 39,750 | 32,750 | 25,750 | 19,000 | 12,250 | 6,000 | |
| SRF | **01/01/11 11 SRF-Rye Line Pump Station Upgrades** | **1,069,714** | | | | | | | | |
| | **Principal-Last Pmt FY30** | 20 Year | | 53,486 | 53,486 | 53,486 | 53,486 | 53,486 | 53,486 | 53,486 |
| | **Interest**-State recalculated interest starting in FY 15 total saving $25,456 | | | 9,674 | 8,292 | 6,910 | 5,528 | 4,146 | 2,764 | 1,382 |
| SRF | **01/01/11 11 SRF-201 Facilities Plan Updates** | **1,000,000** | | | | | | | | |
| | **Principal-Last Pmt FY30** | 20 Year | | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| | **Interest**-State recalculated interest starting in FY 15 total saving $24,288 | | | 9,044 | 7,752 | 6,460 | 5,168 | 3,876 | 2,584 | 1,292 |
| SRF | **12/16/11 12 SRF-LTCP Bartlett St. Area Sewer Ext** | **5,290,233** | | | | | | | | |
| | **Principal-Last Pmt FY31** | 20 Year | | 264,512 | 264,512 | 264,512 | 264,512 | 264,512 | 264,512 | 264,512 |
| | **Interest-**State recalculated interest starting in FY 15 total saving $191,222 | | | 55,399 | 48,474 | 41,549 | 34,625 | 27,700 | 20,775 | 13,850 |
| AAA | **12/14/21 12 P.I.W.W.T.P. Prel. Eng and LTCP Imp-Refunding** | **1,260,000** | | | | | | | | |
| | **Principal-Last Pmt FY32** | 10 YR | | 120,000 | 125,000 | 125,000 | 125,000 | 125,000 | 130,000 | 130,000 |
| | **Interest** | | | 54,000 | 47,875 | 41,625 | 35,375 | 29,125 | 22,750 | 16,250 |
| AA+ | **03/19/12 12 LTCP Contract #3B and Cass St Area** | **8,000,000** | | | | | | | | |
| | **Principal-Last Pmt FY32** | 20 Year | | 400,000 | 400,000 | 400,000 | 400,000 | 400,000 | 400,000 | 400,000 |
| | **Interest** | | | 94,500 | 86,000 | 76,750 | 66,000 | 54,000 | 42,000 | 30,000 |
| AAA | **06/27/13 13 LTCP Contract #3C Lincoln Area** | **3,929,000** | | | | | | | | |
| | **Principal-Last Pmt FY33** | 20 Year | | 195,000 | 195,000 | 195,000 | 195,000 | 195,000 | 195,000 | 195,000 |
| | **Interest** | | | 60,060 | 54,210 | 48,360 | 42,510 | 36,660 | 30,810 | 24,960 |
| SRF | **06/01/14 14 SRF-LTCP Contract #3C** | **5,595,874** | | | | | | | | |
| | **Principal-Last Pmt FY33** | 20 Year | | 279,794 | 279,794 | 279,794 | 279,794 | 279,794 | 279,794 | 279,794 |
| | **Interest** | | | 93,787 | 84,408 | 75,029 | 65,651 | 56,272 | 46,893 | 37,515 |
| AAA | **06/25/14 14 Peirce Island WWTP** | **10,000,000** | | | | | | | | |
| | **Principal-Last Pmt FY34** | 20 Year | | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 |
| | **Interest** | | | 230,000 | 205,000 | 180,000 | 155,000 | 140,000 | 120,000 | 100,000 |
| AAA | **06/25/14 14 Pease WWTP** | **3,500,000** | | | | | | | | |
| | **Principal-Last Pmt FY34** | 20 Year | | 175,000 | 175,000 | 175,000 | 175,000 | 175,000 | 175,000 | 175,000 |
| | **Interest** | | | 80,500 | 71,750 | 63,000 | 54,250 | 49,000 | 42,000 | 35,000 |
| AAA | **06/23/15 15 Pease WWTP** | **1,000,000** | | | | | | | | |
| | **Principal-Last Pmt FY35** | 20 Year | | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| | **Interest** | | | 20,000 | 18,000 | 16,000 | 14,500 | 13,000 | 11,500 | 10,000 |
| AAA | **06/15/16 16 Lafayette Rd Pumping Station** | **3,000,000** | | | | | | | | |
| | **Principal-Last Pmt FY36** | 20 Year | | 150,000 | 150,000 | 150,000 | 150,000 | 150,000 | 150,000 | 150,000 |
| | **Interest** | | | 57,000 | 51,000 | 45,000 | 39,000 | 36,000 | 33,000 | 30,000 |
| AAA | **06/15/17 17 Annual Sewerline** | **2,500,000** | | | | | | | | |
| | **Principal-Last Pmt FY37** | 20 Year | | 125,000 | 125,000 | 125,000 | 125,000 | 125,000 | 125,000 | 125,000 |
| | **Interest** | | | 55,156 | 50,156 | 45,156 | 40,156 | 35,156 | 32,656 | 30,000 |
| AAA | **06/15/18 18 Annual Sewerline and Pumping Stations** | **3,000,000** | | | | | | | | |
| | **Principal-Last Pmt FY38** | 20 Year | | 150,000 | 150,000 | 150,000 | 150,000 | 150,000 | 150,000 | 150,000 |
| | **Interest** | | | 85,313 | 77,813 | 70,313 | 62,813 | 55,313 | 47,813 | 43,313 |
| AAA | **06/20/19 19 Pease Wastewater Treatment Plant** | **$7,200,000($6,490,000)** | | | | | | | | |
| | **Principal-Last Pmt FY39** | 20 Year | | 325,000 | 325,000 | 325,000 | 325,000 | 325,000 | 325,000 | 325,000 |
| | **Interest** | | | 201,194 | 184,944 | 168,694 | 152,444 | 136,194 | 119,944 | 103,694 |
| AAA | **04/06/21 20 Sewer System Upgrades** | **$2,745,000($2,432,300)** | | | | | | | | |
| | **Principal-Last Pmt FY41** | 20 Year | | 130,000 | 130,000 | 120,000 | 120,000 | 120,000 | 120,000 | 120,000 |
| | **Interest** | | | 63,700 | 58,500 | 53,300 | 48,500 | 43,100 | 37,700 | 32,300 |
| | **Annual Sewerline Replacement** | **1,000,000** | | | | | | | | |
| | **Pleasant St Sewerline** | **770,000** | | | | | | | | |
| | **Maplewood Ave Sewerline** | **975,000** | | | | | | | | |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**
**CASH BASIS**

| Bond Rating | | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|---|
| AAA | 04/06/21 | 21 Sewer System Upgrades | $5,250,000($4,816,700) | | | | | | | |
| | | Principal-Last Pmt FY41 | 20 Year | 245,000 | 240,000 | 240,000 | 240,000 | 240,000 | 240,000 | 240,000 |
| | | Interest | | 126,200 | 116,400 | 106,800 | 97,200 | 86,400 | 75,600 | 64,800 |
| | | Mechanic St Pump Station Force Main | 3,600,000 | | | | | | | |
| | | Islington St Phase 1B | 1,650,000 | | | | | | | |
| AAA | 06/23/22 | 22 Sewer System Upgrades (Part I) | $8,900,000($8,232,200) | | | | | | | |
| | | Principal-Last Pmt FY42 | 20 Year | 425,000 | 425,000 | 425,000 | 420,000 | 420,000 | 415,000 | 415,000 |
| | | Interest | | 338,613 | 317,363 | 296,113 | 274,863 | 253,863 | 232,863 | 212,113 |
| | | Annual Sewerline Replacement | 500,000 | | | | | | | |
| | | Mechanic Street Pumping Station | 2,000,000 | | | | | | | |
| | | Islington Street Phase 2 | 2,300,000 | | | | | | | |
| | | Willard Avenue Reconstruction | 3,000,000 | | | | | | | |
| | | Union Street Reconstruction | 1,100,000 | | | | | | | |
| AAA | 06/22/23 | 16 PI WWTP Upgrades | $1,016,957($926,050) | | | | | | | |
| | | Principal-Last Pmt FY43 | 20 Year | 51,050 | 50,000 | 50,000 | 50,000 | 50,000 | 45,000 | 45,000 |
| | | Interest | | 43,196 | 41,500 | 39,000 | 36,500 | 34,000 | 31,500 | 29,250 |
| AAA | 06/22/23 | 22 Sewer System Upgrades (Part II) | $300,000($271,250) | | | | | | | |
| | | Principal-Last Pmt FY43 | 20 Year | 16,250 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 |
| | | Interest | | 12,809 | 12,250 | 11,500 | 10,750 | 10,000 | 9,250 | 8,500 |
| | | Sewer Service for Sagamore Ave Sewer Extension | 300,000 | | | | | | | |
| SRF | 04/01/22 | 22 SRF-PI WWTP Upgrades | $80,883,042$(76,838,889.88) | | | | | | | |
| | | Principal-Last Pmt FY51 | 30 Year | 2,557,694 | 2,557,694 | 2,557,694 | 2,557,694 | 2,557,694 | 2,557,694 | 2,557,694 |
| | | Interest | | 1,432,309 | 1,381,155 | 1,330,001 | 1,278,847 | 1,227,693 | 1,176,539 | 1,125,385 |
| AAA | 06/22/23 | 23 Sewer System Upgrades (Part I) | $2,100,000($1,972,200) | | | | | | | |
| | | Principal-Last Pmt FY53 | 30 Year | 77,200 | 75,000 | 75,000 | 75,000 | 75,000 | 70,000 | 70,000 |
| | | Interest | | 87,868 | 85,750 | 82,000 | 78,250 | 74,500 | 70,750 | 67,250 |
| | | Annual Sewerline Replacement | 500,000 | | | | | | | |
| | | Sewer Main for Sagamore Ave Sewer Extension | 400,000 | | | | | | | |
| | | Sewer Service for Sagamore Ave Sewer Extension | 1,200,000 | | | | | | | |
| | Total Interest savings from State recalculation FY 15 - FY 31 $1,539,384 | | | | | | | | | |
| | | **Total Sewer Fund Issued Debt Principal Due** | | 7,604,726 | 7,600,225.65 | 7,140,320.17 | 7,035,320.17 | 6,935,320.25 | 6,430,485.19 | 6,310,485.50 |
| | | **Total Sewer Fund Issued Debt Interest Due** | | 3,374,980 | 3,133,958 | 2,889,633 | 2,653,277 | 2,434,621 | 2,215,691 | 2,016,853 |
| | | **Total Sewer Fund-Issued Debt** | | 10,979,706 | 10,734,184 | 10,029,953 | 9,688,597 | 9,369,942 | 8,646,176 | 8,327,338 |

| **Issued Debt Related Revenues** | FY 24 | FY 25 | FY 26 | FY 27 | FY 28 | FY 29 | FY 30 |
|---|---|---|---|---|---|---|---|
| Phase 2-State Aid C-706 | (138,463) | (135,967) | | | | | |
| Rye Line Pump Station C-876 | (21,851) | (21,436) | (21,021) | (20,607) | (20,192) | (19,778) | (19,363) |
| Lincoln Area Contract 3B C-877 | (79,463) | (77,235) | (75,006) | (72,777) | (70,549) | (68,878) | (67,694) |
| Lincoln Area Contract 3C C-878 | (77,760) | (76,126) | (74,492) | (72,860) | (71,226) | (69,592) | (67,958) |
| Cass St Area C-879 | (49,956) | (48,555) | (47,154) | (45,753) | (44,352) | (43,301) | (42,556) |
| Bartlett Area C-860 | (69,522) | (68,137) | (66,752) | (65,367) | (63,982) | (62,597) | |
| Lincoln Area 3A C-861 | (78,468) | (76,592) | (74,716) | (72,841) | (70,965) | (69,089) | (67,213) |
| Peirce Island WWTP C-900 | (42,595) | (42,088) | (40,820) | (39,552) | (38,285) | (37,017) | (35,749) |
| Peirce Island WWTP C-959 | (1,478,071) | (1,455,640) | (1,433,144) | (1,410,647) | (1,392,581) | (1,370,084) | (1,347,588) |
| **Total Issued Debt Related Revenues-Sewer Fund** | **(2,036,149)** | **(2,001,776)** | **(1,833,105)** | **(1,800,404)** | **(1,772,132)** | **(1,740,336)** | **(1,648,121)** |
| **Total Net Issued Debt-Sewer Fund** | **8,943,557** | **8,732,408** | **8,196,848** | **7,888,193** | **7,597,810** | **6,905,840** | **6,679,217** |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**
**CASH BASIS**

| Bond Rating | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|
| **SEWER FUND-Projected Future Debt** | | | | | | | | | |
| | Issued Difference Budgeted vs actual | | 202,460 | | | | | | |
| 30 yr 2.536% | FY20-Consent Mitigation (SRF) | 4,400,000 | | | | | | | |
| | **Authorized 07/15/19** | | | | | | | | |
| | less Principal Forgiveness (15%) | (660,000) | | | | | | | |
| **FY 20** | **Total SRF** | **3,740,000** | 219,513 | 216,352 | 213,190 | 210,028 | 206,867 | 203,705 | 200,544 |
| 30 yr 2.536% | FY22-Pease Wastewater Treatment Facility-possible SRF | 1,500,000 | | | | | | | |
| | **Authorized 08/02/21** | | | | | | | | |
| | First $75,000 Forgiveness | (75,000) | | | | | | | |
| | Sub Total | 1,425,000 | | | | | | | |
| | 10% Forgiveness thereafter | (142,500) | | | | | | | |
| | Total SRF | **1,282,500** | 75,274 | 74,190 | 73,106 | 72,022 | 70,938 | 69,854 | 68,769 |
| 20 yr 4.50% | FY22-Pumping Station Upgrades | 750,000 | | 71,250 | 69,563 | 67,875 | 66,188 | 64,500 | 62,813 |
| 20 yr 4.50% | FY22-Marjorie St Pumping Station | 1,000,000 | | 95,000 | 92,750 | 90,500 | 88,250 | 86,000 | 83,750 |
| **FY 22** | **Authorized 08/02/21** | | | | | | | | |
| | **Total FY 22 New Bonding** | **1,750,000** | | | | | | | |
| 30 yr 5.0% | FY23-Pease Wastewater Treatment Facility | 550,000 | | 45,833 | 44,917 | 44,000 | 43,083 | 42,167 | 41,250 |
| 30 yr 5.0% | FY23-Pumping Station Upgrades | 800,000 | | 66,667 | 65,333 | 64,000 | 62,667 | 61,333 | 60,000 |
| 30 yr 5.0% | FY23-Sewer Main for Sagamore Avenue Area Sewer Extension $2,500,000 | | | | | | | | |
| | Bonded $400,000 in June 2023, the remainder maybe SRF eligible as of 05/05/23 | | | | | | | | |
| | Total Remaining | 2,100,000 | | 175,000 | 171,500 | 168,000 | 164,500 | 161,000 | 157,500 |
| 30 yr 5.0% | FY23-Bartlett Street Utilities Upgrades and Streetscape | 800,000 | | 66,667 | 65,333 | 64,000 | 62,667 | 61,333 | 60,000 |
| Total Fleet Street authorization $2,200,000 split between SRF and Bonding: | | | | | | | | | |
| 30 yr 2.536% | FY23-Fleet Street Utilities Upgrades/Streetscape-SRF | 1,680,500 | | | | | | | |
| | less Principal Forgiveness (10%) | (168,050) | | | | | | | |
| | Total SRF | 1,512,450 | | 88,771 | 87,492 | 86,214 | 84,935 | 83,657 | 82,378 |
| 30 yr 5.0% | FY23-Fleet Street Utilities Upgrades/Streetscape-Non SRF | 519,500 | | 43,292 | 42,426 | 41,560 | 40,694 | 39,828 | 38,963 |
| **FY 23** | **Authorized 07/11/22** | | | | | | | | |
| | **Total FY 23 New Bonding** | **6,281,950** | | | | | | | |
| 30 yr 5.0% | FY24-Annual Sewer Line Replacement | 1,000,000 | | 83,333 | 81,667 | 80,000 | 78,333 | 76,667 | 75,000 |
| 30 yr 5.0% | FY24-Long Term Control Related Projects | 300,000 | | 25,000 | 24,500 | 24,000 | 23,500 | 23,000 | 22,500 |
| 30 yr 5.0% | FY24-Woodbury Avenue Sewer Separation | 250,000 | | 20,833 | 20,417 | 20,000 | 19,583 | 19,167 | 18,750 |
| 30 yr 5.0% | FY24-Sewer Service for Sagamore Ave Sewer Extension | 365,000 | | 30,417 | 29,808 | 29,200 | 28,592 | 27,983 | 27,375 |
| 30 yr 5.0% | FY24-Fleet Street Utilities Upgrades/Streetscape | 2,000,000 | | 166,667 | 163,333 | 160,000 | 156,667 | 153,333 | 150,000 |
| 30 yr 5.0% | FY24-Edmond Ave | 200,000 | | 16,667 | 16,333 | 16,000 | 15,667 | 15,333 | 15,000 |
| 30 yr 5.0% | FY24-Islington | 2,100,000 | | 175,000 | 171,500 | 168,000 | 164,500 | 161,000 | 157,500 |
| 30 yr 5.0% | FY24-Union St | 700,000 | | 58,333 | 57,167 | 56,000 | 54,833 | 53,667 | 52,500 |
| **FY 24** | **Authorized 07/10/23** | | | | | | | | |
| | **Total FY 24 New Bonding** | **6,915,000** | | | | | | | |
| 30 yr 5.0% | FY25-Pease Wastewater Treatment Facility-SRF | 20,000,000 | | | 200,000 | 400,000 | 600,000 | 1,666,667 | 1,633,333 |
| | SRF-No Principal forgiveness at this time-1% admin fee FY26-FY28 first full payment in FY29 | | | | | | | | |
| 30 yr 5.0% | FY25-Pumping Station Upgrades | 700,000 | | | 58,333 | 57,167 | 56,000 | 54,833 | 53,667 |
| 30 yr 5.0% | FY25-Sewer Service for Sagamore Ave Sewer Extension | 365,000 | | | 30,417 | 29,808 | 29,200 | 28,592 | 27,983 |
| 30 yr 5.0% | FY25-Mechanic Street Pumping Station Upgrads | 3,000,000 | | | 250,000 | 245,000 | 240,000 | 235,000 | 230,000 |
| 30 yr 5.0% | FY25-Peirce Island Wastewater Treatment Facility | 1,900,000 | | | 158,333 | 155,167 | 152,000 | 148,833 | 145,667 |
| 30 yr 5.0% | FY25-Fleet Street Utilities Upgrades/Streetscape | 1,000,000 | | | 83,333 | 81,667 | 80,000 | 78,333 | 76,667 |
| 30 yr 5.0% | FY25-Stormdrainage | 500,000 | | | 41,667 | 40,833 | 40,000 | 39,167 | 38,333 |
| 30 yr 5.0% | FY25-DPW Complex Improvements | 1,500,000 | | | 125,000 | 122,500 | 120,000 | 117,500 | 115,000 |
| 30 yr 5.0% | FY25-The Creek Neighborhood Reconstruction | 500,000 | | | 41,667 | 40,833 | 40,000 | 39,167 | 38,333 |
| | **Total FY 25 New Bonding** | **29,465,000** | | | | | | | |
| 30 yr 5.0% | FY26-Annual Sewer Line Replacement | 1,500,000 | | | | 125,000 | 122,500 | 120,000 | 117,500 |
| 30 yr 5.0% | FY26-Long Term Control Related Projects | 1,000,000 | | | | 83,333 | 81,667 | 80,000 | 78,333 |
| 30 yr 5.0% | FY26-Sewer Service for Sagamore Ave Sewer Extension | 365,000 | | | | 30,417 | 29,808 | 29,200 | 28,592 |
| 30 yr 5.0% | FY25-Peirce Island Wastewater Treatment Facility | 1,500,000 | | | | 125,000 | 122,500 | 120,000 | 117,500 |
| 30 yr 5.0% | FY26-Fleet Street Utilities Upgrades/Streetscape | 3,000,000 | | | | 250,000 | 245,000 | 240,000 | 235,000 |
| 30 yr 5.0% | FY26-Stormdrainage | 500,000 | | | | 41,667 | 40,833 | 40,000 | 39,167 |
| 30 yr 5.0% | FY26-Chapel Street | 750,000 | | | | 62,500 | 61,250 | 60,000 | 58,750 |
| 30 yr 5.0% | FY26-Lafayette Park | 1,500,000 | | | | 125,000 | 122,500 | 120,000 | 117,500 |
| | **Total FY 26 New Bonding** | **10,115,000** | | | | | | | |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**
**CASH BASIS**

| Bond Rating | | | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 |
|---|---|---|---|---|---|---|---|---|---|
| 30 yr 5.0% | FY27-Wastewater Reuse at Pease WWTF | 2,000,000 | | | | | 166,667 | 163,333 | 160,000 |
| 30 yr 5.0% | FY27-Long Term Control Related Projects | 1,000,000 | | | | | 83,333 | 81,667 | 80,000 |
| 30 yr 5.0% | FY27-Pumping Station Upgrades | 500,000 | | | | | 41,667 | 40,833 | 40,000 |
| 30 yr 5.0% | FY27-Sewer Service for Sagamore Ave Sewer Extension | 365,000 | | | | | 30,417 | 29,808 | 29,200 |
| 30 yr 5.0% | FY27-Mechanic Street Pumping Station Upgrads | 10,000,000 | | | | | 833,333 | 816,667 | 800,000 |
| 30 yr 5.0% | FY27-Peirce Island Wastewater Treatment Facility | 1,500,000 | | | | | 125,000 | 122,500 | 120,000 |
| 30 yr 5.0% | FY27-Stormdrainage | 500,000 | | | | | 41,667 | 40,833 | 40,000 |
| 30 yr 5.0% | FY27-The Creek Neighborhood Reconstruction | 800,000 | | | | | 66,667 | 65,333 | 64,000 |
| | **Total FY 27 New Bonding** | **16,665,000** | | | | | | | |
| 30 yr 5.0% | FY28-Annual Sewer Line Replacement | 1,500,000 | | | | | | 125,000 | 122,500 |
| 30 yr 5.0% | FY28-Long Term Control Related Projects | 1,000,000 | | | | | | 83,333 | 81,667 |
| 30 yr 5.0% | FY28-Sewer Service for Sagamore Ave Sewer Extension | 365,000 | | | | | | 30,417 | 29,808 |
| 30 yr 5.0% | FY28-Stormdrainage | 500,000 | | | | | | 41,667 | 40,833 |
| | **Total FY 28 New Bonding** | **3,365,000** | | | | | | | |
| 30 yr 5.0% | FY29-Wastewater Reuse at Pease WWTF | 6,300,000 | | | | | | | 525,000 |
| 30 yr 5.0% | FY29-Pumping Station Upgrades | 500,000 | | | | | | | 41,667 |
| 30 yr 5.0% | FY29-Sewer Service for Sagamore Ave Sewer Extension | 365,000 | | | | | | | 30,417 |
| 30 yr 5.0% | FY29-Stormdrainage | 500,000 | | | | | | | 41,667 |
| 30 yr 5.0% | FY 29-The Creek Neighborhood Reconstruction | 1,000,000 | | | | | | | 83,333 |
| | **Total FY 29 New Bonding** | **2,365,000** | | | | | | | |
| 30 yr 5.0% | FY30-Annual Sewer Line Replacement | 1,500,000 | | | | | | | |
| 30 yr 5.0% | FY30-Sewer Service for Sagamore Ave Sewer Extension | 365,000 | | | | | | | |
| 30 yr 5.0% | FY30-Stormdrainage | 500,000 | | | | | | | |
| | **Total FY 30 New Bonding** | **2,365,000** | | | | | | | |
| | **Total Projected FY 25-30** | **64,340,000** | | | | | | | |
| | **Total Authorized Unissued (includes SRF)** | **13,054,450** | | | | | | | |
| | **Total Sewer Fund-Projected Future Debt** | | **497,247** | **1,519,271** | **2,479,085** | **3,477,291** | **5,004,471** | **6,262,210** | **6,856,008** |
| | **Total Net Projected Future Debt-Sewer Fund** | | 497,247 | 1,519,271 | 2,479,085 | 3,477,291 | 5,004,471 | 6,262,210 | 6,856,008 |
| | **Total Gross Issued and Projected Debt-Sewer** | | 11,476,953 | 12,253,454 | 12,509,037 | 13,165,888 | 14,374,413 | 14,908,386 | 15,183,346 |
| | **Total Net Issued and Projected Debt-Sewer Fund** | | **9,440,804** | **10,251,678** | **10,675,932** | **11,365,484** | **12,602,281** | **13,168,050** | **13,535,225** |

**CITY OF PORTSMOUTH, NEW HAMPSHIRE**
**LONG-TERM DEBT SERVICE FORECAST MODEL**

**City of Portsmouth**

**Outstanding Debt Service by Fiscal Year**

| Fiscal Year | | General Fund-Gen Gov | | | | General Fund-School | | | | Total General Fund | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Principal | Interest | | | Principal | Interest | | | Principal | Interest | | |
| FY 25 | 1 | 4,980,000 | 1,429,827 | 14% | 14% | 3,275,000 | 1,302,506 | 10% | 10% | 8,255,000 | 2,732,334 | 12% | 12% |
| FY 26 | 2 | 4,600,000 | 1,210,678 | 13% | 27% | 3,205,000 | 1,152,356 | 10% | 20% | 7,805,000 | 2,363,034 | 11% | 24% |
| FY 27 | 3 | 3,660,000 | 1,013,178 | 10% | 37% | 3,155,000 | 1,005,081 | 10% | 29% | 6,815,000 | 2,018,259 | 10% | 34% |
| FY 28 | 4 | 2,900,000 | 848,303 | 8% | 45% | 3,165,000 | 864,181 | 10% | 39% | 6,065,000 | 1,712,484 | 9% | 42% |
| FY 29 | 5 | 2,038,500 | 713,828 | 6% | 51% | 3,105,000 | 726,256 | 9% | 49% | 5,143,500 | 1,440,084 | 8% | 50% |
| FY 30 | 6 | 1,510,000 | 615,788 | 4% | 55% | 3,080,000 | 595,869 | 9% | 58% | 4,590,000 | 1,211,656 | 7% | 57% |
| FY 31 | 7 | 1,500,000 | 543,488 | 4% | 60% | 2,445,000 | 468,169 | 7% | 65% | 3,945,000 | 1,011,656 | 6% | 62% |
| FY 32 | 8 | 1,450,000 | 474,838 | 4% | 64% | 2,450,000 | 365,844 | 7% | 73% | 3,900,000 | 840,681 | 6% | 68% |
| FY 33 | 9 | 1,330,000 | 424,238 | 4% | 68% | 1,470,000 | 294,444 | 4% | 77% | 2,800,000 | 718,681 | 4% | 72% |
| FY 34 | 10 | 1,330,000 | 377,650 | 4% | 71% | 1,470,000 | 243,244 | 4% | 82% | 2,800,000 | 620,894 | 4% | 76% |
| FY 35 | 11 | 1,310,000 | 331,063 | 4% | 75% | 1,295,000 | 194,544 | 4% | 86% | 2,605,000 | 525,606 | 4% | 80% |
| FY 36 | 12 | 1,305,000 | 288,881 | 4% | 79% | 1,295,000 | 153,350 | 4% | 90% | 2,600,000 | 442,231 | 4% | 84% |
| FY 37 | 13 | 1,300,000 | 246,950 | 4% | 82% | 1,040,000 | 111,563 | 3% | 93% | 2,340,000 | 358,513 | 3% | 87% |
| FY 38 | 14 | 1,295,000 | 204,838 | 4% | 86% | 790,000 | 77,125 | 2% | 95% | 2,085,000 | 281,963 | 3% | 90% |
| FY 39 | 15 | 1,295,000 | 161,388 | 4% | 90% | 535,000 | 50,538 | 2% | 97% | 1,830,000 | 211,925 | 3% | 93% |
| FY 40 | 16 | 1,285,000 | 122,388 | 4% | 93% | 315,000 | 33,613 | 1% | 98% | 1,600,000 | 156,000 | 2% | 95% |
| FY 41 | 17 | 1,280,000 | 83,438 | 4% | 97% | 315,000 | 23,475 | 1% | 99% | 1,595,000 | 106,913 | 2% | 98% |
| FY 42 | 18 | 705,000 | 44,588 | 2% | 99% | 205,000 | 13,338 | 1% | 100% | 910,000 | 57,925 | 1% | 99% |
| FY 43 | 19 | 435,000 | 17,400 | 1% | 100% | 135,000 | 5,400 | 0% | 100% | 570,000 | 22,800 | 1% | 100% |
| **Totals** | | **35,508,500** | **9,152,744** | | | **32,745,000** | **7,680,894** | | | **68,253,500** | **16,833,638** | | |
| Revenue | | (8,232,387) | | | | (5,486,762) | | | | (13,719,149) | | | |
| **Net Debt** | | **27,276,113** | | | | **27,258,238** | | | | **54,534,351** | | | |

| Fiscal Year | | Parking/Transportation Fund | | | | Debt Service Fund | | | | Total Governmental Funds | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Principal | Interest | | | Principal | Interest | | | Principal | Interest | | |
| FY 25 | 1 | 1,375,000 | 957,263 | 6% | 6% | 170,000 | 14,000 | 49% | 49% | 9,800,000 | 3,703,596 | 11% | 11% |
| FY 26 | 2 | 1,420,000 | 888,513 | 6% | 12% | 180,000 | 7,200 | 51% | 100% | 9,405,000 | 3,258,746 | 10% | 21% |
| FY 27 | 3 | 1,485,000 | 817,513 | 6% | 18% | | | | | 8,300,000 | 2,835,771 | 9% | 30% |
| FY 28 | 4 | 1,540,000 | 743,263 | 6% | 24% | | | | | 7,605,000 | 2,455,746 | 8% | 38% |
| FY 29 | 5 | 1,605,000 | 666,263 | 7% | 31% | | | | | 6,748,500 | 2,106,346 | 7% | 45% |
| FY 30 | 6 | 1,665,000 | 586,013 | 7% | 38% | | | | | 6,255,000 | 1,797,669 | 7% | 52% |
| FY 31 | 7 | 1,725,000 | 516,513 | 7% | 45% | | | | | 5,670,000 | 1,528,169 | 6% | 58% |
| FY 32 | 8 | 1,785,000 | 444,613 | 7% | 53% | | | | | 5,685,000 | 1,285,294 | 6% | 64% |
| FY 33 | 9 | 1,815,000 | 396,475 | 8% | 60% | | | | | 4,615,000 | 1,115,156 | 5% | 69% |
| FY 34 | 10 | 1,880,000 | 320,975 | 8% | 68% | | | | | 4,680,000 | 941,869 | 5% | 74% |
| FY 35 | 11 | 1,915,000 | 262,750 | 8% | 76% | | | | | 4,520,000 | 788,356 | 5% | 79% |
| FY 36 | 12 | 1,965,000 | 201,531 | 8% | 84% | | | | | 4,565,000 | 643,763 | 5% | 84% |
| FY 37 | 13 | 1,540,000 | 136,781 | 6% | 91% | | | | | 3,880,000 | 495,294 | 4% | 88% |
| FY 38 | 14 | 550,000 | 84,781 | 2% | 93% | | | | | 2,635,000 | 366,744 | 3% | 91% |
| FY 39 | 15 | 555,000 | 62,481 | 2% | 96% | | | | | 2,385,000 | 274,406 | 3% | 94% |
| FY 40 | 16 | 290,000 | 42,600 | 1% | 97% | | | | | 1,890,000 | 198,600 | 2% | 96% |
| FY 41 | 17 | 290,000 | 31,000 | 1% | 98% | | | | | 1,885,000 | 137,913 | 2% | 98% |
| FY 42 | 18 | 290,000 | 19,400 | 1% | 99% | | | | | 1,200,000 | 77,325 | 1% | 99% |
| FY 43 | 19 | 195,000 | 7,800 | 1% | 100% | | | | | 765,000 | 30,600 | 1% | 100% |
| **Totals** | | **23,885,000** | **7,186,525** | | | **350,000** | **21,200** | | | **92,488,500** | **24,041,363** | | |
| Revenue | | | | | | (350,000) | (21,200) | | | (14,069,149) | (21,200) | | |
| **Net Debt** | | **23,885,000** | | | | **0** | **0** | | | **78,419,351** | **24,020,163** | | |

| Fiscal Year | | Water Fund | | | | Sewer Fund | | | | Total City of Portsmouth | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Principal | Interest | | | Principal | Interest | | | Principal | Interest | | |
| FY 25 | 1 | 2,870,000 | 1,047,825 | 10% | 10% | 7,600,226 | 3,133,958 | 6% | 6% | **20,270,226** | **7,885,378** | 8% | 8% |
| FY 26 | 2 | 2,860,000 | 928,237 | 10% | 19% | 7,140,320 | 2,889,633 | 6% | 13% | **19,405,320** | **7,076,615** | 8% | 17% |
| FY 27 | 3 | 2,860,000 | 811,499 | 10% | 29% | 7,035,320 | 2,653,277 | 6% | 18% | **18,195,320** | **6,300,547** | 8% | 24% |
| FY 28 | 4 | 2,845,000 | 700,786 | 10% | 39% | 6,935,320 | 2,434,621 | 6% | 24% | **17,385,320** | **5,591,153** | 7% | 31% |
| FY 29 | 5 | 2,671,500 | 591,198 | 9% | 48% | 6,430,485 | 2,215,691 | 5% | 30% | **15,850,485** | **4,913,235** | 7% | 38% |
| FY 30 | 6 | 1,850,000 | 491,100 | 6% | 54% | 6,310,486 | 2,016,853 | 5% | 35% | **14,415,486** | **4,305,622** | 6% | 44% |
| FY 31 | 7 | 1,845,000 | 424,500 | 6% | 60% | 6,207,000 | 1,826,344 | 5% | 40% | **13,722,000** | **3,779,013** | 6% | 50% |
| FY 32 | 8 | 1,845,000 | 356,750 | 6% | 67% | 5,942,488 | 1,638,121 | 5% | 46% | **13,472,488** | **3,280,165** | 6% | 55% |
| FY 33 | 9 | 1,590,000 | 300,044 | 5% | 72% | 5,407,488 | 1,482,924 | 5% | 50% | **11,612,488** | **2,898,124** | 5% | 60% |
| FY 34 | 10 | 1,585,000 | 245,963 | 5% | 77% | 4,932,694 | 1,328,676 | 4% | 54% | **11,197,694** | **2,516,507** | 5% | 65% |
| FY 35 | 11 | 1,410,000 | 192,925 | 5% | 82% | 4,252,694 | 1,193,860 | 4% | 58% | **10,182,694** | **2,175,141** | 4% | 69% |
| FY 36 | 12 | 1,160,000 | 151,613 | 4% | 86% | 4,202,694 | 1,091,862 | 4% | 61% | **9,927,694** | **1,887,237** | 4% | 73% |
| FY 37 | 13 | 955,000 | 118,738 | 3% | 89% | 4,052,694 | 991,021 | 3% | 65% | **8,887,694** | **1,605,052** | 4% | 77% |
| FY 38 | 14 | 845,000 | 91,469 | 3% | 92% | 3,907,694 | 894,017 | 3% | 68% | **7,387,694** | **1,352,229** | 3% | 80% |
| FY 39 | 15 | 715,000 | 67,025 | 2% | 95% | 3,752,694 | 801,001 | 3% | 71% | **6,852,694** | **1,142,432** | 3% | 83% |
| FY 40 | 16 | 620,000 | 46,781 | 2% | 97% | 3,432,694 | 714,047 | 3% | 74% | **5,942,694** | **959,428** | 2% | 85% |
| FY 41 | 17 | 615,000 | 29,100 | 2% | 99% | 3,427,694 | 636,593 | 3% | 77% | **5,927,694** | **803,605** | 2% | 88% |
| FY 42 | 18 | 320,000 | 11,600 | 1% | 100% | 3,072,694 | 559,239 | 3% | 80% | **4,592,694** | **648,164** | 2% | 90% |
| FY 43 | 19 | | | | | 2,672,694 | 488,985 | 2% | 82% | **3,437,694** | **519,585** | 1% | 91% |
| FY 44 | 20 | | | | | 2,617,694 | 433,231 | 2% | 84% | **2,617,694** | **433,231** | 1% | 92% |
| FY 45 | 21 | | | | | 2,617,694 | 379,677 | 2% | 87% | **2,617,694** | **379,677** | 1% | 93% |
| FY 46 | 22 | | | | | 2,617,694 | 326,123 | 2% | 89% | **2,617,694** | **326,123** | 1% | 95% |
| FY 47 | 23 | | | | | 2,617,694 | 272,569 | 2% | 91% | **2,617,694** | **272,569** | 1% | 96% |
| FY 48 | 24 | | | | | 2,617,694 | 219,016 | 2% | 93% | **2,617,694** | **219,016** | 1% | 97% |
| FY 49 | 25 | | | | | 2,617,694 | 165,462 | 2% | 95% | **2,617,694** | **165,462** | 1% | 98% |
| FY 50 | 26 | | | | | 2,617,694 | 111,908 | 2% | 98% | **2,617,694** | **111,908** | 1% | 99% |
| FY 51 | 27 | | | | | 2,617,694 | 58,354 | 2% | 100% | **2,617,694** | **58,354** | 1% | 100% |
| FY 52 | 28 | | | | | 60,000 | 4,800 | 0% | 100% | **60,000** | **4,800** | 0% | 100% |
| FY 53 | 29 | | | | | 60,000 | 2,400 | 0% | 100% | | | | |
| **Totals** | | **29,461,500** | **6,607,150** | | | **117,777,628** | **30,964,260** | | | **239,667,628** | **61,610,373** | | |
| Revenue | | | | | | (35,604,445) | | | | (49,673,594) | (21,200) | | |
| **Net Debt** | | **29,461,500** | | | | **82,173,183** | | | | **189,994,034** | **61,589,173** | | |

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# I. VEHICLES AND EQUIPMENT

# VE-07-FD-01: Ambulance Replacement Program

| | |
|---|---|
| Department | Fire Department |
| Project Location | Station 2 (2010 Lafayette Road) |
| Project Type | Replacement or Purchase of Vehicle |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project continues the CIP Rolling Stock Replacement Program for the City's ambulances. The City's 2017 Ambulance is scheduled for replacement in FY26. Funds for this vehicle include the purchase of the vehicle with a complete set-up including radio, lettering, striping, and equipment. One-third of the total cost of the vehicle is requested each year with a purchase after the third year.

| Studies Identified & Useful Website Links: |
|---|
| • Self-Assessment of FD Operations: April 2015<br>• Fire Department Webpage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding request increased in all fiscal years, reflecting changes in production costs. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 9% | | | | | | | $0 | $140,000 | $140,000 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 91% | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $870,000 | $475,000 | $1,345,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $145,000 | $870,000 | $615,000 | $1,485,000 |

# VE-14-FD-02: Vehicle Replacement – Fire Engine #4

| | |
|---|---|
| Department | Fire Department |
| Project Location | Station 1 (170 Court Street) |
| Project Type | Replacement or Purchase of a Vehicle |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project continues the CIP Rolling Stock Replacement Program for large apparatus. This allocation will purchase a new, custom rescue pumper with a 4-person cab with medical compartments, five-hundred (500) gallon water tank, 1,500 GPM pump, and related equipment to replace the 2006 Emergency One pumper. Funding would provide a complete vehicle set-up including radio, lettering and striping as well as equipment.

Studies Identified & Useful Website Links:

- Self-Assessment of FD Operations: April 2015
- Fire Department Webpage
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $800,000 | | | | | | $800,000 | $0 | $800,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $800,000 | $0 | $0 | $0 | $0 | $0 | $800,000 | $0 | $800,000 |

# VE-25-FD-03: Vehicle Replacement – Marine #1

| | |
|---|---|
| Department | Fire Department |
| Project Location | Citywide |
| Project Type | Replacement or Purchase of a Vehicle |
| Commence FY | 2027 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project is to plan for the replacement of Marine #1. The Coast Guard is looking at its staffing challenges and subsequently lifesaving missions and may require more assistance from local partners. This project would be to increase the safety of the operating platform for crews on the water. The Fire Department is working regionally to address potential coverage issues in the marine environment and this project will address any shortfalls.

| Studies Identified & Useful Website Links: |
|---|
| • Fire Department Webpage |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25, funding in an outyear. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | $250,000 | | | | $250,000 | $0 | $250,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $250,000 | $0 | $0 | $0 | $250,000 | $0 | $250,000 |

# VE-24-FD-04: Vehicle Replacement – Tower #5

| | |
|---|---|
| Department | Fire Department |
| Project Location | Station 2 (2010 Lafayette Rd) |
| Project Type | Replacement or Purchase of a Vehicle |
| Commence FY | FY 2028 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project continues the CIP Rolling Stock Replacement Program for large apparatus. This allocation will purchase a new aerial ladder, with a 6-person cab with medical compartments, three-hundred (300) gallon water tank, 2,000 GPM pump, and related equipment to replace this 2007 Ferrara Tower Ladder. Funding would provide a complete vehicle set-up including radio, lettering and striping as well as equipment.

| Studies Identified & Useful Website Links: |
|---|
| • Fire Department Webpage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | | $1,500,000 | | | $1,500,000 | $0 | $1,500,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $1,500,000 | $0 | $0 | $1,500,000 | $0 | $1,500,000 |

# VE-24-FD-05: Vehicle Replacement – Engine #6

| | |
|---|---|
| Department | Fire Department |
| Project Location | Station 1 (170 Court Street) |
| Project Type | Replacement or Purchase of a Vehicle |
| Commence FY | FY 2029 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project continues the CIP Rolling Stock Replacement Program for large apparatus. This allocation will purchase a new custom pumper with a 6-person cab with medical compartments, five-hundred (500) gallon water tank, 1,500 GPM pump, and related equipment to replace this 2011 Emergency One pumper. Purchase of this apparatus would include a complete set-up including radio, lettering and striping as well as equipment.

| Studies Identified & Useful Website Links: |
|---|
| • Fire Department Webpage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | | | $800,000 | | $800,000 | $0 | $800,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $0 | $800,000 | $0 | $800,000 | $0 | $800,000 |

# VE-25-FD-06: Vehicle Replacement – Engine #3

| | |
|---|---|
| Department | Fire Department |
| Project Location | Station 1 (170 Court Street) |
| Project Type | Replacement or Purchase of a Vehicle |
| Commence FY | FY 2030 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project continues the CIP Rolling Stock Replacement Program for large apparatus and will fund the replacement of Fire Engine 3. This allocation will purchase a new custom pumper with a 6-person cab with medical compartments, seven-hundred fifty (750) gallon water tank, 1,500 GPM pump, and related equipment to replace this 2015 Emergency One pumper. Purchase of this apparatus would include a complete set-up including radio, lettering and striping as well as equipment.

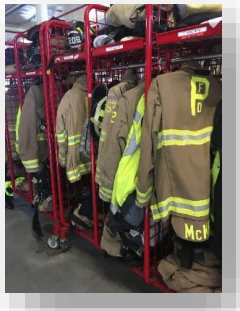
| Studies Identified & Useful Website Links: |
|---|
| • Fire Department Webpage |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New Project for FY25, funding request in an outyear. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | | | | $800,000 | $800,000 | $0 | $800,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $0 | $0 | $800,000 | $800,000 | $0 | $800,000 |

# VE-18-FD-07: Personal Protective Clothing Replacement

| | |
|---|---|
| Department | Fire Department |
| Project Location | Fire Station 1, Station 2 and Station 3 |
| Project Type | Equipment (non-vehicular) |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |



| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project will continue the practice of replacing personal protective clothing every five (5) years so that all personnel have a primary and secondary set of structural firefighting gear that is no more than ten (10) years old as required by NFPA 1851. Best practices of firefighter cancer prevention allows each firefighter to have a secondary set of gear so that an acutely soiled set can be cleaned while the firefighter remains on duty and in service.

The funds are dispersed over a 3-year period to match the recommended replacement of existing gear. One-third of the members will replace gear for three (3) consecutive years.

| Studies Identified & Useful Website Links: |
|---|
| • Fire Department Webpage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 78% | $70,000 | | | $80,000 | $80,000 | $80,000 | $310,000 | $180,000 | $490,000 |
| Fed/ State (ARPA) | 22% | | | | | | | $0 | $140,000 | $140,000 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $70,000 | $0 | $0 | $80,000 | $80,000 | $80,000 | $310,000 | $320,000 | $630,000 |

# VE-24-PD-08: Police Body Cameras

| | |
|---|---|
| Department | Police Department |
| Project Location | Police Department (Junkins Avenue) |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2021 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | High ($100,001 or more) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: In 2018, a 7-member resident sub-committee assessed "the pros and cons of requiring PPD officers to use body-worn cameras" and concluded not to purchase BWC at that time. Since then, however, developments throughout the state, in the form of the Governor's Commission on Law Enforcement Accountability (LEACT), and the legislature enacting a fund to assist with the initial purchase costs of BWC, influenced a recent decision to revisit this project. In October 2021, the Police Commission adopted a set of recommendations to "improve police practices." These recommendations were the result of a year-long collaboration between the police staff, the Police Commission, and a newly formed Portsmouth Resident Advocacy Group. The recommendation under 5(d) of the document is to re-assess the feasibility of Body Worn Cameras (BWC). This project is anticipated to include staff, equipment, and vendor services. The department will evaluate vendors, products, services, and price to meet the expectations of the PPD and the public. We will seek grants to offset the cost of this project.

**Studies Identified & Useful Website Links:**

- "Improving Police Department Practices" October 13, 2021
- Portsmouth Police Department Homepage
- FY24-FY29 CIP (Prior Year) Project Sheet

**Notes of Changes in Funding Plan from FY24-29 CIP:**

The Department recently received a quote the same vendor that provides the City PPD's tasers. Pricing featured in the prior year's project was for equipment only. Pricing was adjusted to reflect the addition of storage, user licenses, and features (such as video tagging and redaction software).

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 1% | $50,000 | | | | | | $50,000 | $0 | $50,000 |
| Bond/ Lease | 99% | $1,237,000 | | | | | $2,073,000 | $3,310,000 | $0 | $3,310,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $1,287,000 | $0 | $0 | $0 | $0 | $2,073,000 | $3,360,000 | $0 | $3,360,000 |

# VE-25-PD-09: Taser Replacement Cycle

| | |
|---|---|
| Department | Police Department |
| Project Location | Police Department (Junkins Avenue) |
| Project Type | Equipment (non-vehicular) |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: Tasers are a "less than lethal" tool officers carry and, at times, use to de-escalate situations. Originally, tasers cost about $700-$800 a piece and had a solid life-cycle (10-12 years). With the evolution of taser technology, the unit has become very sophisticated, is more accurate, having what is akin to a minicomputer. The unit can also detail each deployment and can also be connected to a Police Officer's body camera.

The improvement in the taser's technology comes at a cost and a shorter life cycle (5 years). The average cost for a taser bundle is now approximately $7,100 each.

Tasers are deployed to all sworn and auxiliary officers. These devices also required a lot of training and residual training for split second use.

| Studies Identified & Useful Website Links: |
|---|
| • Portsmouth Police Department Homepage |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25 CIP. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $533,500 | | | | | $860,000 | $1,393,500 | $0 | $1,393,500 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $533,500 | $0 | $0 | $0 | $0 | $860,000 | $1,393,500 | $0 | $1,393,500 |

# VE-25-PD-10: In-Cruiser and Handheld Radars

| | |
|---|---|
| Department | Police Department |
| Project Location | Police Department (Junkins Ave) |
| Project Type | Equipment (non-vehicular) |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The biggest complaint by Portsmouth residents relates to cars speeding on the city roadways. The Police Department dedicates resources to tackle this problem to keep the streets safe. In-cruiser and Handheld Speed Radars are the best tool for enforcement activities. The current units have become antiquated and are at the end of their 8 to10-year life cycle. The department is requesting to replace twelve (12) in-cruiser radars and two (2) hand-held devices.

| Studies Identified & Useful Website Links: |
|---|
| • Portsmouth Police Department Homepage |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25 CIP. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $53,000 | | | | | | $53,000 | $0 | $53,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $53,000 | $0 | $0 | $0 | $0 | $0 | $53,000 | $0 | $53,000 |

# VE-23-PW-11: Brine Equipment

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Equipment (non-vehicular) |
| Commence FY | 2024 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: This piece of equipment will provide a proven and safe method to pre-treat roads for winter. Brine is commonly used in anti-icing operations. It is made by mixing salt in water to approximately a 23% solution by weight (23% salt / 77% water). This type of treatment contributes less salt to local water bodies. The equipment will assist in the City's compliance with the Municipal Separate Storm Sewer System (MS4) permit.

| Studies Identified & Useful Website Links: |
|---|
| • Department of Public Works – Highway Division<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding moved to Stormwater for FY25. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 50% | | | | | | | $0 | $55,000 | $55,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (Stormwater) | 50% | $55,000 | | | | | | $55,000 | $0 | $55,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $55,000 | $0 | $0 | $0 | $0 | $0 | $55,000 | $55,000 | $110,000 |

# II. BUILDINGS AND INFRASTRUCTURE

# BI-24-FD-12: Fire Station Security Upgrade

| | |
|---|---|
| Department | Fire Department |
| Project Location | Fire Station 1, Station 2 and Station 3 |
| Project Type | Equipment, non-vehicular |
| Commence FY | 2024 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,002 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project provides safety and security to the staff of the Fire Department in addition to securing the inventory and assets of the Department. The goal is to hire a consultant to help identify needs, the appropriate technology, and potential future needs of the Fire Department and then utilize this data to identify and install a security system for the storerooms, offices and public entrances of the buildings. This new security system would require the use of a key card or fob to grant authorized access. The system would also add cameras in addition to tying in existing cameras to the security system. Additionally, computer software and hardware to support the system and its anticipated growth will be identified.

| Studies Identified & Useful Website Links: |
|---|
| • Fire Department Webpage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $150,000 | | | | | | $150,000 | $20,000 | $170,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $150,000 | $0 | $0 | $0 | $0 | $0 | $150,000 | $20,000 | $170,000 |

# BI-25-FD-13: Fire Station 1 - Roof Replacement

| | |
|---|---|
| Department | Fire Department |
| Project Location | Station 1 (170 Court Street) |
| Project Type | Non-Recurring Rehabilitation of a Facility |
| Commence FY | 2028 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The roof replacement cost is an estimated cost to completely remove all of the existing roof assembly down to the structural decking and replace with materials that will meet current building code regulations.

| Studies Identified & Useful Website Links: |
|---|
| • Study: Roof Consultant Report |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25, funding request in an out year. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | | | | $170,000 | | | $170,000 | $0 | $170,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $170,000 | $0 | $0 | $170,000 | $0 | $170,000 |

# BI-15-PD-14: New Police Department Facility

| | |
|---|---|
| Department | Police Department |
| Project Location | To Be Determined |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | To Be Determined |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | High ($100,001 or more) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The results of the space needs study conducted in FY14 determined the current Police facility no longer meets the needs of the Department. This project would fund the design and construction of a new facility after a site selection study and conceptual design are complete.

In FY22, $1,400,000 was approved in the CIP to fund the preliminary designs once prospective sites were chosen. In FY23, an additional $2,800,000 was allocated to complete the pre-construction process and provide the necessary documents and information needed to make a final decision regarding construction (this funding was approved as part of the budget process but has yet to be authorized).

Note: The cost estimates provided are based on those provided in a prior study and the pricing is escalated to the FY24 /estimated rates.

Studies Identified & Useful Website Links:

- Portsmouth Community Policing Facility
- Police Department Facility Study
- Portsmouth Police Department Homepage
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $38,000,000 | | | | | | $38,000,000 | $4,200,000 | $42,200,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $38,000,000 | $0 | $0 | $0 | $0 | $0 | $38,000,000 | $4,200,000 | $42,200,000 |

# BI-21-PD-15: Police Deficiencies and Repair Project

| | |
|---|---|
| Department | Police Department |
| Project Location | Police Department (Junkins Ave) |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2021 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: A 2014 space needs study of the police facility identified deficiencies in the space allocated to the police department, as well as, operational deficiencies in function. In addition, a 2018 public presentation from a public safety architect provided insight into some of the unique needs and requirements of a police facility. Although a funding request for a new facility has been included in the CIP plan since 2015, other citywide projects have had to take precedence. A new police facility is still the goal, and preliminary steps have been taken with monies appropriated for this effort.

In the interim, the current facility has needed significant repair and upgrades to make it safe and functional. Although initial projects were identified in FY21, the funding has been used to cover mold and asbestos abatement, and restoration of the areas after the contaminated materials were removed. Luckily, some of the restoration work overlapped with projects originally identified. With the abatement project coming to a close in FY23, the department will resume working on the projects that have been on hold. It should be noted: if the police department moves into a new facility, all the necessary repairs done to the current facility will benefit any city department moving into the space.

The remaining projects include: upgrade HVAC filtration in the range, security, ADA compliance, server room upgrade, RDC (redundant/disaster recovery center) upgrade at Fire Station II, dispatch upgrade, updating old lighting throughout the PPD, evidence processing and submittal areas upgrade, renovation of former generator rooms for equipment storage, archive space, and gym area, K9 office conversion, and upgrade back parking lot surface and security fencing.

**Studies Identified & Useful Website Links:**

- Police Department Facility Study
- Portsmouth Police Department Homepage
- FY24-FY29 CIP (Prior Year) Project Sheet

**Notes of Changes in Funding Plan from FY24-29 CIP:**

Monies added for FY25 due to additional work needed for this project as well as higher costs than anticipated for existing projects.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $400,000 | | | | | | $400,000 | $1,600,000 | $2,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $400,000 | $0 | $0 | $0 | $0 | $0 | $400,000 | $1,600,000 | $2,000,000 |

# BI-07-SC-16: School Facilities Capital Improvements

| | |
|---|---|
| Department | School Department |
| Project Location | District Wide |
| Project Type | Rehabilitation of Existing Facilities |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Minimal ($5,002 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The Portsmouth School Department has maintenance responsibilities for seven (7) buildings and the grounds that accompany them. These appropriations are used for buildings and grounds improvement projects including paving, roofing, energy efficiency upgrades, infrastructure replacement, and security enhancements. FY30 funding will support air handling upgrades in high school spaces impacted by State supported renovation of the CTE Center.

| Studies Identified & Useful Website Links: |
|---|
| • Portsmouth School Department Homepage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| FY30 Funding of $1 million to complete air handling upgrades in high school spaces intertwined with CTE spaces under renovation with state funding |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $650,000 | $650,000 | $1,000,000 | | | $1,000,000 | $3,300,000 | $3,650,000 | $6,950,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $650,000 | $650,000 | $1,000,000 | $0 | $0 | $1,000,000 | $3,300,000 | $3,650,000 | $6,950,000 |

# BI-07-SC-16: SCHOOL FACILITIES CAPITAL IMPROVEMENTS

| Facility/School | Improvement Project | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals |
|---|---|---|---|---|---|---|---|---|
| District Wide | Paving / Exterior Lighting Improvements | $400,000 | $400,000 | $200,000 | | | | $1,000,000 |
| District Wide | Roof Replacement | $250,000 | $250,000 | $250,000 | | | | $750,000 |
| High School | Athletic Complex Upgrades (Irrigation, Infrastructure) | | | $225,000 | | | | $225,000 |
| High School | Security Upgrades - Doors & Hardware, Surveillance | | | $100,000 | | | | $100,000 |
| High School | Interior Upgrades - Painting / Wall Tile | | | $125,000 | | | | $125,000 |
| High School | Energy Efficiency Upgrades Lighting/Mechanical | | | $100,000 | | | | $100,000 |
| High School | Life Safety, Security and Mechanical Infrastructure | | | | | | $1,000,000 | $1,000,000 |
| District Wide | Mechanical Infrastructure Upgrades | | | | | | | $0 |
| District Wide | Flooring Improvements | | | | | | | $0 |
| **Total District Wide City Capital Improvement** | | **$650,000** | **$650,000** | **$450,000** | **$0** | **$0** | **$0** | **$1,750,000** |
| **Total High School Capital Improvement** | | **$0** | **$0** | **$550,000** | **$0** | **$0** | **$1,000,000** | **$1,550,000** |
| **Total R.J. Lister Academy Capital Improvement** | | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** |
| **TOTAL IMPROVEMENTS** | | **$650,000** | **$650,000** | **$1,000,000** | **$0** | **$0** | **$1,000,000** | **$3,300,000** |

# BI-08-SC-17: Elementary Schools Upgrade

| Department | School Department |
|---|---|
| Project Location | Elementary Schools (Dondero School, Little Harbour, and New Franklin ) |
| Project Type | Rehabilitation of Existing Facilities |
| Commence FY | 2016 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,002 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This appropriation continues upgrading of the infrastructure of our Elementary Schools. Comprehensive renovation of the New Franklin interior is projected for Fiscal Years 2026 and 2029 and will address accessibility issues, upgrades to school entrance security, and building storage needs.

| Studies Identified & Useful Website Links: |
|---|
| • Portsmouth School Department Homepage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| FY29 Funding increased by $500,000 for anticipated cost of inflation |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 1% | | | | | | | $0 | $200,000 | $200,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 99% | | $3,000,000 | | | $2,500,000 | | $5,500,000 | $9,600,000 | $15,100,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $3,000,000 | $0 | $0 | $2,500,000 | $0 | $5,500,000 | $9,800,000 | $15,300,000 |

# BI-25-SC-18: Renovation of Portsmouth Career and Technical Education Center

| Department | School Department |
|---|---|
| Project Location | CTE Center at PHS, Andrew Jarvis Drive |
| Project Type | Rehabilitation of an Existing Facilities |
| Commence FY | 2030 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Minimal ($5,002 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The Portsmouth Career Technical Education Center is co-located on Andrew Jarvis Drive with Portsmouth High School. The program is an important element of ensuring students graduate college and career ready. The State of New Hampshire capital budget supports renovation of CTE facilities on a roughly 25-year rotation. The 30-31 biennium is expected to bring that support to Portsmouth. Renovation will include safety and security upgrades, updating of classroom and lab spaces, and introduction of facilities to support new programming initiatives to match needs in the labor market.

| Studies Identified & Useful Website Links: |
|---|
| • Portsmouth School Department Homepage |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for the FY25 CIP showing anticipated State Capital Budget match in 30-31 Biennium. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 70% | | | | | | $7,000,000 | $7,000,000 | $0 | $7,000,000 |
| Bond/ Lease | 30% | | | | | | $3,000,000 | $3,000,000 | $0 | $3,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $0 | $0 | $10,000,000 | $10,000,000 | $0 | $10,000,000 |

# BI-17-FI-19: Permanent Records Storage Facilities

| | |
|---|---|
| Department | Finance Department/ City Clerk |
| Project Location | City Hall (1 Junkins Ave) |
| Project Type | New Construction/ Refurbishment |
| Commence FY | 2018 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: In FY18, the CIP funded the rehabilitation of the first permanent document storage area (City archive) within City Hall. This Permanent Records Room features a new waterless Inergen® Gas Fire Suppression System (nitrogen 52%/argon 40%/carbon dioxide 8%), local temperature control and monitoring, humidity monitoring and archival quality shelving for many of the City's oldest and most important and legally required records not located in the City Clerk's vault. The facility also features a separate document quarantine area for documents contaminated with mold, red rot or maladies that may potentially spread to healthy documents. The Archive houses records from many departments including the City Clerk, Finance, Planning, Public Works, Human Resources, Trustees, and the Fire Department. The documents in this room range from the 1700's to current permanent records. All funding requests help with the expansion and continued maintenance of the current facility in addition to the relocation or building of a future archival space.

**Studies Identified & Useful Website Links:**

- Study: Goodman Report on the Survey of the Municipally Owned Historic Artifacts and Documents in Portsmouth, NH
- FY24-FY29 CIP (Prior Year) Project Sheet

**Notes of Changes in Funding Plan from FY24-29 CIP:**

Funding was reduced for FY25 due to funding constraints.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $25,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $525,000 | $150,000 | $675,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $25,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $525,000 | $150,000 | $675,000 |

# BI-18-FI-20: Permanent/Historic Document Restoration, Preservation, and Scanning

| | |
|---|---|
| Department | Finance Department/ City Clerk |
| Project Location | City Hall (1 Junkins Ave) |
| Project Type | Other |
| Commence FY | 2018 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: By law, the City is required to keep certain types of documents in perpetuity (i.e. tax warrants, assessing information, city council records, etc.). These historic/permanent documents, ranging in age from 20 – 300+ years, are not in current city use day-to-day by City Staff, and are being stored in the City Hall archive. Many of these permanent records are showing signs of maladies including red rot and mold that increase the rate of deterioration. The requested funds will be utilized to restore/preserve these permanent documents as well as scan them for preservation purposes to digital format (pdf/a) and/or microfilm. The monies requested fund both City Clerk and Finance Department Archival Records preservation. The total amount of funds needed to preserve the contaminated documents, overtime, will continue to grow as preservation costs increase and is likely to last decades with the current funding plan. In October FY24 the Finance Department was awarded its 7th consecutive MoosePlate Grant from the NH State Library to preserve additional documents ($9,695.80), bringing the total of grant funding to $65,474. A list of documents with current preservation needs can be found in Appendix IV.

| Studies Identified & Useful Website Links: |
|---|
| • Study: Goodman Report on the Survey of the Municipally Owned Historic Artifacts and Documents in Portsmouth, NH<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Reduced funding in FY25 due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 96% | $100,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $850,000 | $398,000 | $1,248,000 |
| Fed/ State | 4% | | | | | | | $0 | $55,508 | $55,508 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $100,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $850,000 | $453,508 | $1,303,508 |

# BI-24-FI-21: Disposition of Municipal Records

| | |
|---|---|
| Department | Finance Department/ City Clerk |
| Project Location | City Hall (1 Junkins Ave) |
| Project Type | Other |
| Commence FY | 2018 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

**Description**: Per RSA 33a, the City is required to keep many records in perpetuity. A number of these records are still actively utilized by staff on a day-to-day basis and are not held in the City's Archive. Many of these records are original paper copies of records that have no digital backup of any kind. This project would provide funds to scan these documents to a PDF/A format (as required by NH State law for permanent record storage) as a digital backup in the case of damage, destruction or theft of the original paper documents. The purpose of this project is to not only ensure compliance with the NH RSA but to also ensure continuity of services in the case of an emergency or disaster that links access to the paper originals.

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

Studies Identified & Useful Website Links:

- Study: Goodman Report on the Survey of the Municipally Owned Historic Artifacts and Documents in Portsmouth, NH
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $25,000 | $25,000 | $25,000 | | | | $75,000 | $25,000 | $100,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $25,000 | $25,000 | $25,000 | $0 | $0 | $0 | $75,000 | $25,000 | $100,000 |

# BI-25-LI-22: Historic Record Artifact Conservation and Storage Assessment

| | |
|---|---|
| Department | Public Library |
| Project Location | Citywide |
| Project Type | Other |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: A conservation assessment is a necessary first step in creating a public/private archival facility. It will determine the scale and scope of the collections held by multiple city departments including Finance, City Clerk, Library, Legal, School Department, Police and Fire, along with collections held by the Portsmouth Athenaeum, Strawbery Banke and the Portsmouth Historical Society. The storage assessment (funded in FY26) will help in dictating needs for a potential public/private shared archival facility for the City and aforementioned organizations. This public/private facility would reduce redundancies and make a more cost- effective long-term solution to the broad shared interests in protecting Portsmouth history for future generations.

| Studies Identified & Useful Website Links: |
|---|
| Mayor's Blue Ribbon Task Force on Historical Archives |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New Project for FY25 – Citizens Request from the Mayor's Blue Ribbon Task Force on Historical Archives. Recommended as a project by the City Council Citizens Requests CIP Subcommittee. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $150,000 | $75,000 | | | | | $225,000 | $25,000 | $250,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $150,000 | $75,000 | $0 | $0 | $0 | $0 | $225,000 | $25,000 | $250,000 |

# BI-25-ED-23: Public Art Trust Fund

| | |
|---|---|
| Department | Economic and Community Development Department |
| Project Location | Citywide |
| Project Type | Other |
| Commence FY | 2025 |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The Public Art Review Committee was established for the purpose of reviewing and making recommendations to the City Council on all issues related to Public Art on City property. This committee plans to apply for state and federal grants in the future. Many state and federal grants require matching funds from the applicant, and this is the primary purpose for this request.

| Studies Identified & Useful Website Links: |
|---|
| • Public Art Review Committee<br>• Economic Development Department |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New Project for FY25 – Citizens Request from the city's Public Art Review Committee (PARC). Recommended as a project by the City Council Citizens Requests CIP Subcommittee. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $25,000 | $25,000 | $25,000 | $25,000 | $25,000 | $25,000 | $150,000 | $25,000 | $175,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $25,000 | $25,000 | $25,000 | $25,000 | $25,000 | $25,000 | $150,000 | $25,000 | $175,000 |

# BI-25-HL-24: Sheltering and Public Health Resources

| | |
|---|---|
| Department | Health Department |
| Project Location | TBD |
| Project Type | Construction or Expansion of a New Public Facility or Public Infrastructure |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: This Health Department CIP request is to address local sheltering capacity needs in a critical event. Specifically, the first $250,000 is to cover an additional 204 durable medical-grade cots to outfit a shelter, and an additional two (2) Shelter Supply trailers to transport them, increasing our local sheltering capacity from 46 to 250 beds. This will also allow us to participate in a regional shelter if a critical event is too large to handle locally.

The next amount of funds requested will either be used to reinforce existing facility structures to increase the ability to safely shelter residents without taking critical infrastructure offline. This is vital for continuity of municipal operations and community recovery. The focus of assessment and reinforcement of existing structures for sheltering/evacuation purposes is to ensure any facility receiving residents is safe to withstand the emergency at hand, such as hurricane-force winds, ice/snow loads, severe rain events and seismic aftershocks; or to build a stand-alone facility for the storage, maintenance, inventory rotation, deployment and security of sheltering equipment and supplies. Potentially both will be needed.

| Studies Identified & Useful Website Links: |
|---|
| • Health Department Webpage |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 27% | $250,000 | | | | | | $250,000 | $25,000 | $275,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 73% | | $750,000 | | | | | $750,000 | $0 | $750,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $250,000 | $750,000 | $0 | $0 | $0 | $0 | $1,000,000 | $25,000 | $1,025,000 |

# BI-95-PL-25: Land Acquisition

| | |
|---|---|
| Department | Planning and Sustainability Department |
| Project Location | Citywide |
| Project Type | Land Acquisition |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project funds the purchase of land that has been determined should protected for conservation and recreation. Ownership is usually sought to secure environmentally sensitive areas to purchase the development rights to a particular parcel, or for some municipal use. Protection may also be provided through the purchase of development rights by way of conservation easements and/or restrictions. Funds can be used as match for leverage on existing grant programs and to support and supplement the City's existing Conservation Fund. Acquisition of land is consistent with the goals and visions stated in the City Master Plan and Open Space Plan.

Studies Identified & Useful Website Links:

- Open Space Plan
- Master Plan 2025
- Conservation Commission
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

This project was funded last year, and this year's request will provide needed funds to allow the acquisition of conservation lands.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 2% | | | | | | | $0 | $25,000 | $25,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 98% | $500,000 | | | | $500,000 | | $1,000,000 | $500,000 | $1,500,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $500,000 | $0 | $0 | $0 | $500,000 | $0 | $1,000,000 | $525,000 | $1,525,000 |

# BI-22-PL-26: Historic District Guidelines Part 2

| | |
|---|---|
| Department | Planning and Sustainability Department |
| Project Location | Citywide |
| Project Type | Design Work or Planning Study |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project funds the update and expands the design guidelines for new construction within the Historic District. These design guidelines are used by applicants and Historic District Commission members in review of building projects requiring a Certificate of Approval in the Historic District. This project should be informed by the Master Plan Update consistent with the updated community vision.

| Studies Identified & Useful Website Links: |
|---|
| • Historic District Commission |
| • Historic District Commission Design Review Guidelines (current) |
| • Master Plan 2025 |
| • Planning & Sustainability Department |
| • FY24-FY29 CIP (Prior Year) Project Sheet |

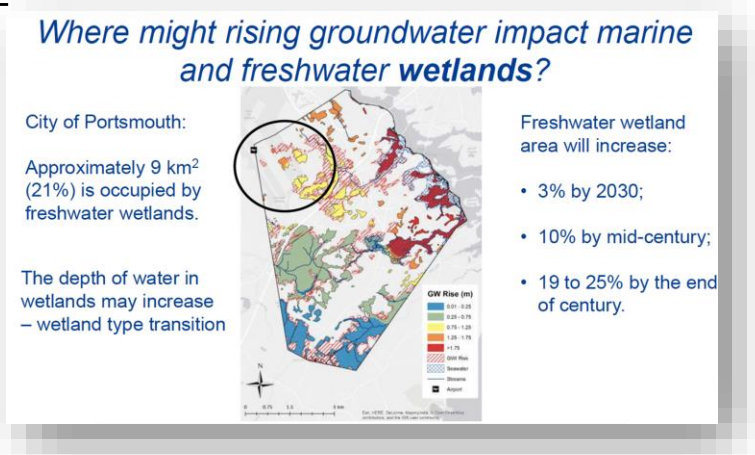
| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $50,000 | | | | | | $50,000 | $0 | $50,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $0 | $0 | $0 | $0 | $0 | $50,000 | $0 | $50,000 |

# BI-23-PL-27: Groundwater Study to Identify Impacts

| | |
|---|---|
| Department | Planning and Sustainability Department |
| Project Location | Focus on lower elevation portions of the municipality |
| Project Type | Design Work or Planning Study |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| **Evaluation Criteria** | **Qualify?** |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |




**Description**: As identified in the Coastal Resilience Initiative, impacts to Municipal infrastructure will increase as the impacts of sea level rise and coastal flooding increase. A study which includes monitoring equipment to better understand the flow of groundwater over time will help identify where issues with infrastructure are going to occur. Additionally, monitoring equipment can serve as an early warning to detect where impacts are likely to occur in the short term.

| Studies Identified & Useful Website Links: |
|---|
| • Coastal Resilience Initiative<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Study was moved from FY24 to FY25 |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | $50,000 | | | | | | $50,000 | $0 | $50,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $0 | $0 | $0 | $0 | $0 | $50,000 | $0 | $50,000 |

# BI-24-PL-28: City of Portsmouth Master Plan Update

| | |
|---|---|
| Department | Planning and Sustainability Department |
| Project Location | Citywide |
| Project Type | Design Work or Planning Study |
| Commence FY | 2024 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: A master plan is a planning document that serves to guide the overall character, physical form and development of a community (RSA 674:2). It describes how, why, where and when to build or rebuild a city. It provides guidance to local officials making decisions on budgets, ordinances, capital improvements, zoning and subdivision matters, and other development-related issues. The Master Plan shall include, at a minimum, the following required sections:

a) A vision section that serves to direct the other sections of the plan. This section shall contain a set of statements which articulate the desires of the citizens affected by the master plan, not only for their locality but for the region and the whole state. It shall contain a set of guiding principles and priorities to implement that vision.

b) A land use section upon which all the following sections shall be based. This section shall translate the vision statements into physical terms. Based on a study of population, economic activity, and natural, historic, and cultural resources, it shall show existing conditions and the proposed location, extent, and intensity of future land use.

Portsmouth last updated their master plan in 2016. At that time, the community articulated a vision for the future of Portsmouth. This included key themes that included goals and strategies for advancing those the community values articulated in those themes. The plan also included focus growth areas where opportunities and challenges were explored, and actions were identified that would guide the development and transformation of those areas.
Under RSA 674:3 Master Plan Preparation – revisions to the plan are recommended every five to ten years. Portsmouth is nearing the end of the planning horizon for the current Master Plan, Portsmouth 2025. The development of a master plan involves significant community involvement to ensure development of the community vision is inclusive and broadly representative. Staff anticipates in a 18-to-24-month process for completing the plan update. Funding would support professional services support for this community-wide process with consultant recruitment beginning in 2024.

**Studies Identified & Useful Website Links:**

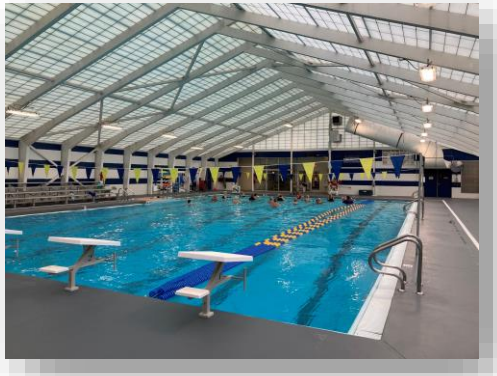
- 674:3 Master Plan Preparation. –
- http://www.gencourt.state.nh.us/rsa/html/LXIV/674/674-3.htm
- 674:2 Master Plan; Purpose and Description. –
- http://www.gencourt.state.nh.us/rsa/html/LXIV/674/674-2.htm
- FY24-FY29 CIP (Prior Year) Project Sheet

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $150,000 | | | | | | $150,000 | $150,000 | $300,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (Rolling Stock) | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (parking) | 0% | | | | | | | $0 | $100,000 | $100,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $150,000 | $0 | $0 | $0 | $0 | $0 | $150,000 | $250,000 | $400,000 |

# BI-24-RC-29: Indoor Pool Facility Needs

| | |
|---|---|
| Department | Recreation |
| Project Location | Indoor Pool (48 Andrew Jarvis Dr) |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2024 |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |



**Description**: With the City re-acquiring the Indoor Pool from Save The Indoor Portsmouth Pool (SIPP), there is a need to set up an on-going capital maintenance plan. These monies would address projects such as locker room, carpeting, painting, and aquatics upgrades. There is also a need for the construction of expanded dedicated pool parking. Many of these projects are necessary to be in compliance with state standards.

| Studies Identified & Useful Website Links: |
|---|
| • Indoor Pool<br>• Recreation Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Increased funding in FY29 for parking construction. Funding split in FY25 and beyond between General Fund and SIPP Trust. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 24% | $32,500 | $32,500 | $32,500 | $32,500 | $32,500 | $32,500 | $195,000 | $0 | $195,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 41% | | | | | $325,000 | | $325,000 | $0 | $325,000 |
| Other (SIPP Trust Transfer) | 35% | $17,500 | $17,500 | $17,500 | $17,500 | $192,500 | $17,500 | $280,000 | $0 | $280,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $50,000 | $50,000 | $50,000 | $550,000 | $50,000 | $800,000 | $0 | $800,000 |

# BI-24-RC-30: South Mill Pond Playground

| | |
|---|---|
| Department | Recreation |
| Project Location | South Mill Pond Playground |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Moderate ($50,000 to $100,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: This project would be to replace the existing South Mill playground with a new, universal design ADA compliant, age-friendly inclusive playground. Along with the playground overhaul, would be the addition of restroom facilities. The ADA compliant, family-friendly facilities would replace the port-a-potties. This area is heavily utilized throughout the year with pickleball, basketball, and tennis courts nearby, as well as Leary Field and the dog park. This area is also host to multiple city events such as the fireworks, farmer's market, and Easter Egg Hunt.

| Studies Identified & Useful Website Links: |
|---|
| • Recreation Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $600,000 | | | | $900,000 | | $1,500,000 | $0 | $1,500,000 |
| Other (Rolling Stock) | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP (Rotary) | 0% | | | | | | | $0 | $15,000 | $15,000 |
| | Totals | $600,000 | $0 | $0 | $0 | $900,000 | $0 | $1,500,000 | $15,000 | $1,515,000 |

# BI-12-RC-31: Existing Outdoor Recreation Field and Facility Improvements

| | |
|---|---|
| Department | Recreation Department |
| Project Location | Various Locations |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2020 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,002 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project includes funding for site improvements to existing fields and recreation facilities. The goal of these improvements is to increase playability and improve services. Site improvements will include addressing drainage issues, improving turf systems, converting practice fields to competition fields, and upgrading infrastructure. The 2015 Recreation Field Report highlights opportunities to improve the City's athletic fields.

Studies Identified & Useful Website Links:

- 2015 Recreation Field Report
- Comprehensive Recreation Needs Study 2010;
- 2022 Updated Recreation Needs Study
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Funding reduced for FY25 due to funding constraints.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $75,000 | $150,000 | $150,000 | $175,000 | $150,000 | $150,000 | $850,000 | $300,000 | $1,150,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $75,000 | $150,000 | $150,000 | $175,000 | $150,000 | $150,000 | $850,000 | $300,000 | $1,150,000 |

# BI-12-RC-32: Additional Outdoor Recreation Fields

| | |
|---|---|
| Department | Recreation Department |
| Project Location | 100 Campus Drive/680 Peverly Hill Road |
| Project Type | Construction or Expansion of a New Public Facility or Public Infrastructure. |
| Commence FY | 2026 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,002 to $50,000) |

**Description**: This project will fund the design and construction of an additional field and related amenities at the property behind the City's Public Works facility. Previous funding was utilized to acquire the land and complete construction of the first field. The project is being constructed in phases due to projected costs. Funding will be required for a third phase to realize the site's full potential for adding to the city's field inventory.

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

Studies Identified & Useful Website Links:

- Athletic Field – Project Page
- Comprehensive Recreation Needs Study 2010
- 2022 Updated Recreation Needs Study
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Moved funding to FY25 for construction per direction from the City Council. Added monies in FY29 funding for design and FY30 funding for completion of Phase III.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 3% | | | | | $100,000 | | $100,000 | $100,000 | $200,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 97% | $3,000,000 | | | | | $3,000,000 | $6,000,000 | $0 | $6,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $3,000,000 | $0 | $0 | $0 | $100,000 | $3,000,000 | $6,100,000 | $100,000 | $6,200,000 |

# BI-20-RC-33: Greenland Road Recreation Facility

| | |
|---|---|
| Department | Recreation Department |
| Project Location | Greenland Road Recreation Facility/ Portsmouth Skateboard Park (Route 33) |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Moderate ($50,001 to $100,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project will be a phased build out of the Stump Dump lot Master Plan. Phase I would include a skate park and parking. Phase II would be a pump track and additional parking. This would also be the main access point to the NH Seacoast Greenway Route (Rail Trail). Additional phases include adding walking paths, a splash pad, additional parking, lighting, and field upgrades.

Studies Identified & Useful Website Links:

- Skateboard Park Project Page
- Skatepark/ Stump Dump Site Design
- Comprehensive Recreation Needs Study 2010
- Stump Dump lot Master Plan
- 2022 Updated Recreation Needs Study
- 2015 Recreation Field Report
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

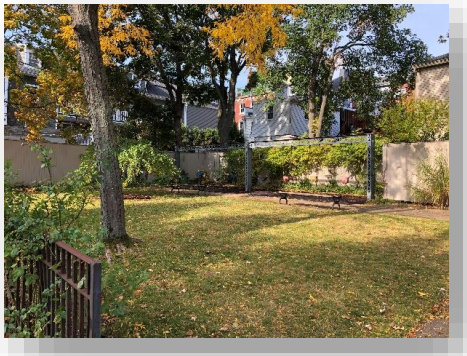
First phase of the project was completed in FY24 with the building of the skatepark. FY29 and FY30 funding reflects the design and construction of Phase II of the project. (Moved from FY29 to FY30).

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 4% | | | | | $100,000 | | $100,000 | $200,000 | $300,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 94% | | | | | | $6,100,000 | $6,100,000 | $1,805,000 | $7,905,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP (Donations) | 2% | $146,534 | | | | | | $146,534 | $48,466 | $195,000 |
| | Totals | $146,534 | $0 | $0 | $0 | $100,000 | $6,100,000 | $6,346,534 | $2,053,466 | $8,400,000 |

# BI-02-RC-34: Citywide Playground Improvements

| | |
|---|---|
| Department | Recreation Department |
| Project Location | Various |
| Project Type | Rehabilitation of an Existing Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |



**Description**: This project provides funding for continued investment in City playgrounds. It will maintain the level of service resulting from many investments over the past few years. Funding will be used for replacing equipment, upgrading furnishings, and other amenities as needed. Future upgrades are intended for an additional basketball court at the Plains Ballfield in FY26.

| Studies Identified & Useful Website Links: |
|---|
| • Parks and Playgrounds Homepage<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| FY25 Monies moved to FY26 due to funding constraints. Funding for FY26 include $50,000 for the building of a new basketball court at Plains Ballfield/Playground. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | | $85,000 | $200,000 | | $10,000 | $200,000 | $495,000 | $262,500 | $757,500 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $85,000 | $200,000 | $0 | $10,000 | $200,000 | $495,000 | $262,500 | $757,500 |

# BI-15-RC-35: Leary Field – Bleachers/Grandstands

| | |
|---|---|
| Department | Recreation Department |
| Project Location | Leary Field (Parrot Avenue) |
| Project Type | Rehabilitation of Existing Facility |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project is to refurbish the Leary Field grandstand. The refurbishment will bring the grandstand into compliance with the National Fire Protection Association (NFPA) standard 102-5.10. Improvements and upgrades to the concession stand and walkways are also included in this project.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding for FY25 was reduced due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 5% | $50,000 | | | | | | $50,000 | $0 | $50,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 95% | | $1,000,000 | | | | | $1,000,000 | $0 | $1,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $1,000,000 | $0 | $0 | $0 | $0 | $1,050,000 | $0 | $1,050,000 |

# BI-25-PW-36: Peirce Island Recreation Improvements

| | |
|---|---|
| Department | Public Works & Recreation Department |
| Project Location | Peirce Island |
| Project Type | Construction or Expansion of a New Public Facility or Public Infrastructure |
| Commence FY | 2025 |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The Peirce Island Master Plan was completed in 1999. The plan detailed many capital improvement projects that support recreational activities on the island. With the completion of the Wastewater Treatment Plant, trail construction, picnic table installation and signage upgrades, there have been requests for more services on the island. These monies would fund improvements to the dog park, playground replacement, boat launch upgrades, sand volleyball court installation, and ongoing trail maintenance.

Studies Identified & Useful Website Links:

- Peirce Island Master Plan

Notes of Changes in Funding Plan from FY24-29 CIP:

New Project for FY25

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $900,000 | $0 | $900,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $900,000 | $0 | $900,000 |

# BI-15-PW-37: Outdoor Pool Aquatics Upgrade and Pool House

| | |
|---|---|
| Department | Public Works and Recreation Department |
| Project Location | Portsmouth Outdoor Pool (99 Pierce Island Road) |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2019 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project will be constructed in several phases. The first phase will include upgrades to the pool filter, liner, and pump house. FY28 funds will be used for the design of the updated pool house with projected construction in FY29.

| Studies Identified & Useful Website Links: |
|---|
| • Outdoor Pool Page<br>• Peirce Island Outdoor Pool Project Page<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 1% | | | | $100,000 | | | $100,000 | $0 | $100,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 99% | | | | | $3,250,000 | | $3,250,000 | $7,000,000 | $10,250,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $100,000 | $3,250,000 | $0 | $3,350,000 | $7,000,000 | $10,350,000 |

# BI-23-PW-38: Community Campus Facility Needs

| | |
|---|---|
| Department | Public Works & Recreation Department |
| Project Location | Community Campus (Campus Drive) |
| Project Type | Other |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This 20+ year old building is in need of ongoing maintenance. The roof at Community Campus is of large concern as there are several ongoing leaks that need to be mitigated. Also of concern, the aging fire alarm system and HVAC controls. These monies would be used to address those improvements as well as ongoing maintenance of plumbing infrastructure, playgrounds, retaining walls, and kitchen equipment.

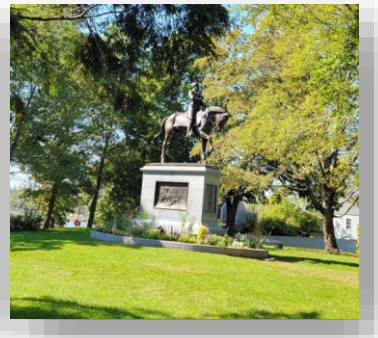
| Studies Identified & Useful Website Links: |
|---|
| • Community Campus<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding reduced for FY25 due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $50,000 | $200,000 | $200,000 | $200,000 | $200,000 | $200,000 | $1,050,000 | $300,000 | $1,350,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $200,000 | $200,000 | $200,000 | $200,000 | $200,000 | $1,050,000 | $300,000 | $1,350,000 |

# BI-02-PW-39: Citywide Park and Monument Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Various |
| Project Type | Rehabilitation of an Existing Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible ( < $5,001) |



| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project provides funding for continued investment in city parks. Community discussions about existing park facilities (Goodwin Park, Haven Park, Aldrich Park, South School Street Playground, Plains Ballfield, Leary Field, Langdon Park, Pine Street Park and Vaughan Mall) and investments in new parks, have emphasized the need for continued investment in park improvements. Funding will improve furnishings and signage, walkways, landscaping, lighting, and drainage.

| Studies Identified & Useful Website Links: |
|---|
| • Parks and Playgrounds Homepage<br>• Map of Citywide Parks<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding reduced for FY25 due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $50,000 | | $100,000 | | $100,000 | | $250,000 | $350,000 | $600,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $0 | $100,000 | $0 | $100,000 | $0 | $250,000 | $350,000 | $600,000 |

# BI-04-PW-40: Citywide Tree and Public Greenery Program

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Other (explained below) |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City of Portsmouth has received recognition as a Tree City USA for over twenty years. The City has a long tradition of caring for urban forests. The City Arborist and the Trees and Public Greenery Committee administers this program which focuses on proactive plantings, managing street tree planting projects, inspecting, pruning or removing hazardous trees in the right-of-way. In addition, they provide information and resources to residents, homeowners and builders.

Studies Identified & Useful Website Links:

- Public Works – Parks & Greenery Division
- Trees & Public Greenery Committee
- FY24-FY29 CIP (Prior Year) Project Sheet

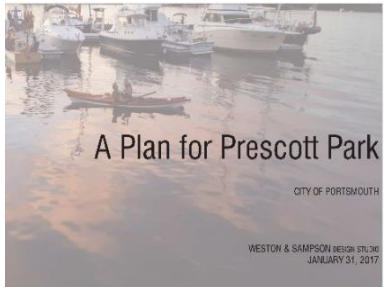
Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $20,000 | $20,000 | $20,000 | $20,000 | $20,000 | $20,000 | $120,000 | $110,000 | $230,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $20,000 | $20,000 | $20,000 | $20,000 | $20,000 | $20,000 | $120,000 | $110,000 | $230,000 |

# BI-19-PW-41: Prescott Park Master Plan Implementation

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Prescott Park |
| Project Type | Rehabilitation of an Existing Facilities |
| Commence FY | Ongoing |
| Priority | A (Needed in the next 0 to 3 years) |
| Impact on Operating Budget | High ($100,001 or more) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |



**Description**: The City Council adopted the Prescott Park Master Plan in 2017. The plan calls for extensive park-wide reconfiguration, restructuring services and developing new park policies. Renovation to the park presents opportunities to plan for climate adaptation, preserve antique historic structures, accommodate performances and event spaces, and ensure iconic Portsmouth places continue to serve the public.

Studies Identified & Useful Website Links:

- Prescott Park Master Plan Implementation Committee/Project Page
- Prescott Park Master Plan 2017
- Prescott Park Implementation Committee
- Prescott Park Advisory Committee
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

PPP funding was removed due to a lack of committed Partnerships. FY26 bonding was moved due to funding constraints. FY25 funding is for facility upgrades and climate change improvements along the water.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 6% | | $125,000 | $125,000 | $125,000 | $125,000 | $125,000 | $625,000 | $125,000 | $750,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 94% | $4,500,000 | | | $1,750,000 | $1,750,000 | | $8,000,000 | $4,075,000 | $12,075,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $4,500,000 | $125,000 | $125,000 | $1,875,000 | $1,875,000 | $125,000 | $8,625,000 | $4,200,000 | $12,825,000 |

# BI-11-PW-42: Prescott Park Facilities Capital Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Prescott Park |
| Project Type | Rehabilitation of an Existing Facilities |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City of Portsmouth is responsible for the care and maintenance of Prescott Park and Four Tree Island. Among the abundant gardens and green space, there are several historic buildings, access ways, foot paths, period lights, plazas, fountains, park furnishings, and marine infrastructure that need significant rehabilitation or upgrades. In 2017, a master plan was completed identifying changes to the park, however, there are several projects that require funding. Identified projects include various improvements to the Shaw and Sheafe warehouses, Four Tree Island bathrooms, the upgrade and replacement of paved surfaces, replacement of perimeter fencing along the waterfront, dock repairs, electrical and lighting rehabilitation, and irrigation and fountain improvements.

| Studies Identified & Useful Website Links: |
|---|
| • Prescott Park Master Plan 2017<br>• Prescott Park Homepage<br>• Prescott Park Advisory Committee<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Added $50,000 to FY25 for fit out of Sheafe building improvements. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $100,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $350,000 | $355,000 | $705,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $100,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $350,000 | $355,000 | $705,000 |

# BI-21-PW-43: City Hall HVAC Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | City Hall (1 Junkins Ave) |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Moderate ($50,001 to $100,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project addresses City Hall complex's antiquated heating and air conditioning system. The remaining original system is deteriorating and does not provide reliable heating, cooling, and dehumidification. In recent years, half of the piping has been replaced. Problematic issues continue to be of concern that require additional investment. Concerns include pipe corrosion, heavy condensation and leaks, which may contribute to mold growth and results in additional maintenance.

| Studies Identified & Useful Website Links: |
|---|
| • HVAC Study 2019<br>• Public Works Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Additional monies added in FY25 for design. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 19% | $200,000 | | | | | | $200,000 | $150,000 | $350,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 81% | | $500,000 | | | $1,000,000 | | $1,500,000 | $0 | $1,500,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $200,000 | $500,000 | $0 | $0 | $1,000,000 | $0 | $1,700,000 | $150,000 | $1,850,000 |

# BI-18-PW-44: Recycling and Solid Waste Transfer Station

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Portsmouth Recycling Center (Peverly Hill Road) |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2019 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | High ($100,001 or more) |

**Description**: The purpose of this project is to design and build a new recycling center at the Public Works Department. The new recycling center will improve safety and increase efficiency by adding infrastructure so recycling and solid waste materials can be consolidated for transport. This will provide additional disposal options and cost savings. The preliminary design phase has been completed. Final design is pending available funding. As requested by residents, the new facility will include a Swap Shop.

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

Studies Identified & Useful Website Links:

- DPW Master Complex Summary July 2020 (draft)
- Recycling Facility Basis of Design Report March 2020 (draft)
- Solid Waste and Recycling Info
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 4% | | | | | | | $0 | $350,000 | $350,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 96% | | | | | $7,500,000 | | $7,500,000 | $0 | $7,500,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $0 | $7,500,000 | $0 | $7,500,000 | $350,000 | $7,850,000 |

# BI-05-PW-45: Historic Cemetery Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a facility |
| Commence FY | Ongoing |
| Priority | O (Ongoing and Programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City maintains six (6) historic cemeteries: Point of Graves Burial Ground, North Cemetery, Union Cemetery, Pleasant Street Burial Ground, the African Burying Ground, and Cotton Cemetery. The City is responsible for maintaining the grounds and headstones; hill, ledgers, and chest tombs; cemetery walls and related structures. The City has assessed these historic resources and the City's Cemetery Committee has reviewed this assessment and created a prioritized list of restoration and repair projects. The projects will be carried out over a multi-year period.

Studies Identified & Useful Website Links:

- Cemetery Committee
- Cemetery Existing Conditions Assessment and Restoration Plan (2013)
- Portsmouth Historic Cemeteries
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $40,000 | $40,000 | $40,000 | $40,000 | $40,000 | $40,000 | $240,000 | $145,000 | $385,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| Donation | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $40,000 | $40,000 | $40,000 | $40,000 | $40,000 | $40,000 | $240,000 | $145,000 | $385,000 |

## BI-05-PW-45 : Historic Cemetery Improvements

- North Cemetery Phase II
- Point of Graves Stone Wall Rebuild
- Professional Repair and Straighten Headstone – All Cemeteries
- Replace and Restore Wrought Iron Fixtures – All Cemeteries
- Hall Cemetery Clean Up and Tree Removal
- Pleasant Street Cemetery Wall Repair
- Cotton Cemetery South Street Façade Repair Four Doors
- Cotton Cemetery Rebuild and Replace Missing Sections Side Wall
- Improve/Repair Entrance at Point of Graves
- Cotton Cemetery Front Stone Wall Tear down and Rebuild
- Union Cemetery Rebuild of Original Receiving Tomb Framing/Masonry

# BI-15-PW-46: Citywide Retaining Walls Repairs and Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City owns over thirty (30) retaining walls. This project involves repairing failing retaining walls that pose a safety concern or that could cause damage to adjacent private properties.

| Studies Identified & Useful Website Links: |
|---|
| • Public Works Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding for FY25 moved out one (1) year due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | | $50,000 | $50,000 | | $50,000 | | $150,000 | $0 | $150,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Bond Prem Supp. | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $50,000 | $50,000 | $0 | $50,000 | $0 | $150,000 | $0 | $150,000 |

# BI-07-PW/NH-47: Sound Barriers in Residential Area Along I-95

| | |
|---|---|
| Department | Public Works Department |
| Project Location | I-95 Corridor |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2019 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The purpose of this project is to mitigate sound pollution in neighborhoods along Interstate 95. The State of NHDOT has determined the north side of I-95 is eligible for funding, while the South side was deemed ineligible. Monies identified in this project will be used to investigate and implement sound barriers on the southern side. Any project would have to be built on City property or private property.

| Studies Identified & Useful Website Links: |
|---|
| • Sound Barriers Project Page<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding reduced for FY25 due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $50,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $550,000 | $150,000 | $700,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $550,000 | $150,000 | $700,000 |

# BI-01-PW-48: Citywide Facilities Capital Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The Public Works Department is responsible for maintaining all General Fund municipal facilities. These City facilities serve multiple uses. Many facilities need to be updated due to age and usage. A backlog of projects is shown on the next page.

| Studies Identified & Useful Website Links: |
|---|
| • Facility Condition Assessment 2015<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Annual funding requests have been increased to adjust for the upsurge in current construction bid pricing. Funding was added to FY25 for a roof repair at Fire Station 2. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $850,000 | $1,100,000 | $550,000 | $550,000 | $1,100,000 | $550,000 | $4,700,000 | $2,500,000 | $7,200,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $850,000 | $1,100,000 | $550,000 | $550,000 | $1,100,000 | $550,000 | $4,700,000 | $2,500,000 | $7,200,000 |

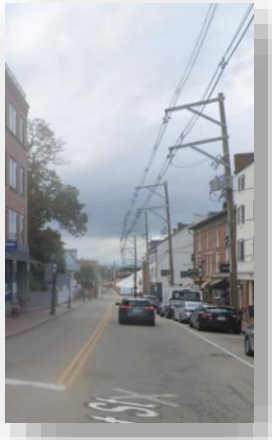
## BI-01-PW-48 : Citywide Facilities Capital Improvements

- Fire Station 2 Roof Replacement
- 95 Mechanic Street
- City Hall Archive
- City Hall Dept. Renovations
- IT Infrastructure associated with city facilities
- City Hall (Rear) Masonry Repointing And Sealing
- City Hall New Carpet Throughout
- City Hall New Paint Throughout
- DPW Complex
- Connor’s Cottage Basement / Drainage Project
- Connor’s Cottage Basement and Tunnel Renovations
- South Meeting House
- Facilities Safety Inspection Action Items
- Discovery Center Handicap Accessibility

# BI-21-PW-49: Downtown Aerial Utilities Undergrounding

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Various |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |



**Description**: Opportunities to bury overhead utilities were identified with Eversource, the local utility company, during a citywide reliability and needs assessment meeting. These projects will bury overhead utilities from Fleet Street at Hanover to State, as well as Deer Street at Market to Bow, Penhallow, and Daniel Street to Market Square. In addition, these steps will enable the eventual removal of the power lines over North Mill Pond.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 67% | | | | | $2,500,000 | | $2,500,000 | $2,500,000 | $5,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 33% | | | | | $2,500,000 | | $2,500,000 | $0 | $2,500,000 |
| | Totals | $0 | $0 | $0 | $0 | $5,000,000 | $0 | $5,000,000 | $2,500,000 | $7,500,000 |

# BI-20-PW-50: Level 2 (120/208 Volt Single Phase) & Level 3 (480 Volt Three Phase) Electric Vehicle (EV) Charging Stations

| | |
|---|---|
| Department | Public Works – Parking and Transportation Division |
| Project Location | Citywide |
| Project Type | Construction of a New Facility |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The City continues to work on expanding its Electric Vehicle (EV) charging station network. In addition to its stations at Hanover Garage, the City has a station in the City Hall Lower Lot, located at the corner of Junkins Avenue and South Street and the Foundry Garage is equipped with three (3) EV Stations. Currently, the City plans to add additional stations to the Bridge Street lot as part of a parking lot renovation project.

| Studies Identified & Useful Website Links: |
|---|
| • EV Charging Stations<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 67% | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $600,000 | $100,000 | $700,000 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (Parking) | 33% | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 | $50,000 | $350,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $900,000 | $150,000 | $1,050,000 |

# BI-24-PW-51: Mechanic Street Wharf/Pier

| | |
|---|---|
| Department | Public Works – Parking and Transportation Division |
| Project Location | Mechanic Street |
| Project Type | Other |
| Commence FY | 2024 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: This project will replace the "Snappy LaCava" Wharf that had been at 95 Mechanic Street. The project was bid with the recently completed sea wall replacement but due to a lack of funding was not completed.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding request has been increased to adjust for the upsurge in current construction bid pricing. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $1,300,000 | | | | | | $1,300,000 | $0 | $1,300,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (Parking) | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $1,300,000 | $0 | $0 | $0 | $0 | $0 | $1,300,000 | $0 | $1,300,000 |

# BI-25-PW-52: Hanover Garage Structural Improvements

| | |
|---|---|
| Department | Public Works – Parking and Transportation Division |
| Project Location | Hanover Parking Garage |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: These monies would be used to supplement the ongoing Hanover Garage upgrade project with specific funding for overall structural and operational improvements.

| Studies Identified & Useful Website Links: |
|---|
| • Hanover Garage Project Webpage<br>• Hanover Garage Page<br>• Parking Department Page |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (Parking) | 100% | $600,000 | | | | | | $600,000 | $0 | $600,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $600,000 | $0 | $0 | $0 | $0 | $0 | $600,000 | $0 | $600,000 |

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# III. INFORMATION SYSTEMS

# IS-06-IT-53: Information Technology Upgrades and Replacements

| | |
|---|---|
| Department | IT Department |
| Project Location | Citywide |
| Project Type | Equipment (non-vehicular) |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The Information Technology Upgrades & Replacements project incorporates the General Government (City Hall, Public Works, Recreation, and Library), Police, Fire and School Departments' technology needs. The replacement/upgrade of computers, servers and other technology upgrades follow by location for FY25.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| The significant funding increase reflect both the increase in costs for IT products as well as the increased need for IT services within city departments. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State (ARPA) | 2% | | | | | | | $0 | $204,000 | $204,000 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| GF (Non-Operating) | 98% | $829,038 | $759,608 | $749,108 | $900,158 | $1,044,108 | $830,058 | $5,112,078 | $5,066,026 | $10,178,104 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $829,038 | $759,608 | $749,108 | $900,158 | $1,044,108 | $830,058 | $5,112,078 | $5,270,026 | $10,382,104 |

# IS-06-IT-53: Information Technology Upgrades & Replacements

## Computers/Notebooks/Tablets

(Costs include installation)

| Location | Inventory | FY 25 | FY 26 | FY 27 | FY 28 | FY29 | FY 30 |
|---|---|---|---|---|---|---|---|
| City Hall | 170 | | 46 | 45 | 39 | 40 | |
| Public Works | 67 | 30 | | | | | 37 |
| Library | 119 | 68 | | | 51 | 68 | 51 |
| Recreation | 15 | 11 | | | 4 | 11 | 4 |
| Police | 125 | 25 | 25 | 25 | 25 | 25 | 25 |
| Fire | 47 | 10 | 19 | 10 | 10 | 19 | 10 |
| Total Computers | 543 | 144 | 90 | 80 | 129 | 163 | 127 |

| Cost of Replacement | FY 25 | FY 26 | FY 27 | FY 28 | FY29 | FY 30 |
|---|---|---|---|---|---|---|
| City Hall | $0 | $46,000 | $45,000 | $39,000 | $40,000 | $0 |
| Public Works | $30,000 | $0 | $0 | $0 | $0 | $37,000 |
| Library | $68,000 | $0 | $0 | $51,000 | $68,000 | $51,000 |
| Recreation | $11,000 | $0 | $0 | $4,000 | $11,000 | $4,000 |
| Police | $57,000 | $57,000 | $57,000 | $57,000 | $57,000 | $57,000 |
| Fire | $10,000 | $19,000 | $10,000 | $10,000 | $19,000 | $10,000 |
| **Computers/Notebooks Cost per Year** | **$176,000** | **$122,000** | **$112,000** | **$161,000** | **$195,000** | **$159,000** |

# IS-06-IT-53: Information Technology Upgrades & Replacements

## Servers

(Costs include installation and software)

| Location | Inventory | FY 25 | FY 26 | FY 27 | FY 28 | FY29 | FY 30 |
|---|---|---|---|---|---|---|---|
| City Hall Server Room | 3 | - | | | | 3 | |
| Public Works | | | | | | | |
| Library | 1 | | | | | 1 | 1 |
| Police | 10 | 2 | 2 | 2 | 2 | 2 | 2 |
| Fire | | | | | | | |
| Total Servers | 14 | 2 | 2 | 2 | 2 | 6 | 3 |

| Cost of Replacement | FY 25 | FY 26 | FY 27 | FY 28 | FY29 | FY 30 |
|---|---|---|---|---|---|---|
| Citywide | $0 | $0 | $0 | $0 | $150,000 | $0 |
| Public Works | $0 | $0 | $0 | $0 | $0 | $0 |
| Library | $0 | $0 | $0 | $0 | $5,000 | $5,000 |
| Police | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 |
| Fire | $0 | $0 | $0 | $0 | $0 | $0 |
| **Servers Cost per Year** | **$50,000** | **$50,000** | **$50,000** | **$50,000** | **$205,000** | **$55,000** |

# IS-06-IT-53: Information Technology Upgrades & Replacements

## Other Technology Replacements and Upgrades

| Location | FY 25 | FY 26 | FY 27 | FY 28 | FY29 | FY 30 |
|---|---|---|---|---|---|---|
| **Citywide** | | | | | | |
| Plotter (City Hall) | $0 | $0 | $10,000 | $0 | $0 | $0 |
| Channel 22 technology equipment | $25,000 | $25,000 | $0 | $0 | $0 | $0 |
| WiFi Access Points (City Hall) | $700 | $700 | $700 | $5,250 | $700 | $5,250 |
| WiFi Contoller (Citywide) | $0 | $0 | $0 | $0 | $20,000 | $20,000 |
| Interactive Display Panels (City Hall) | $20,000 | $0 | $0 | $20,000 | $20,000 | $20,000 |
| Network Management System (Citywide) | $10,000 | $10,000 | $10,000 | $10,000 | $10,000 | $10,000 |
| WAN Switches/Cables/Firewalls (City Hall - 4) | $20,000 | $20,000 | $20,000 | $20,000 | $20,000 | $20,000 |
| CMS and Data Conversion (Citywide) | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 |
| **Total City Hall** | **$90,700** | **$70,700** | **$55,700** | **$70,250** | **$85,700** | **$90,250** |
| **Public Works** | | | | | | |
| WiFi Access Points | $2,100 | $2,100 | $2,100 | $2,100 | $2,100 | $2,100 |
| Interactive Display Panels | $0 | $0 | $20,000 | $20,000 | $0 | $0 |
| WAN Switches | $10,000 | $10,000 | $10,000 | $10,000 | $10,000 | $10,000 |
| **Total Public Works** | **$12,100** | **$12,100** | **$32,100** | **$32,100** | **$12,100** | **$12,100** |
| **Library** | | | | | | |
| Interactive Display Panels | $0 | $20,000 | $0 | $20,000 | $0 | $20,000 |
| WiFi Access Points | $0 | $0 | $10,500 | $0 | $0 | $0 |
| WiFi Controller | $0 | $0 | $15,000 | $0 | $0 | $0 |
| WAN Switches (1) | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 |
| **Total Library** | **$5,000** | **$25,000** | **$30,500** | **$25,000** | **$5,000** | **$25,000** |
| **Recreation** | | | | | | |
| Interactive Display Panels | $0 | $0 | $0 | $0 | $20,000 | $20,000 |
| WiFi Access Points | $2,100 | $2,100 | $2,100 | $2,100 | $2,100 | $10,500 |
| WiFi Controller | $0 | $0 | $0 | $0 | $0 | $15,000 |
| WAN Switches | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 | $20,000 |
| **Total Library** | **$7,100** | **$7,100** | **$7,100** | **$7,100** | **$27,100** | **$65,500** |

# IS-06-IT-53: Information Technology Upgrades & Replacements

**Other Technology Replacements and Upgrades**

| Location | FY 25 | FY 26 | FY 27 | FY 28 | FY29 | FY 30 |
|---|---|---|---|---|---|---|
| **Police** | | | | | | |
| Radios-portable (154) | $56,000 | $56,000 | $56,000 | $56,000 | $56,000 | $56,000 |
| Radios-mobile (42) | $19,200 | $19,200 | $19,200 | $19,200 | $19,200 | $19,200 |
| Printers (68) | $4,200 | $4,200 | $4,200 | $4,200 | $4,200 | $4,200 |
| CJIS Compliance | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 |
| Firewalls (4) | $3,500 | $3,500 | $3,500 | $3,500 | $3,500 | $3,500 |
| Tape back ups (2) | $0 | $5,000 | $0 | $5,000 | $0 | $5,000 |
| NAS (Network Attached Storage) (6) | $2,500 | $2,500 | $2,500 | $2,500 | $2,500 | $2,500 |
| Scanners (14) | $1,600 | $1,600 | $1,600 | $1,600 | $1,600 | $1,600 |
| MS WS19 Data Center (2) | $0 | $0 | $0 | $10,000 | $0 | $0 |
| MSA Storage & Drives | $0 | $0 | $0 | $0 | $0 | $23,500 |
| WiFi Access Points (7) | $3,500 | | | | $3,500 | $0 |
| Cisco network Switches (10g) (2) | $0 | $0 | $0 | $12,000 | $0 | $0 |
| Cisco network Switches (1g) (6) | $0 | $6,000 | $0 | $6,000 | $0 | $6,000 |
| Exacom (Telephone audio recording) | $0 | $0 | $0 | $60,000 | $0 | $0 |
| Phone System Replace/Upgrade | $50,000 | $0 | $0 | $0 | $0 | $0 |
| Security Door Access Units System | | | | | | |
| Cameravision Exacq | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 |
| Comm Center-Radio System Replacement | $261,858 | $261,858 | $261,858 | $261,858 | $261,858 | $261,858 |
| **Total Police** | **$412,358** | **$369,858** | **$358,858** | **$451,858** | **$362,358** | **$393,358** |
| **Fire** | | | | | | |
| Radios- portable (55) | $18,000 | $18,000 | $18,000 | $18,000 | $18,000 | $18,000 |
| Radios- mobile (44) | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 |
| Printers (13) | $2,750 | $2,750 | $2,750 | $2,750 | $2,750 | $2,750 |
| WiFi Access Points | $2,100 | $2,100 | $2,100 | $2,100 | $2,100 | $2,100 |
| Interactive Display Panels | $20,000 | $0 | $0 | $20,000 | $20,000 | $20,000 |
| MutualLink EOC | $0 | $0 | $0 | $0 | $24,000 | $24,000 |
| WAN Swtiches (3) | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 | $5,000 |
| **Total Fire** | **$52,850** | **$32,850** | **$32,850** | **$52,850** | **$76,850** | **$76,850** |
| **School Department** | | | | | | |
| Wifi Access Points | $22,000 | $25,000 | $40,000 | $25,000 | $15,000 | $0 |
| Classroom Interactive Panels or Projectors | $8,000 | $0 | $0 | $10,000 | $0 | $0 |
| Virtual Desktop Interface (VDI) Expansion | $0 | $30,000 | $30,000 | $0 | $30,000 | $30,000 |
| Firewall | $0 | $0 | $0 | $0 | $0 | $0 |
| LAN Network Switches | $0 | $0 | $0 | $15,000 | $30,000 | $0 |
| WAN Switches (6) | $0 | $15,000 | $0 | $0 | $0 | $30,000 |
| **Total School** | **$30,000** | **$70,000** | **$70,000** | **$50,000** | **$75,000** | **$60,000** |
| **Other Technology Replacement/Upgrades Cost per Year** | **$738,008** | **$715,508** | **$715,008** | **$817,058** | **$752,008** | **$792,558** |

# IS-06-IT-53: Information Technology Upgrades & Replacements

| Totals by Location | FY 25 | FY 26 | FY 27 | FY 28 | FY29 | FY 30 |
|---|---|---|---|---|---|---|
| Citywide | $90,700 | $116,700 | $100,700 | $109,250 | $275,700 | $90,250 |
| Public Works | $42,100 | $12,100 | $32,100 | $32,100 | $12,100 | $49,100 |
| Library | $73,000 | $25,000 | $30,500 | $76,000 | $78,000 | $81,000 |
| Recreation | $11,030 | $7,100 | $7,100 | $11,100 | $38,100 | $69,500 |
| Police | $519,358 | $476,858 | $465,858 | $558,858 | $469,358 | $393,358 |
| Fire | $62,850 | $51,850 | $42,850 | $62,850 | $95,850 | $86,850 |
| School | $30,000 | $70,000 | $70,000 | $50,000 | $75,000 | $60,000 |
| **Total Information Technology Replacement and Upgrades** | **$829,038** | **$759,608** | **$749,108** | **$900,158** | **$1,044,108** | **$830,058** |

# IS-24-IT-54: Cybersecurity Enhancements

| | |
|---|---|
| Department | IT Department |
| Project Location | Citywide |
| Project Type | Equipment (non-vehicular) |
| Commence FY | FY2024 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: In order to improve cybersecurity, the city has assessed its technology environment and developed a remediation plan to address recommendations from Homeland Security CISA (Cybersecurity and Infrastructure Security Agency). This funding request is to address the CISA physical security recommendations. These recommendations apply to all 15 server and switch rooms/closets. These spaces need to be secured with (1) door card access (2) cameras (3) secure cable racks (4) color coded cabling (5) replacement of doors to eliminate windows giving visibility to the spaces, and (6) adequate reliable cooling.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding added to FY25 to enable IT to begin to mitigate risks that were identified in a Homeland Security/CISA assessment |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State (ARPA) | 17% | | | | | | | $0 | $50,000 | $50,000 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| GF (Non-Operating) | 83% | $125,000 | $125,000 | | | | | $250,000 | $0 | $250,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $125,000 | $125,000 | $0 | $0 | $0 | $0 | $250,000 | $50,000 | $300,000 |

# IS-21-FI-55: Financial Software Upgrade

| | |
|---|---|
| Department | Finance Department |
| Project Location | City Hall |
| Project Type | Equipment (non-vehicular) |
| Commence FY | 2021 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: There are several different software utilized to perform the necessary financial functions of the city which need to be upgraded and/or expanded for Citywide efficiencies. Due to the size and cost of this project, it is recommended that this funding be spread out over several years with a phased in implementation commencing in FY25 for the City's major financial software, while other specialized software are introduced and upgraded concurrently. These upgrades will enable more efficiencies and the streamlining of the current payroll, accounts payable, cash receipting and other processes for all City Departments.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other (GF Non Operating) | 100% | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | $1,800,000 | $575,000 | $2,375,000 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | $1,800,000 | $575,000 | $2,375,000 |

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# IV. TRANSPORTATION SYSTEMS MANAGEMENT

# TSM-12-PW-56: Parking Lot Paving

| | |
|---|---|
| Department | Public Works:<br>Parking and Transportation Division |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: Parking lots require maintenance and periodic repaving. The City owns metered and unmetered parking lots. There are five (5) metered lots: Bridge Street Lot, Hanover Lot, Ladd Lot, Memorial Lot, and Worth Lot. There are six unmetered lots: Parrott, Prescott, Water, Peirce Island, South Mill Pond, and City Hall.

| Studies Identified & Useful Website Links: |
|---|
| • Department of Public Works - Parking Division (Park Portsmouth)<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (Parking) | 100% | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $900,000 | $550,000 | $1,450,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $900,000 | $550,000 | $1,450,000 |

# TSM-08-PW-57: Parking Meters

| | |
|---|---|
| Department | Public Works – Parking and Transportation Division |
| Project Location | Downtown Business District |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: These funds allow for ready replacement of aging equipment and greater user experience. Funding covers meters and upgrades to ensure up-to-date technology required by all cell providers.

| Studies Identified & Useful Website Links: |
|---|
| • Department of Public Works - Parking Division (Park Portsmouth)<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (Parking) | 100% | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 | $255,000 | $555,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 | $255,000 | $555,000 |

# TSM-15-PL/NH-58: Hampton Branch Rail Trail (NH Seacoast Greenway)

| | |
|---|---|
| Department | Planning and Sustainability Department |
| Project Location | Former Hampton Branch Rail Line |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,002 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: A now abandoned rail corridor between Portsmouth and the Massachusetts border includes 3.6 miles in Portsmouth. This corridor has been designated as the future off-road route of the NH Seacoast Greenway. In 2019, the NH Department of Transportation acquired the rail corridor and also has secured some federal funding to convert it to a multiuse trail. Design and construction of the trail will be done through a collaboration between NHDOT and corridor communities. The project cost estimates assume that NHDOT will be responsible for initial design, permitting and engineering as well as construction costs to create a gravel trail base. The City's portion of the costs will include additional costs required to build a paved surface as well as any amenities such as trail access areas and interpretive signs. This should be reassessed in FY24 based trail progress.

Studies Identified & Useful Website Links:

- NH Seacoast Greenway in Portsmouth
- Bicycle and Pedestrian Plan 2014
- Planning and Sustainability Department
- FY24-FY29 CIP (Prior Year) Project Sheet

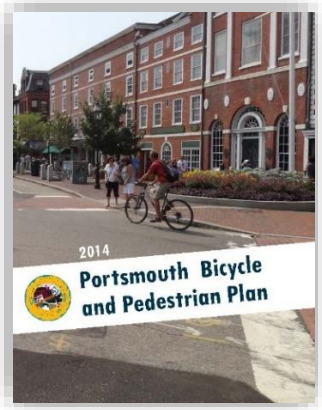
Notes of Changes in Funding Plan from FY24-29 CIP:

FY25, FY26 and FY27 funding moved to meet funding constraints

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 26% | | $203,000 | $200,000 | | | | $403,000 | $544,000 | $947,000 |
| Fed/ State | 50% | | | | | | | $0 | $1,800,000 | $1,800,000 |
| Bond/ Lease | 24% | | | | | $880,000 | | $880,000 | $0 | $880,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $203,000 | $200,000 | $0 | $880,000 | $0 | $1,283,000 | $2,344,000 | $3,627,000 |

# TSM-15-PL-59: Bicycle/Pedestrian Plan Implementation

| | |
|---|---|
| Department | Planning and Sustainability Department |
| Project Location | Citywide |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |




| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This funding is requested to implement the projects identified in the Bicycle and Pedestrian Plan. Demand for bicycle and pedestrian facilities continues to grow and these funds will be used as opportunities become available to expand and improve the citywide bicycle and pedestrian networks. A Request for Proposal (RFP) is going out in the fall of 2023 to update the 2014 Plan.

| Studies Identified & Useful Website Links: |
|---|
| • Bicycle & Pedestrian Planning<br>• Bicycle and Pedestrian Plan 2014<br>• Planning and Sustainability Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 15% | | | | | | | $0 | $80,000 | $80,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (parking) | 85% | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 | $150,000 | $450,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 | $230,000 | $530,000 |

# TSM-21-PL-60: Market Street Sidepath

| | |
|---|---|
| Department | Planning and Sustainability Department |
| Project Location | Market Street between Kearsarge Way and Maplewood Avenue |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project will complete a link in the City's bicycle network and improve pedestrian connections by constructing a sidepath on one side of Market Street between Kearsarge Way and Woodbury Avenue.

Studies Identified & Useful Website Links:

- Bicycle and Pedestrian Plan 2014
- Bicycle & Pedestrian Planning
- Planning and Sustainability Department
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Funding moved out one (1) year to work best with synergistic projects.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 7% | | $160,000 | | | | | $160,000 | $0 | $160,000 |
| Fed/ State (CMAQ) | 74% | | | $1,600,000 | | | | $1,600,000 | $0 | $1,600,000 |
| Bond/ Lease | 19% | | | $400,000 | | | | $400,000 | $0 | $400,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (parking) | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $160,000 | $2,000,000 | $0 | $0 | $0 | $2,160,000 | $0 | $2,160,000 |

# TSM-08-PL/NH-61: US Route 1 New Sidepath Construction

| | |
|---|---|
| Department | Planning and Sustainability Department and Public Works |
| Project Location | Constitution to Wilson and Ocean Road to White Cedar |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project calls for the creation of a walkable and bike-able connection for neighborhoods and destinations along Route 1 through the construction of ten-foot sidepaths on each side of road in available NHDOT right-of-way. This will be a phased project to correspond with the NHDOT Route 1 Corridor Project. Most of the project falls within NHDOT jurisdiction and requires coordination and permission from the state agency to implement and maintain. A separate but related project would add ADA-Compliant crosswalks and actuated pedestrian signals to cross Lafayette Rd at key intersections. Progress on this project is dependent upon NHDOT.

| Studies Identified & Useful Website Links: |
|---|
| • US Route 1 Corridor Project (NHDOT)<br>• Bicycle and Pedestrian Plan 2014<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding was adjusted to reflect the NHDOT 10-year plan timeline. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 30% | | $295,000 | | | | | $295,000 | $130,000 | $425,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 70% | | | $1,000,000 | | | | $1,000,000 | $0 | $1,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $295,000 | $1,000,000 | $0 | $0 | $0 | $1,295,000 | $130,000 | $1,425,000 |

# TSM-16-PL/NH-62: US Route 1 Crosswalks and Signals

| | |
|---|---|
| Department | Planning and Sustainability Department & Public Works |
| Project Location | Constitution to Wilson and Ocean Road to White Cedar |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project supports a US Route 1 Sidepath project (a separate project from the NHDOT project) in order to improve the bicycle and pedestrian safety crossing of US Route 1/Lafayette Road. The project includes the addition of ADA-compliant crosswalks and actuated pedestrian signals to cross Lafayette Road.

Studies Identified & Useful Website Links:

- US Route 1 Corridor Improvement Project (NHDOT)
- Bicycle and Pedestrian Plan 2014
- Planning and Sustainability Department
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Funding was adjusted to reflect the NHDOT 10-year plan timeline.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | | $135,000 | $135,000 | | | | $270,000 | $0 | $270,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP (Walmart) | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $135,000 | $135,000 | $0 | $0 | $0 | $270,000 | $0 | $270,000 |

# TSM-25-PW-63: Constitution Avenue Multi-Use Path

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Connection to Hampton Branch Trail via Constitution Avenue |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2023 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: This project would finish the multi-use path on Constitution Avenue to provide access to the new rail trail near the Banfield Road crossing. The path would continue from the Walmart driveway on Constitution Avenue to Banfield Road and travel approximately 2200'.

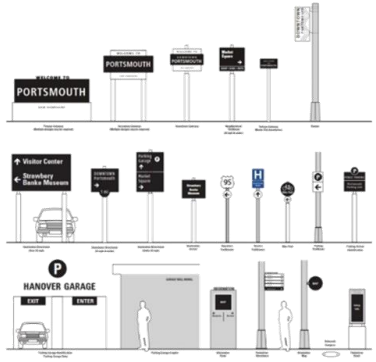
| Studies Identified & Useful Website Links: |
|---|
| |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | | $1,200,000 | | | $1,200,000 | $0 | $1,200,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP (Walmart) | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $1,200,000 | $0 | $0 | $1,200,000 | $0 | $1,200,000 |

# TSM-08-PW-64: Wayfinding System

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | Ongoing |
| Priority | O (Ongoing) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |




| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City's Wayfinding System is designed to help visitors navigate efficiently to major destinations within the Downtown and throughout the City, using a variety of tools, both physical and virtual. The system is designed to assist pedestrians, bicyclists and transit users, as well as motorists. The program includes a phased implementation of the project over several years and is designed for easy maintenance.

| Studies Identified & Useful Website Links: |
|---|
| • Master Plan 2005<br>• Wayfinding Analysis 2014<br>• Wayfinding Program<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (parking) | 100% | $350,000 | | | | | | $350,000 | $275,000 | $625,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $350,000 | $0 | $0 | $0 | $0 | $0 | $350,000 | $275,000 | $625,000 |

# TSM-21-PW-65: Greenland Road/Middle Road Corridor Bicycle/Pedestrian Improvements

| | |
|---|---|
| Department | Public Works Department & Planning and Sustainability Department |
| Project Location | Middle Road and Greenland Road from Spinney Road to Harvard Street |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project will be revisited in the updated Citywide Bicycle and Pedestrian Master Plan. The project would complete a link in the City's bicycle network for the residential neighborhoods along Middle Road. Proposed improvements include bicycle lanes along Middle Road and a multi-use path along the north side of Greenland Road. Monies identified in FY26 are for the planning and design phase.

Studies Identified & Useful Website Links:

- Bicycle and Pedestrian Plan 2014
- Bicycle & Pedestrian Planning
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

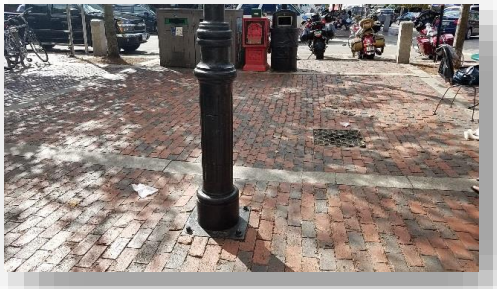
Funding requests increased to adjust for the upsurge in current construction bid pricing.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 26% | | $300,000 | | | | | $300,000 | $50,000 | $350,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 74% | | | | | $1,000,000 | | $1,000,000 | $0 | $1,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (parking) | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $300,000 | $0 | $0 | $1,000,000 | $0 | $1,300,000 | $50,000 | $1,350,000 |

# TSM-15-PW-66: Market Square Upgrade

| | |
|---|---|
| Department | Public Works Department & Planning and Sustainability Department |
| Project Location | Market Square |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2024 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | Y |



**Description**: Market Square was constructed in 1977 with minor improvements having been completed over the years. Streets and buildings around the square have been updated but utility, sidewalk and lighting upgrades are now required. The Market Square study will be completed in FY25 and will inform Phase 1 capital investments in FY26. The intent of this study is to engage the community in a Citywide process that will allow us to better understand the vision, values, and funding priorities for Market Square through public outreach. This project will be implemented in multiple phases which are reflected in the funding requests for outyears FY28 and FY30. These phases will include streetscape improvements, pedestrian enhancements, and upgrades to water, sewer, drainage and will address citizen requests.

| Studies Identified & Useful Website Links: |
|---|
| • Bicycle and Pedestrian Plan 2014<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Phased project funding was added in FY30. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 3% | | | | | | | $0 | $100,000 | $100,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease (Parking) | 97% | | $1,000,000 | | $1,000,000 | | $1,000,000 | $3,000,000 | $0 | $3,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $1,000,000 | $0 | $1,000,000 | $0 | $1,000,000 | $3,000,000 | $100,000 | $3,100,000 |

# TSM-95-PW-67: Citywide Sidewalk Reconstruction Program

| | |
|---|---|
| Department | Public Works |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The Public Works Department completed a conditional sidewalk assessment of City maintained sidewalks. The assessment contains detailed information on seventy-four (74) miles of sidewalk. These sidewalks are not included in parks, fields and other City maintained facilities. The results give staff a clear depiction of the overall conditions. This project consists of sidewalks identified as poor to fair condition. Reconstruction work is based on need and execution is coordinated with other street and utility improvement projects.

Studies Identified & Useful Website Links:

- Roads & Sidewalks Project Page
- Sidewalk Condition Index 2018
- Public Works Homepage
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Funding was changed from the prior year to return the program to an every-other-year funding plan.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | $400,000 | | $400,000 | | $400,000 | $1,200,000 | $1,600,000 | $2,800,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $400,000 | $0 | $400,000 | $0 | $400,000 | $1,200,000 | $1,600,000 | $2,800,000 |

## TSM-95-PW-67: Citywide Sidewalk Reconstruction Program

PROPOSED CAPITAL IMPROVEMENTS ON EXISTING SIDEWALKS:

- Pannaway Manor – Phase 2
- Maple Haven - North
- Kensington Road
- Lawrence Street
- Mendum Avenue
- Summit Avenue
- Woodlands Area

The list above represents a backlog of high priority sidewalk projects as identified by the Conditional Sidewalk Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices.

# TSM-10-PW-68: Citywide Traffic Signal Upgrade Program

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City continues to replace its antiquated signal systems. These replacements improve traffic flow, emergency response, safety, and efficiency at intersections. The upgrades include new traffic signals, controllers, improved compliance with pedestrian ADA requirements, and minor roadwork. FY25 monies will fund the intersection and signal upgrade work at Middle Street and Miller Avenue/Summer Street to align with that project's construction.

Studies Identified & Useful Website Links:

- Middle Street, Summer Street, Miller Avenue – Traffic Signal Design
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $600,000 | $600,000 | $1,200,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $600,000 | $600,000 | $1,200,000 |

# TSM-11-PW-69: Citywide Intersection Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The Parking and Traffic Safety (PTS) Committee receives numerous requests to address traffic volumes, vehicle speeds, and pedestrian safety. Many of these requests deal with street intersections which could be enhanced with minor modifications to the geometry of the streets at the intersections. This project would fund improvements to various intersections involving realignment, curbing, signage, and other traffic calming methods. These slight modifications would improve safety for both pedestrian and motor vehicle traffic. The Greenleaf Avenue and Lafayette Road intersection has been identified as a difficult intersection, which needs improvement.

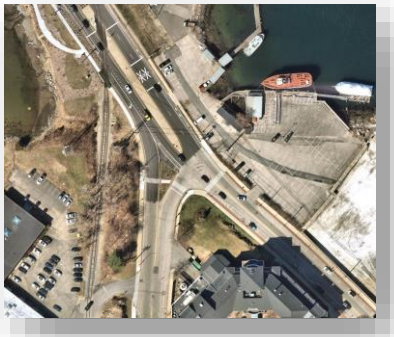
| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 100% | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $600,000 | $300,000 | $900,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $600,000 | $300,000 | $900,000 |

# TSM-16-PL-70: Russell/Market Intersection Upgrade

| | |
|---|---|
| Department | Planning and Sustainability Department/Public Works Department |
| Project Location | Russell and Market Streets |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2026 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |



| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The volume of traffic at the intersection of Russell Street and Market Street has increased over time. Traffic is expected to continue to increase due to nearby private development projects. Improvements are needed to address traffic flow and safety. This work would complement the recently completed Market Street Gateway Project. In addition, this project will progress in conjunction with the upcoming Market Street railroad crossing reconstruction project by NHDOT and coordinate with adjacent development.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding was changed to match the updated NHDOT 10-year plan funding and schedule. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 9% | | | | | | | $0 | $200,000 | $200,000 |
| Fed/ State (NHDOT) | 68% | | $240,193 | | $64,573 | $1,145,070 | | $1,449,836 | $0 | $1,449,836 |
| Bond/ Lease | 17% | $365,000 | | | | | | $365,000 | $0 | $365,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP (developers) | 6% | | | | | | | $0 | $117,500 | $117,500 |
| | Totals | $365,000 | $240,193 | $0 | $64,573 | $1,145,070 | $0 | $1,814,836 | $317,500 | $2,132,336 |

# TSM-16-PW-71: Railroad Crossings

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2026 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Minimal ($5,001 to $50,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | Y |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: NHDOT has identified the need to upgrade the railroad crossing on Maplewood Avenue as well as the crossing on Market Street near its intersection with Russell Street. These hazard elimination projects, which are included in the NHDOT 10-year plan, include upgrade of the rail, the roadway approaches, drainage improvements and the need for protective devices at the crossing. A portion of a local match has been appropriated in previous programs.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Monies are needed to address these issues in conjunction with the NHDOT's 10-Year-Plan. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 76% | $172,500 | | | | | | $172,500 | $200,000 | $372,500 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP (developers) | 24% | | | | | | | $0 | $117,500 | $117,500 |
| | Totals | $172,500 | $0 | $0 | $0 | $0 | $0 | $172,500 | $317,500 | $490,000 |

# TSM-18-PW-72: Citywide Bridge Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project affords regular maintenance on city bridges. Typical bridge maintenance includes sealing the concrete surfaces, replacing the pavement surfaces and membranes, and maintaining or upgrading railing systems and fences. Monies identified in FY25 will be to fund work on bridges on Bartlett Street, Coakley Road Bridge, and the pedestrian bridge on Borthwick Avenue.

| Studies Identified & Useful Website Links: |
|---|
| • Citywide Bridge Evaluation 2018<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| FY24 and FY25 funding were combined in FY25 due to project coordination. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 22% | $100,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $350,000 | $300,000 | $650,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 78% | | | | | | | $0 | $2,350,000 | $2,350,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $100,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $350,000 | $2,650,000 | $3,000,000 |

# TSM-08-PW-73: Cate Street Bridge Replacement

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Cate Street |
| Project Type | Other (explained below) |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This bridge is beyond its 50-year design life. It cannot handle heavy truck volumes and needs to be replaced. Residents have asked for the bridge to remain open if the median on Route 1 Bypass is extended past Cottage Street. This ensures emergency vehicle access to Portsmouth Hospital from the neighborhood. The City will continue to do temporary repairs until state funding is available for the bridge replacement.

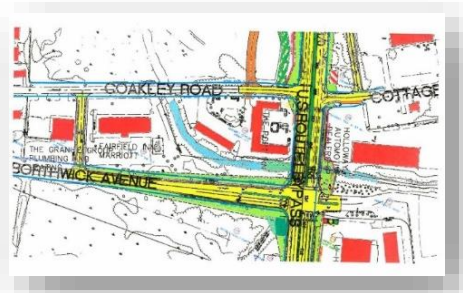
| Studies Identified & Useful Website Links: |
|---|
| • Citywide Bridge Evaluation 2018<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding moved to outyear to reflect NHDOT timeline funding. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 78% | | | | $1,335,000 | | | $1,335,000 | $100,000 | $1,435,000 |
| Bond/ Lease | 22% | | | | $415,000 | | | $415,000 | $0 | $415,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $1,750,000 | $0 | $0 | $1,750,000 | $100,000 | $1,850,000 |

# TSM-20-PW-74: Coakley-Borthwick Connector Roadway

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Coakley Road and Borthwick Avenue |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2026 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Negligible (<$5,001) |




**Description**: To improve traffic flow on the Route 1 Bypass, a plan for intersection improvements has been designed. The signal at the intersection of Coakley Road, Cottage Street and the Route 1 Bypass may be removed and the median on the Bypass extended through the intersection prohibiting left turns. To provide left turn access to and from the Bypass for the users of Coakley Road, this project would construct a connector roadway between Coakley Road and Borthwick Avenue. This project is subject to NHDOT approval and would be contingent upon acquiring the necessary right-of-way.

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

| Studies Identified & Useful Website Links: |
|---|
| • Citywide Bridge Evaluation 2018,<br>• NHDOT long range vision for the Bypass<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | $1,000,000 | | | | | $1,000,000 | $0 | $1,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $1,000,000 | $0 | $0 | $0 | $0 | $1,000,000 | $0 | $1,000,000 |

# TSM-21-PW-75: Traffic Calming

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: Residents have been calling for traffic calming throughout the City. This project addresses funding for calming measures in several areas. FY25 funding will be for projects on South Street and Middle Road. These measures may include reconfiguring the intersections. These changes would improve safety and access for pedestrians destined for Portsmouth High School and area playgrounds.
Other locations with requests for traffic calming measures include Hoover Drive, State Street from Cass to Middle, Rockingham Avenue, Edwards Avenue, Elwyn Road, Little Harbor Road, Greenland Road, Dennett Street, New Castle Avenue and Miller Avenue.

| Studies Identified & Useful Website Links: |
|---|
| • Neighborhood Traffic Calming Program<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Funding sourced changed from General Fund to Parking Revenues |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 52% | | | | | | | $0 | $320,000 | $320,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues (Parking) | 48% | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 | $0 | $300,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $50,000 | $300,000 | $320,000 | $620,000 |

# TSM-94-PW-76: Street Paving, Management, and Rehabilitation

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The Pavement Condition Management Program started in 1993. An annual report updating the city's pavement management system is completed as part of this program. The city's network of roads are evaluated, and comprehensive budget requirements are analyzed to develop road-paving programs and timelines. The report provides recommended funding to maintain street conditions at current levels. These are capital costs that are implemented over a two-year period with an expected lifespan of 20 years. The Public Works operational budget includes maintenance costs with an expected lifespan of 10 years. A list of streets needing improvement is on the next page.

Studies Identified & Useful Website Links:

- Pavement Management Index 2020 (draft)
- Department of Public Works Projects Page
- Roads & Sidewalks Project Page
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

The funding schedule was adjusted to preserve the every-other-year schedule.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | $4,000,000 | | $4,000,000 | | $4,000,000 | $12,000,000 | $12,000,000 | $24,000,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $4,000,000 | $0 | $4,000,000 | $0 | $4,000,000 | $12,000,000 | $12,000,000 | $24,000,000 |

## TSM-94-PW-76: Street Paving, Management, and Rehabilitation

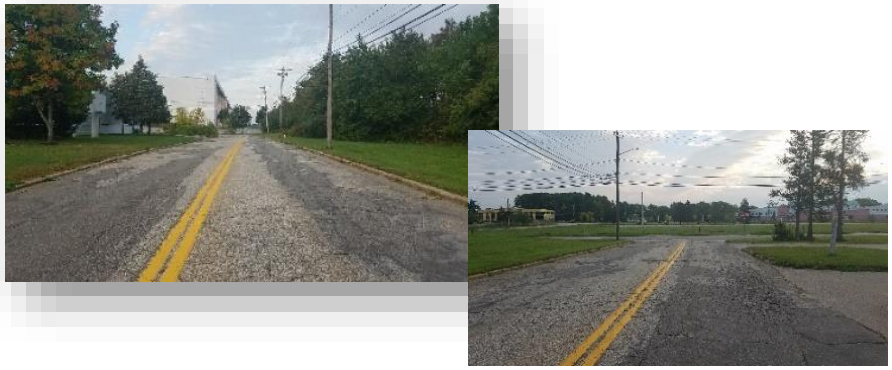
STREETS LISTING:

- Middle Street
- Woodbury Avenue (Bartlett to Market Street)
- Atlantic Heights (Phase 2)
- Maple Haven
- Michael Succi Drive/Cutts/Chase
- Coakley Road
- Miscellaneous

The list above represents a backlog of high priority pavement projects as identified by the Pavement Management Index and other capital projects. The amount of work completed depends on available funds and construction bid prices.

# TSM-11-PW-77: Pease International Tradeport Roadway Rehabilitation

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Pease International Tradeport |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |



| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: Per the Municipal Service Agreement between the City of Portsmouth and Pease Development Authority, the City will provide public work services in the non-airfield area of the Pease International Tradeport. Services include maintaining and repairing roads, streets, bridges and sidewalks. A list of streets needing improvement is on the next page.

| Studies Identified & Useful Website Links: |
|---|
| • Pavement Management Index 2020 (draft)<br>• Department of Public Works Projects Page<br>• Roads & Sidewalks Project Page<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| FY26 funding was delayed due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | | $1,000,000 | $500,000 | | $1,500,000 | $7,200,000 | $8,700,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $1,000,000 | $500,000 | $0 | $1,500,000 | $7,200,000 | $8,700,000 |

## TSM-11-PW-77: Pease International Tradeport Roadway Rehabilitation

STREETS LISTING:

- Airline Avenue
- Aviation Avenue
- Newfields Street
- Rochester Avenue
- Rye Street
- Miscellaneous

The list above represents a backlog of high priority pavement projects in the Pease International Tradeport as identified by the Pavement Management Index and other capital projects. The amount of work completed depends on available funds and construction bid prices.

# TSM-15-PW-78: Junkins Avenue Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Junkins Avenue |
| Project Type | Upgrade of Existing Facilities |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: This project will be completed in conjunction with the replacement of failing drainage pipes and culverts located under the City Hall lower parking lot. The goal is to create a "complete street", as defined in the Complete Streets Policy, which will also include work to be done on the South Mill pond trail sidewalk and area of Parrott Avenue.

| Studies Identified & Useful Website Links: |
|---|
| • Bicycle and Pedestrian Plan 2014<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

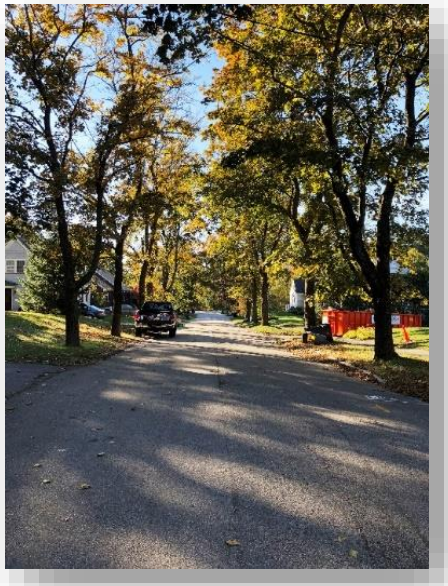
| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 12% | | | | $150,000 | | | $150,000 | $0 | $150,000 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 88% | | | | | $1,100,000 | | $1,100,000 | $0 | $1,100,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $150,000 | $1,100,000 | $0 | $1,250,000 | $0 | $1,250,000 |

# TSM-20-PW-79: Pinehurst Road Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Pinehurst Road |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2025 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |



**Description**: Residents have requested drainage improvements on Pinehurst Road to control stormwater runoff and prevent ponding in lower elevation properties.

| Studies Identified & Useful Website Links: |
|---|
| • FY23-FY28 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Project delayed to FY30 due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | | | | $300,000 | $300,000 | $0 | $300,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $0 | $0 | $300,000 | $300,000 | $0 | $300,000 |

# TSM-20-PW-80: Madison Street Roadway Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Upper Madison St. |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2025 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: Residents are parking on the front lawn of Madison Street Apartments. Madison Street residents have requested curbing and other roadway improvements to include defined parking.

| Studies Identified & Useful Website Links: |
|---|
| • FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Project funding delayed due to funding constraints. |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | | | | | $350,000 | | $350,000 | $0 | $350,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $0 | $0 | $350,000 | $0 | $350,000 | $0 | $350,000 |

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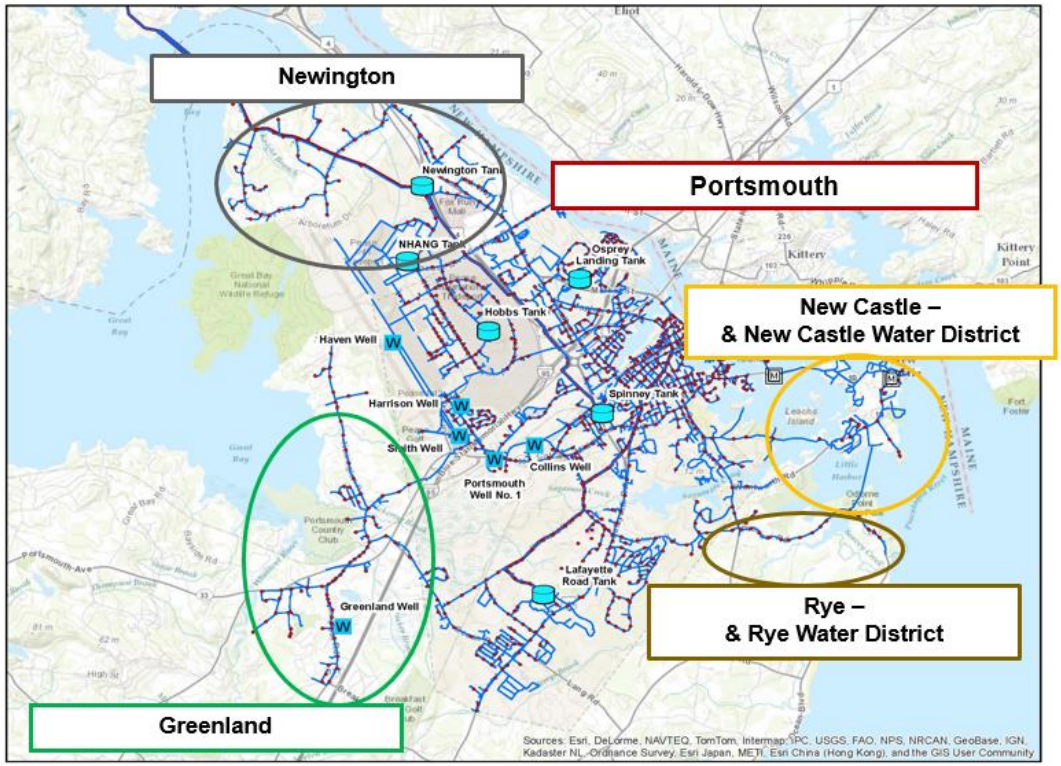
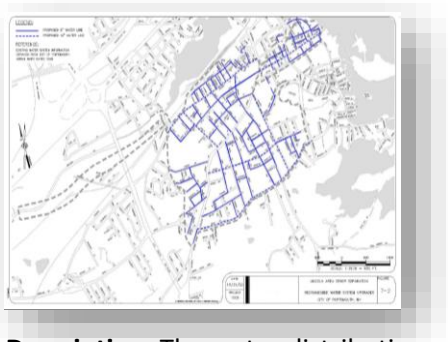
# V. ENTERPRISE FUNDS

## WATER



# EF-02-WD-81: Annual Water Line Replacement

| | |
|---|---|
| Department | Public Works – Water Division |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (Ongoing) |
| Impact on Operating Budget | Negligible (<$5,001) |



| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The water distribution system consists of more than 150 miles of pipe. Many of the older pipes are 50 to 100 years old, undersized and at the end of their design life. Pipes are replaced programmatically as part of water specific capital projects, roadway reconstruction, and prior to annual paving. This item will fund the purchase of pipe, valves and associated materials used to replace those pipes. This project bonds the funding for large full road reconstruction projects.

Studies Identified & Useful Website Links:

- Water System Master Plan 2013
- Water Department
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Annual funding requests have been increased to adjust for the upsurge in current construction bid pricing.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 95% | | $1,500,000 | | $1,500,000 | | $1,500,000 | $4,500,000 | $5,000,000 | $9,500,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 5% | | | | | | | $0 | $500,000 | $500,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $1,500,000 | $0 | $1,500,000 | $0 | $1,500,000 | $4,500,000 | $5,500,000 | $10,000,000 |

# EF-08-WD-82: Well Stations Improvements

| | |
|---|---|
| Department | Public Works – Water Division |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project involves upgrades to existing well pump stations. Improvements include upgrades to premium efficiency motors, variable frequency drives, the radio telemetry, and SCADA system. It also includes an evaluation of options to improve the efficiency of Collins Well and structural upgrades to the building.

| Studies Identified & Useful Website Links: |
|---|
| • Water System Master Plan 2013<br>• Water Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 83% | | $700,000 | | | | | $700,000 | $1,000,000 | $1,700,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 17% | | | | | | | $0 | $350,000 | $350,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $700,000 | $0 | $0 | $0 | $0 | $700,000 | $1,350,000 | $2,050,000 |

# EF-15-WD-83: Reservoir Management

| | |
|---|---|
| Department | Public Works – Water Division |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project consists of the study, design and implementation of measures to ensure the sustainability of the dam and the Bellamy Reservoir; the surface water supply for the Portsmouth Water Treatment Facility in Madbury. This includes an engineering assessment of the condition of the Bellamy Reservoir Dam and the design and implementation of measures to improve the dam structure, the design and construction of an improved outlet flow structure, water quality improvements and the protection of the Bellamy Reservoir.

| Studies Identified & Useful Website Links: |
|---|
| • Water System Master Plan 2013<br>• Water Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 89% | | $1,000,000 | | | | | $1,000,000 | $600,000 | $1,600,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 11% | | | | | | | $0 | $200,000 | $200,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $1,000,000 | $0 | $0 | $0 | $0 | $1,000,000 | $800,000 | $1,800,000 |

# EF-22-WD-84: Water Storage Tanks Improvements

| | |
|---|---|
| Department | Public Works – Water Division |
| Project Location | Lafayette Road |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2023 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This CIP item accounts for the on-going need to repair and improve the conditions of our water storage tanks beyond routine painting. Currently the Lafayette Road Water Storage Tank needs painting, however, due to its very large capacity (7.5 MG) the water in this storage tank does not turnover and mix sufficiently. This causes declines in residual chlorine disinfectant. An engineering assessment needs to be performed to evaluate options for improving this tank's performance and minimizing water quality issues associated with inadequate mixing. Funds for tank improvement design are also included for planning purposes. After the engineering assessment, construction costs will be adjusted accordingly.

| Studies Identified & Useful Website Links: |
|---|
| • Water Department<br>• FY23-FY28 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 98% | $400,000 | | $4,000,000 | | | | $4,400,000 | $0 | $4,400,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 2% | | | | | | | $0 | $100,000 | $100,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $400,000 | $0 | $4,000,000 | $0 | $0 | $0 | $4,400,000 | $100,000 | $4,500,000 |

# EF-22-WD-85: Madbury Water Treatment Plant - Facility Repair and Improvements

| | |
|---|---|
| Department | Public Works – Water Division |
| Project Location | Madbury Water Treatment Plant |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2026 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City's surface water treatment facility located in Madbury began operation in 2011. Since that time, facility maintenance items have been covered by operational line-item budgets. After more than ten years of continuous operation, the facility is beginning to see wear that needs to be addressed with more than annual maintenance. These items include the replacement of the water treatment filter media, replacement of water pump drives, the purchase of a backup finished water pump, replacement of building siding, and the construction of a storage shed for equipment and spare parts.

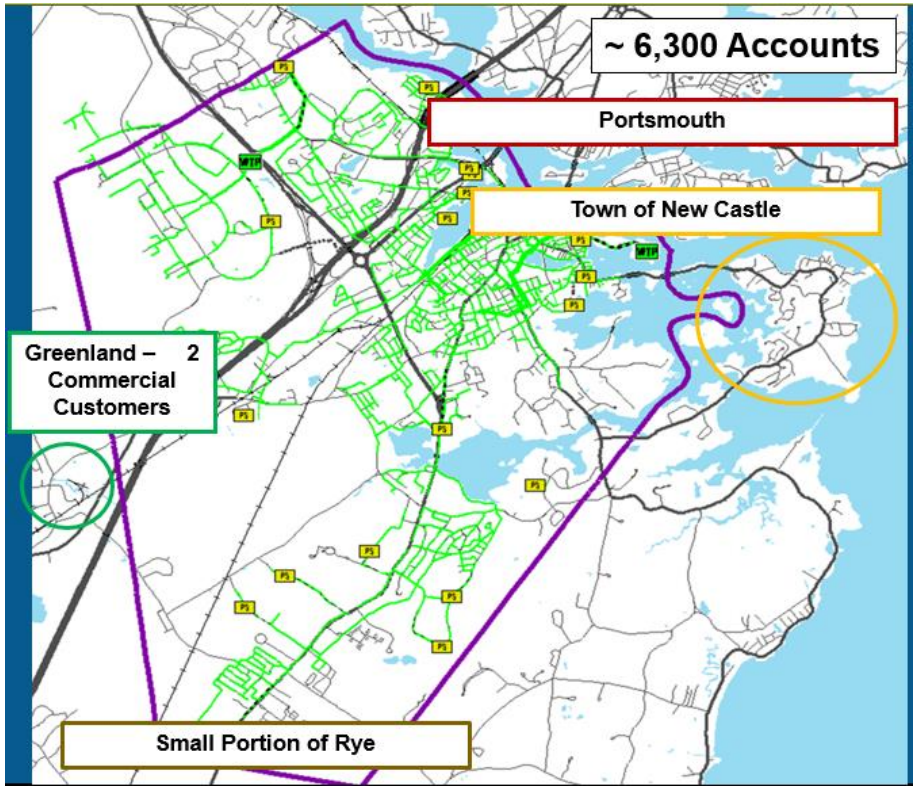
| Studies Identified & Useful Website Links: |
|---|
| • Water Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 72% | $650,000 | | | | | | $650,000 | $0 | $650,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 28% | | $125,000 | $125,000 | | | | $250,000 | $0 | $250,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $650,000 | $125,000 | $125,000 | $0 | $0 | $0 | $900,000 | $0 | $900,000 |

# V. ENTERPRISE FUNDS

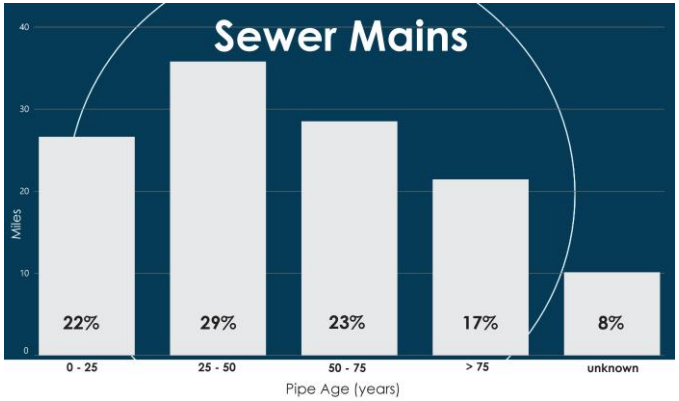
## SEWER



# EF-12-SD-86: Annual Sewer Line Replacement

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | Citywide |
| Project Type | Upgrade of Existing Facilities |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |




**Description**: The wastewater collection system consists of more than 120 miles of pipe. Many of the older pipes are 50 to 100 years old, undersized and at the end of their design life. Pipes are replaced programmatically as part of sewer-specific capital projects, roadway reconstruction and prior to annual paving. This project will fund the purchase of pipes and associated materials used to replace those pipes.

Studies Identified & Useful Website Links:

- Water and Wastewater Division Page
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Annual funding requests have been increased to adjust for the upsurge in current construction bid pricing.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 83% | | $1,500,000 | | $1,500,000 | | $1,500,000 | $4,500,000 | $3,000,000 | $7,500,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 17% | | | | | | | $0 | $1,500,000 | $1,500,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $1,500,000 | $0 | $1,500,000 | $0 | $1,500,000 | $4,500,000 | $4,500,000 | $9,000,000 |

# EF-12-SD-87: Pease Wastewater Treatment Facility

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | Pease WWTF at Corporate Dr |
| Project Type | Upgrade of Existing Facilities |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | High ($100,000 or more) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |

**Description**: The Pease Treatment Facility was original constructed in the 1950s and was upgraded in the 1990s. Selected upgrades have been completed since the 1990s with the Headworks and primary clarifier project completed in 2021. Much of the facility has exceeded its useful lifespan and needs replacement. The City received an updated NPDES permit allowing for an increase in design flow rate from 1.2 million gallons per day to 1.77 million gallons per day. This increase in flow was to accommodate a request from Lonza Biologics for potential expansion of their manufacturing capacity. In February 2023, the City was notified that the request for an increase in flow was no longer required due to water conservation upgrades and manufacturing process changes completed by Lonza Biologics. Since no additional flow is required to accommodate Lonza's expansion needs, the City is changing its project scope to only include critical refurbishment of existing equipment. Initial engineering design for the necessary upgrades is underway. Funding under the bond category represents the costs to design and construct replacement of aged equipment at the existing facility. Costs are preliminary and will be refined as the design moves forward. The City is working to fund this project using revolving loan funds (SRF) to take advantage of principal forgiveness, lower interest rates and favorable construction financing.

Studies Identified & Useful Website Links:

- Pease Wastewater Facility NPDES Permit Renewal 2019
- Pease Wastewater Treatment Facility
- FY23-FY28 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Increase to FY25 based on increased costs of construction quotes

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State (ARPA) | 15% | $5,000,000 | | | | | | $5,000,000 | $450,000 | $5,450,000 |
| Bond/ Lease | 82% | $20,000,000 | | | | | | $20,000,000 | $9,250,000 | $29,250,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 2% | | | | | | | $0 | $800,000 | $800,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $25,000,000 | $0 | $0 | $0 | $0 | $0 | $25,000,000 | $10,500,000 | $35,500,000 |

# EF-23-SD-88: Wastewater Reuse at Pease Wastewater Treatment Facility

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | Pease Wastewater Treatment Facility (WWTF) (Corporate Drive) |
| Project Type | Construction or Expansion of a New Public Facility or Public Infrastructure |
| Commence FY | 2024 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: Reuse of wastewater is a sustainable and resilient initiative that can assist in reducing the impact of non-potable water demands on the drinking water system. Wastewater reuse requires additional levels of treatment and construction of a distribution system to carry the reuse water to the user. There are many applications for reuse water including, but not limited to, irrigation and water for cooling towers. This item covers the potential cost of a water reuse treatment and initial distribution system for the Pease Wastewater Treatment Facility. Prior year's funds will be to update a planning and feasibility study that will be used to inform costs and timing.

Studies Identified & Useful Website Links:

- Water and Wastewater Division Page
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

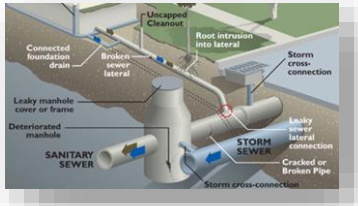
Funding timeline changed due to reprioritization of competing projects. FY27 funding to be utilized for a feasibility study that will guide the future development of this project.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 99% | | | $2,000,000 | | $6,300,000 | | $8,300,000 | $0 | $8,300,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 1% | | | | | | | $0 | $100,000 | $100,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $0 | $2,000,000 | $0 | $6,300,000 | $0 | $8,300,000 | $100,000 | $8,400,000 |

# EF-16-SD-89: Long Term Control Plan Related Projects

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | Citywide |
| Project Type | Rehabilitation of a Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |




**Description**: The City has a combined sewer collection system and is required by the Environmental Protection Agency (EPA) to implement a Long-Term Control Plan to reduce and otherwise mitigate Combined Sewer Overflows (CSO). The City is moving forward with a Supplemental Compliance Plan (SCP) that stipulates sewer separation projects to be constructed. The SCP sewer separation projects are funded under other items. This project includes the costs for study, design, and construction of other Long-Term Control Plan projects, such as a Long-Term Control Plan Update, infiltration and inflow identification and removal, sump pump removal programs, and other mitigations projects.

Studies Identified & Useful Website Links:

- Infiltration and Inflow Study 2016
- Post Construction Monitoring Plan 2017
- CSO Supplemental Compliance Plan 2017
- FY24-FY29 CIP (Prior Year) Project Sheet

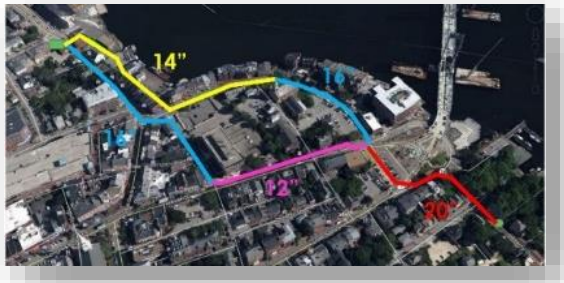
Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 3% | | | | | | | $0 | $100,000 | $100,000 |
| Bond/ Lease | 85% | | $1,000,000 | $1,000,000 | $1,000,000 | | | $3,000,000 | $300,000 | $3,300,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 13% | | | | | | | $0 | $500,000 | $500,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $0 | $1,000,000 | $1,000,000 | $1,000,000 | $0 | $0 | $3,000,000 | $900,000 | $3,900,000 |

# EF-17-SD-90: Wastewater Pumping Station Improvements

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | Citywide |
| Project Type | Rehabilitation of Existing Facility |
| Commence FY | Ongoing |
| Priority | O (ongoing or programmatic) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |




**Description**: The City owns and operates twenty wastewater pumping stations. The projected life span of a pumping station is twenty years. This project plans for the replacement or major rehabilitation of pumping stations and/or force mains that have not been included as separate projects in the CIP. The work will generally follow the recommendations detailed in the Wastewater Pumping Station Master Plan dated 2019. FY25 funding increase will be used to fund isolation and repair activities to improve reliability.

Studies Identified & Useful Website Links:

- Wastewater Pump Station Master Plan 2019
- Projects Page – Department of Public Works
- Wastewater Pumping Stations Page
- Water and Wastewater Division Page
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

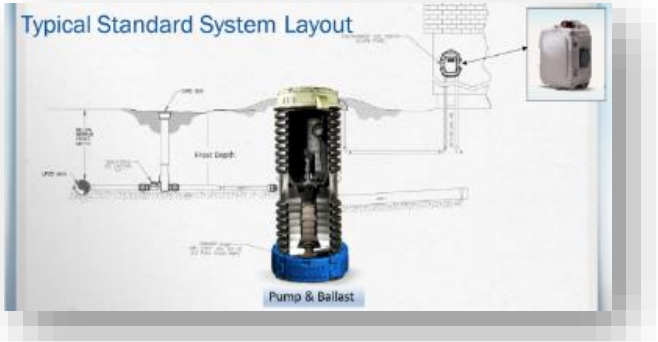
FY25 funding increased due to repair project costs.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 94% | $700,000 | | $500,000 | | $500,000 | | $1,700,000 | $1,900,000 | $3,600,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 6% | | | | | | | $0 | $250,000 | $250,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $700,000 | $0 | $500,000 | $0 | $500,000 | $0 | $1,700,000 | $2,150,000 | $3,850,000 |

# EF-22-SD-91: Sewer Service Funding For Sagamore Avenue Area Sewer Extension

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | Portions of Sagamore Ave & Wentworth House Road; Cliff Road, Walker Bungalow Road & Sagamore Grove |
| Project Type | Construction or Expansion of a Public Facility, Street or Utility |
| Commence FY | 2022 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |




**Description**: The City has advanced this project to gain pricing for the private side work for converting existing septic systems to a pumped sewer connection. Bids were received in August 2021 and pricing was found to be higher than anticipated. The project will be re-bid and updated price acquired. City staff will present updated rate information to the City Council to conclude an approach to the cost sharing proposal. This item sets aside funds in anticipation of City Council action.

Studies Identified & Useful Website Links:

- Consent Decree Second Modification.
- Sagamore Ave Sewer Extension Project Page
- Water and Wastewater Division Page
- FY24-FY29 CIP (Prior Year) Project Sheet

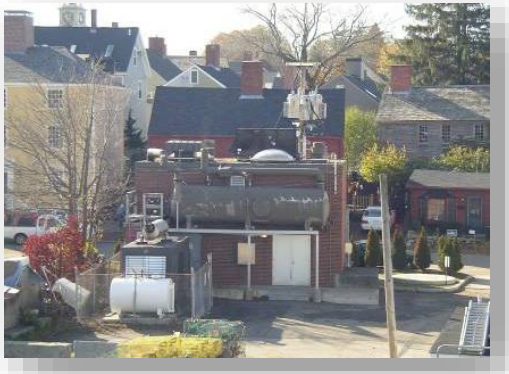
Notes of Changes in Funding Plan from FY24-29 CIP:

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $365,000 | $365,000 | $365,000 | $365,000 | $365,000 | $365,000 | $2,190,000 | $1,865,000 | $4,055,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $365,000 | $365,000 | $365,000 | $365,000 | $365,000 | $365,000 | $2,190,000 | $1,865,000 | $4,055,000 |

# EF-13-SD-92: Mechanic Street Pumping Station Upgrade

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | 113 Mechanic Street |
| Project Type | Upgrade of Existing Facilities |
| Commence FY | 2030 |
| Priority | C (needed after 6 years) |
| Impact on Operating Budget | Reduce (will reduce operating costs) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |



**Description**: The Mechanic Street Wastewater Pumping Station is the largest in the City. Recent failures at the site indicate a comprehensive replacement and upgrade are required. Applications for State and Federal grant monies have been made. FY25 monies will be for design with grant monies and City match following in FY27.

Studies Identified & Useful Website Links:

- Wastewater Pump Station Master Plan 2019
- Lifespan Evaluation (ongoing)
- Water and Wastewater Division Page
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Schedule of project has changed; funding reflects new schedule.

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 39% | | | $10,000,000 | | | | $10,000,000 | $0 | $10,000,000 |
| Bond/ Lease | 61% | $3,000,000 | | $10,000,000 | | | | $13,000,000 | $2,500,000 | $15,500,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $50,000 | $50,000 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $3,000,000 | $0 | $20,000,000 | $0 | $0 | $0 | $23,000,000 | $2,550,000 | $25,550,000 |

# EF-24-SD-93: Peirce Island Wastewater Treatment Facility

| | |
|---|---|
| Department | Public Works – Sewer Division |
| Project Location | Peirce Island Wastewater Treatment Facility (200 Peirce Island Road) |
| Project Type | Equipment, Non-vehicular |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Moderate ($50,000 to $100,000) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The Peirce Island Wastewater Treatment Facility was officially put online in the spring of 2020. Portions of the facility have been operational since an upgrade in 2015. The City is planning for the long-term improvements needed at this facility to address capital equipment replacement, permit modifications and operational needs over time. The FY25 funds are for a 3rd inclined screw press for sludge de-watering. This 3rd press will allow for redundancy to improve reliable sludge de-watering operations.

Studies Identified & Useful Website Links:

- Peirce Island Wastewater Facility Upgrade Project Page
- Water and Wastewater Division Page
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Multiple Projects Cited in Cost Estimate – current project to be $4.9 million

| | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|
| GF | 0% | | | | | | | $0 | $0 | $0 |
| Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| Bond/ Lease | 100% | $1,900,000 | $1,500,000 | $1,500,000 | | | | $4,900,000 | $0 | $4,900,000 |
| Other | 0% | | | | | | | $0 | $0 | $0 |
| Revenues | 0% | | | | | | | $0 | $0 | $0 |
| PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Totals | $1,900,000 | $1,500,000 | $1,500,000 | $0 | $0 | $0 | $4,900,000 | $0 | $4,900,000 |

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# VI. COMBINED FUNDING PROJECTS

(GENERAL FUND, WATER FUND, AND SEWER FUND)

# COM-20-PW-94: Fleet Street Utilities Upgrade and Streetscape

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Fleet Street |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2020 |
| Priority | A (needed (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | Y |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: The City is moving forward with a sewer separation project on Fleet Street. It is required through the City's Long Term Control Plan and Supplemental Compliance Plan. The project includes water, sewer, drainage upgrades along with full streetscape rework and other pedestrian enhancements. Funding for this work will come from the Water and Sewer Enterprise Funds and the General Fund.

Given the scope of this project, it will need to be completed in phases. Phase 1, a new drain line from the North Mill Pond, was addressed with FY24 Funding. Phase 2 will be the Vaughan Mall and upper Congress Street area. Phase 3 will be Fleet Street from Hanover Street to Court Street as well as a potential expansion of the project limits as determined during the design.

Downtown Aerial Utilities Underground (BI-21-PW-43) project is being funded to bury the Fleet Street overhead utilities. Market Square Upgrade project (TSM-15-PW-61) will be coordinated with this project.

Studies Identified & Useful Website Links:

- Fleet Street Reconstruction Project Page
- Long Term Control Plan Update 2010;
- CSO Supplemental Compliance Plan 2017
- Public Works Department
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

Added funding to FY25 to prioritize and expedite Vaughan Mall corridor.

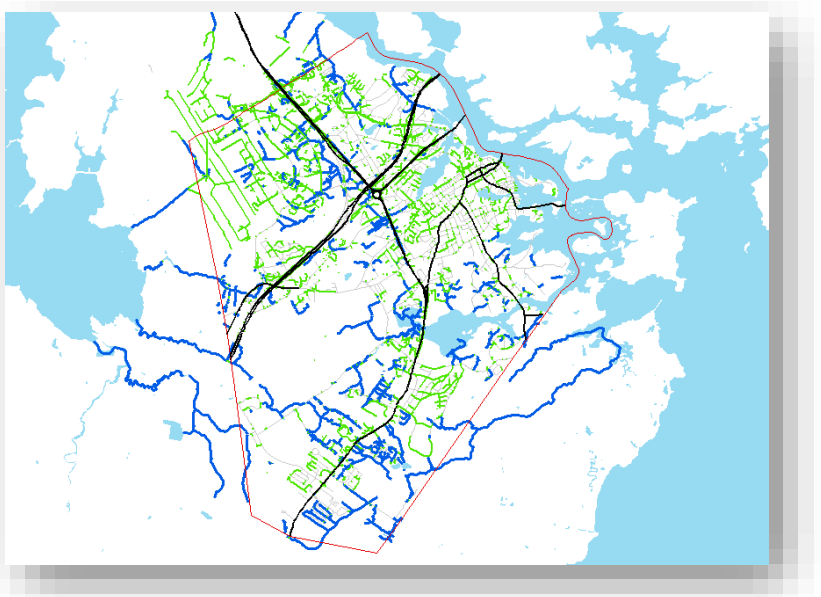
# COM-20-PW-94: Fleet Street Utilities Upgrade and Streetscape

| | | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General Fund | Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| | GF-Capital Outlay | 0% | | | | | | | $0 | $0 | $0 |
| | GF-Bond/ Lease | 21% | $1,000,000 | $2,000,000 | | | | | $3,000,000 | $0 | $3,000,000 |
| | Other | 0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Water | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 21% | $1,000,000 | $2,000,000 | | | | | $3,000,000 | $0 | $3,000,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Sewer | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 58% | $1,000,000 | $3,000,000 | | | | | $4,000,000 | $4,200,000 | $8,200,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Total General Fund | 21% | $1,000,000 | $2,000,000 | $0 | $0 | $0 | $0 | $3,000,000 | $0 | $3,000,000 |
| | Total Water Fund | 21% | $1,000,000 | $2,000,000 | $0 | $0 | $0 | $0 | $3,000,000 | $0 | $3,000,000 |
| | Total Sewer Fund | 58% | $1,000,000 | $3,000,000 | $0 | $0 | $0 | $0 | $4,000,000 | $4,200,000 | $8,200,000 |
| | | **Totals** | **$3,000,000** | **$7,000,000** | **$0** | **$0** | **$0** | **$0** | **$10,000,000** | **$4,200,000** | **$14,200,000** |

# COM-15-PW-95: Citywide Storm Drainage Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Citywide |
| Project Type | Construction or expansion of a new public facility, street or utility |
| Commence FY | Ongoing |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| **Evaluation Criteria** | **Qualify?** |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |



**Description**: The City owns and maintains storm drains, catch basins and outfalls. Many of these structures are failing and need upgrades. Drainage improvements are upgraded as part of specific capital projects, roadway reconstruction and prior to annual paving. In addition to pipe work, the existing stormwater ponds and swales need to be maintained.

Funding for this work will come from the Sewer Enterprise Fund and the General Fund.

| Studies Identified & Useful Website Links: |
|---|
| • Stormwater Master Plan 2007<br>• Department of Public Works<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Increase in funding due to upsurge in current construction bid costs |

# COM-15-PW-95: Citywide Storm Drainage Improvements

| | | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General Fund | Fed/State (ARPA) | 8% | | | | | | | $0 | $600,000 | $600,000 |
| | GF-Capital Outlay | 10% | | | | | | | $0 | $800,000 | $800,000 |
| | GF-Bond/ Lease | 38% | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $3,000,000 | $0 | $3,000,000 |
| | Other | 0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Water | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Sewer | Revenues | 7% | | | | | | | $0 | $550,000 | $550,000 |
| | Bond/Lease | 38% | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $3,000,000 | $0 | $3,000,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Total General Fund | | 55% | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $3,000,000 | $1,400,000 | $4,400,000 |
| Total Water Fund | | 0% | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Total Sewer Fund | | 45% | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $500,000 | $3,000,000 | $550,000 | $3,550,000 |
| | **Totals** | | **$1,000,000** | **$1,000,000** | **$1,000,000** | **$1,000,000** | **$1,000,000** | **$1,000,000** | **$6,000,000** | **$1,950,000** | **$7,950,000** |

# COM-23-PW-96: Chapel Street

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Chapel Street at Bow Street |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2027 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | Y |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: This project includes the reconstruction of Chapel Street from Daniel Street to Bow Street. Work will include replacement of the water main, sewer main, and drainage improvements along the roadway.

| Studies Identified & Useful Website Links: |
|---|
| • Public Works Department<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| Annual funding requests have been increased to adjust for the upsurge in current construction bid pricing. |

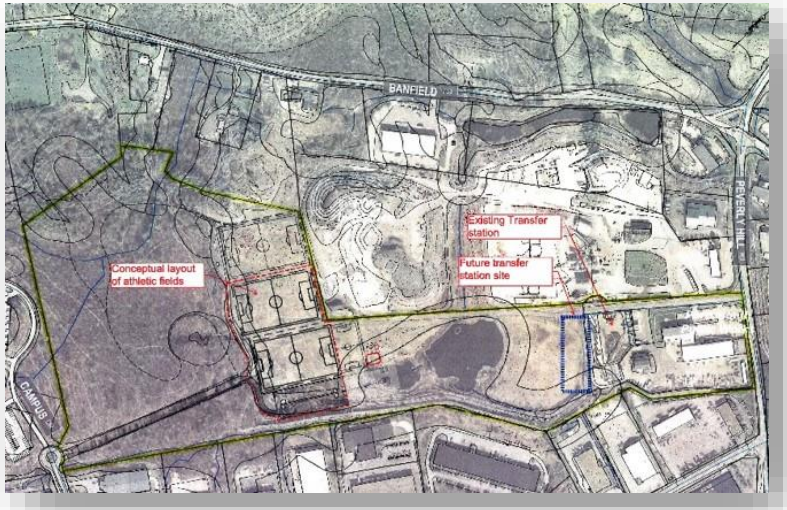
# COM-23-PW-96: Chapel Street

| | | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General Fund | Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| | GF-Capital Outlay | 0% | | | | | | | $0 | $0 | $0 |
| | GF-Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| | Other | 0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Water | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 50% | | $750,000 | | | | | $750,000 | $1,000,000 | $1,750,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Sewer | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 50% | | $750,000 | | | | | $750,000 | $1,000,000 | $1,750,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Total General Fund | 0% | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | Total Water Fund | 50% | $0 | $750,000 | $0 | $0 | $0 | $0 | $750,000 | $1,000,000 | $1,750,000 |
| | Total Sewer Fund | 50% | $0 | $750,000 | $0 | $0 | $0 | $0 | $750,000 | $1,000,000 | $1,750,000 |
| | **Totals** | | **$0** | **$1,500,000** | **$0** | **$0** | **$0** | **$0** | **$1,500,000** | **$2,000,000** | **$3,500,000** |

# COM-20-PW-97: DPW Complex Improvements

| | |
|---|---|
| Department | Public Works Department |
| Project Location | Department of Public Works (680 Peverly Hill Road) |
| Project Type | Rehabilitation of a Facility |
| Commence FY | 2027 |
| Priority | B (needed within 4 to 6 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |




**Description**: The Department of Public Works Municipal Complex needs improvements to optimize efficiency. This project will provide upgrades to improve water and sewer divisions operations including high bay storage for critical equipment, which requires indoor storage. Funding will be used to complete design, permitting and construction.

Funding for this project will come from the Water and Sewer Enterprise Funds.

Studies Identified & Useful Website Links:

- Stormwater Master Plan 2007
- Public Works Department
- FY24-FY29 CIP (Prior Year) Project Sheet

Notes of Changes in Funding Plan from FY24-29 CIP:

# COM-20-PW-97: DPW Complex Improvements

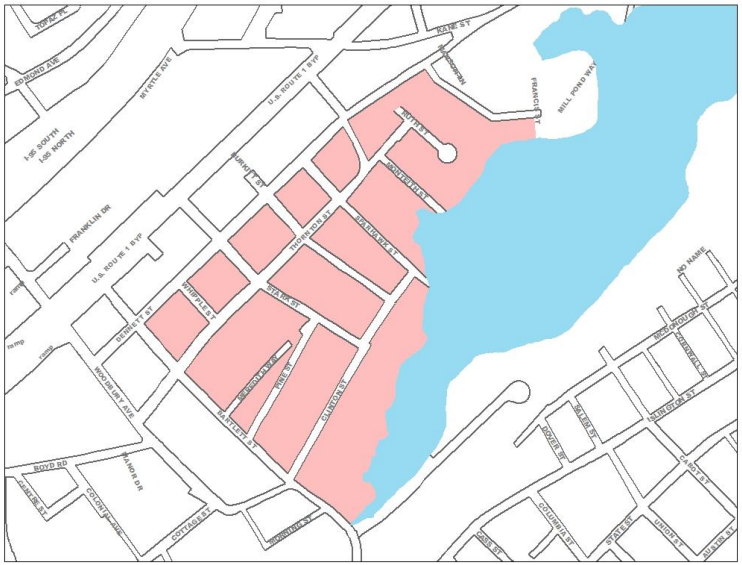
| | | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General Fund | Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| | GF-Capital Outlay | 0% | | | | | | | $0 | $0 | $0 |
| | GF-Bond/ Lease | 0% | | | | | | | $0 | $0 | $0 |
| | Other | 0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Water | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 50% | $1,500,000 | | | | | | $1,500,000 | $1,000,000 | $2,500,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Sewer | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 50% | $1,500,000 | | | | | | $1,500,000 | $1,000,000 | $2,500,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total General Fund | 0% | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | Total Water Fund | 50% | $1,500,000 | $0 | $0 | $0 | $0 | $0 | $1,500,000 | $1,000,000 | $2,500,000 |
| | Total Sewer Fund | 50% | $1,500,000 | $0 | $0 | $0 | $0 | $0 | $1,500,000 | $1,000,000 | $2,500,000 |
| | **Totals** | | **$3,000,000** | **$0** | **$0** | **$0** | **$0** | **$0** | **$3,000,000** | **$2,000,000** | **$5,000,000** |

# COM-22-PW-98: The Creek Neighborhood Reconstruction

| | |
|---|---|
| Department | Public Works |
| Project Location | Dennett Street to North Mill Pond to Bartlett Street |
| Project Type | Construction or expansion of a public facility, street, or utility |
| Commence FY | 2025 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| **Evaluation Criteria** | **Qualify?** |
|---|---|
| Responds to Federal or State Requirement | |
| Addresses a Public Health or Safety Need | |
| Alleviates Substandard Conditions or Deficiencies | |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | |
| Identified in Planning Document or Study | Y |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | Y |




**Description**: This project will address water, sewer, drainage and streetscape improvements in the Islington Creek Neighborhood. It will be implemented in phases similar to the McDonough Street area project completed in 2019. Phase one will include design and the development of the phased implementation plan.

| Useful Website Links: |
|---|
| • Stormwater Master Plan 2007<br>• Department of Public Works<br>• FY24-FY29 CIP (Prior Year) Project Sheet |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| |

# COM-22-PW-98: The Creek Neighborhood Reconstruction

| | | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General Fund | Fed/ State | 0.0% | | | | | | | $0 | $0 | $0 |
| | GF-Capital Outlay | 0.0% | | | | | | | $0 | $0 | $0 |
| | GF-Bond/ Lease | 33.3% | $500,000 | | $800,000 | | $1,000,000 | | $2,300,000 | $0 | $2,300,000 |
| | Other | 0.0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0.0% | | | | | | | $0 | $0 | $0 |
| Water | Revenues | 0.0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 33.3% | $500,000 | | $800,000 | | $1,000,000 | | $2,300,000 | $0 | $2,300,000 |
| | PPP | 0.0% | | | | | | | $0 | $0 | $0 |
| Sewer | Revenues | 0.0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 33.3% | $500,000 | | $800,000 | | $1,000,000 | | $2,300,000 | $0 | $2,300,000 |
| | PPP | 0.0% | | | | | | | $0 | $0 | $0 |
| | Total General Fund | 33.3% | $500,000 | $0 | $800,000 | $0 | $1,000,000 | $0 | $2,300,000 | $0 | $2,300,000 |
| | Total Water Fund | 33.3% | $500,000 | $0 | $800,000 | $0 | $1,000,000 | $0 | $2,300,000 | $0 | $2,300,000 |
| | Total Sewer Fund | 33.3% | $500,000 | $0 | $800,000 | $0 | $1,000,000 | $0 | $2,300,000 | $0 | $2,300,000 |
| | **Totals** | | **$1,500,000** | **$0** | **$2,400,000** | **$0** | **$3,000,000** | **$0** | **$6,900,000** | **$0** | **$6,900,000** |

# COM-25-PW-99: Lafayette Park and Monroe Street Drainage Improvements

| | |
|---|---|
| Department | Public Works |
| Project Location | Lafayette Park and Monroe Street |
| Project Type | Construction or expansion of a public facility, street, or utility |
| Commence FY | 2026 |
| Priority | A (needed within 0 to 3 years) |
| Impact on Operating Budget | Negligible (<$5,001) |

| Evaluation Criteria | Qualify? |
|---|---|
| Responds to Federal or State Requirement | Y |
| Addresses a Public Health or Safety Need | Y |
| Alleviates Substandard Conditions or Deficiencies | Y |
| Eligible for Matching Funds with Limited Availability | |
| Timing or Location Coordinate with Synergistic Project | Y |
| Identified in Planning Document or Study | |
| Improves Quality of or Provides Added Capacity to Existing Services | Y |
| Reduces Long-Term Operating Costs | |
| Provides Incentive for Economic Development | |
| Responds to a Citywide Goal or Submitted Resident Request | |

**Description**: Phase one will be improvements to the water, sewer and storm drainage on Monroe Street at Lafayette Park in order to separate stormwater from sanitary sewer and prevent ponding in playground. Phase two of this project, in FY28 and FY29, will fund design and construction of playground and field improvements at the park.

| Useful Website Links: |
|---|
| |

| Notes of Changes in Funding Plan from FY24-29 CIP: |
|---|
| New project for FY25 |

# COM-25-PW-99: Lafayette Park and Monroe Street Drainage Improvements

| | | | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | Totals 25-30 | 6 PY's Funding | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General Fund | Fed/ State | 0% | | | | | | | $0 | $0 | $0 |
| | GF-Capital Outlay | 3% | | | | $75,000 | | | $75,000 | $0 | $75,000 |
| | GF-Bond/ Lease | 35% | | | | | $1,000,000 | | $1,000,000 | $0 | $1,000,000 |
| | Other | 0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Water | Revenues | 0% | | | | | | | $0 | $0 | $0 |
| | Bond/Lease | 0% | | | | | | | $0 | $0 | $0 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| Sewer | Revenues | 9% | | $250,000 | | | | | $250,000 | $0 | $250,000 |
| | Bond/Lease | 53% | | $1,500,000 | | | | | $1,500,000 | $0 | $1,500,000 |
| | PPP | 0% | | | | | | | $0 | $0 | $0 |
| | Total General Fund | 38% | $0 | $0 | $0 | $75,000 | $1,000,000 | $0 | $1,075,000 | $0 | $1,075,000 |
| | Total Water Fund | 0% | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | Total Sewer Fund | 62% | $0 | $1,750,000 | $0 | $0 | $0 | $0 | $1,750,000 | $0 | $1,750,000 |
| | **Totals** | | **$0** | **$1,750,000** | **$0** | **$75,000** | **$1,000,000** | **$0** | **$2,825,000** | **$0** | **$2,825,000** |

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# Appendix I. Citizen Requested Projects

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2025 | Elwyn Drive | Extend proposed Elwyn Side Path to Rye Line or Tucker's Cove Neighborhood. Currently Oakwood and Regina St Neighborhoods are isolated from surrounding neighborhoods and walking paths by Elwyn Drive. Walking on Elwyn drive is dangerous due to little to no road shoulder, blind corners, and high-speed traffic. The bicycle and pedestrian plan listed the sidepath all the way to the rye border as high priority. As of the 2019 update this was still listed in the recommendations. As of today the elwyn sidepath is slated to go to harding road, but an update hasn't been provided in a few years. This proposal is to extend the path past harding road to Regina st or beyond to connect the Oakwood and Regina neighborhoods. | Ian Monk | 55 Oakwood Drive Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation") |
| 2025 | Sherburne School | Renovation of this school to become a senior housing facility. It helps the affordable housing issue, while providing a downsize choice for elderly people looking to sell their houses and live in a smaller place. Priority given to Portsmouth residents. Adding a second floor in a structurally sound building also makes sense. The ball fields could remain and enhance the youthful activity surrounding this facility. The corner lot would be available for a compatible use. Many trees and benches throughout our city encourages people to connect! I can still dream..... | Donna Garganta | 471 Colonial Drive Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This project submission does not qualify as a CIP Project. This type of decision is a Policy Decision that is to be made by the City Council. |
| 2025 | Portsmouth Traffic Circle | Modernize 1950s era single lane Portsmouth rotary to modern , high capacity 2 lane roundabout like the one in Lee at NH 125 and US 4 and in Keene at NH 9 and NH 12. THe extra air pollution caused by all the traffic back ups is massively and needlessly increasing Portsmouth's carbon footprint. Not a very sustainable practice. | James Hewitt | 726 Middle Road Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This project is a State Project with the New Hampshire Department of Transportation (NHDOT). This project is the highest priority project being requested to be added to the state's Ten Year Plan by the Rockingham Planning Commission. This is not an eligible project for the City. |
| 2025 | FW Hartford Drive & TJ Gamester Avenue | "Repair dangerous Woodlands sidewalks. The sidewalks in the Woodlands are in serious disrepair. There are numerous spots were city equipment has damaged the sidewalks, causing deep depressions and risk of serious injury. There is even a sharp metal shards sticking out of the junction of the two roads by one of the stop signs. City counselors have toured this and done nothing." | MJ Shoer | 40 TJ Gamester Avenue Portsmouth, NH 03801 | Existing CIP Projects | Although similar to other Woodland's sidewalk requests, this submission is maintenace related, including metal shards sticking from the sidewalk. This specific submission was forwarded to the City's Public Works - Highway Department to address. The sidewalk was found to be deficient in one area and repaired, with a 40-foot section re-paved. The remainder of the sidewalk work for this neighborhood has been added to the CIP future project list under the Sidewalk Reconstruction Program (FY24 Project # TSM-95-PW-69). |
| 2025 | Downtown | Public Bathrooms! Traveling to other US cities as well as European cities, Portsmouth negatively stands out in its lack of year-round public bathrooms. Expecting businesses to accommodate the need does not work as they limit usage to customers. Our town fails by not providing such a basic need. | Kathryn Brandin | 495 Middle Road Portsmouth, NH 03801 | Existing CIP Projects | This item is being incorporated into other public infrastructure upgrades including the City's Upcoming Market Square Upgrades. |
| 2025 | Woodlands neighborhood | The sidewalks in our neighborhood have fallen apart and are in need of repair and replacement. They get walked often and now people walk on the street rather than the sidewalk because of the safety hazard the sidewalks present. This is not safe for child or adults. | John Gonsalves | 295 FW Hartford Drive Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Sagamore Avenue | Sideswalks on Sagamore Avenue - To replace the broken sidewalk where it is asphalt and crumbling and add a sidewalk where it is missing. The safe and intact section ends around where th eSagamore apartments are located and the rest toward the bridge is non-existant. There are a lot of walkers, especially with the incrase of residences and businesses on the avenue and the current sidewalk is crumbling, creating a tripping hazard. A crosswalk would also help where Jones intersects Sagamore near the entrance to the cemetary. It is used not only for walkers but also school kids going both to t the High School and Little Harbor. | Laura Spelke | 579 Sagamore Avenue Unit 87 Portsmouth, NH 03801 | Existing CIP Projects | This project has already been funded in a prior year CIP (CIP FY24 Project # TSM-19-PW-68) and the project will move forward as soon as feasible. |
| 2025 | Woodlands Subdivision | Sidewalks are unsafe in dire need of replacement. There is broken concrete in many places. Some areas have been patched but surface is uneven. People are forced to walk in the street, which should not be a requirement when there are sidewalks for that purpose. Please add sidewalk replacement within the Woodlands community, especially Alling TJ Gamester, to your CIP for 2024. Thank you. | Cathy LaFata | 520 FW Hartford Drive Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | State Street | Walking back from Prescott Park vis State Street in the evening, I noticed State Street does not have very good lighting for pedestrian traffic. I was hoping there was a wayt o improve the lighting on State Street. Thanks. | Julie Gilston | 203 Melbourne Street Portsmouth, NH 03801 | Existing CIP Projects | This item is already funded through the City's Public Work's Department in its Annual Operating Budget in an ongoing manner. The Highway Department will review the brightness of these lights as part of this ongoing initiative. |
| 2025 | TJ Gamester Ave, FW Hartford Dr | Sidewalks on these two streets are in terrible shape. Please maintain the sidewalks we already have before making new sidewalks. | David Heller | 95 TJ Gamester Ave Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2025 | Haven Park Pleasant Street | Pedestrian crosswalk safety - Install path lighting along the length of the sidewalk bisecting Haven Park (Livermore to Edward Streets). The park has little interior lighting, and none along the sidewalk - it is very dark at night, making it unsafe to walk through. Particularly for pedestrians walking in the direction of Edward Street toward the LIvermore Street exit of the park, vehicular traffic exiting Hancock Street blinds pedestrians with their headlights. | Mary Cline | 395 Pleasant St Portsmouth, NH 03801 | Eligible to be a CIP Project | City staff recommend this request for consideration as a potential future CIP project. Prior to formerly creating a CIP project a scope of work and public support should be detmined. |
| 2025 | Pleasant Street | Traffic Calming/Speed table installation - Traffic calming/ speed table installation needs to be implemented in the section of Pleasant Street from Hancock to Marcy Streets. Multiple residents have made similar requests to slow traffic in this very narrow stretch of Pleasant Street. This is a major traffic route to/from Newcastel, the road has no linemarkings and traffic travels this stretch faster than posted speed limits particularly in the early morning hours. Commercial vehicles (landscapers, food service, marine traffic) passing in this section nearly impinge upon the sidewalks. Previous requests have implied a resistance by fire and police services to implementing speed bumps or tables; however the increasing predominance of spped bumps throughout other areas of the city would suggest this should not be an impediment. | Mary Cline | 395 Pleasant St Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This project has the potential to be CIP Eligible under the current CIP Project "Traffic Calming" ( FY24 CIP Project# TSM-21-PW-77) but should begin with a review from the Parking, Traffic and Safety Committee. Staff recommends interested parties contact Parking, Traffic and Safety Committee with this request. |
| 2025 | Confluence of Pleasant, Marcy, South Mill and South Street | Pedestrian crosswalk safety - Please install pedestrian crossing signage and lighting at the crosswalks on these intersections. These crosswalks are partially obscured by parked cars (Pleasant Street and Marcy Streets) and or the orientation (Marcy Street) of the streets/ traffic flow (see red marks in photo). Summer tourist traffic exacerbates the safety issues as people unfamiliar with the roads are more focused on travel than on pedestrians. Many residents and canines also cross Marcy and South STreets to visit the green space bounded by Salter Street (see yellow marks in photo). There are no marked crosswalks here wahtsoever and traffic approaching these intersections often do not anticipate and/or look for pedestrians. | Mary Cline | 395 Pleasant St Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This project does not meet the qualifications to be a CIP Project and instead should be forwarded to the Parking, Traffic and Safety Committee. Staff recommends interested parties contact the Parking, Traffic and Safety Committee with this request. |
| 2025 | Woodlands neighborhood | Our side walks are in dreadful shape forcing pedestrians to walk in the street. | Joan Rice | 460 FW Hartford Dr Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Neighborhood of Boos & Lawrence | I have lived here for 16 years. The road and sidewalk condition was bad when we moved in and is terrible now. | Hannah Marchand | 44 Lawrence Street Portsmouth, NH 03801 | Existing CIP Projects | Street paving is prioritized based on the volume of traffic, the condition of pavement, and the City's Pavement Management Program. This request is existing in CIP24 Project#: TSM-94-PW-78: Street Paving, Management, and Rehabilitation plan documents the upcoming streets to be paved. |
| 2025 | Could be anywhere in Portsmouth | Submitted on behalf of the City's Public Art Review Committee (PARC), include $25,000 annually in the CIP for $ to be added to the Public Art Trust Fund to commission public art for the city's parks, neighborhoods, gateways, and public buildings. | M. Christine Dwyer (On Behalf of the City's Public Art Review Committee PARC) | 600 Broad Street Portsmouth, NH 03801 | Eligible to be a CIP Project | The Economic Development Department support this standing Committee (the Public Art Review Committee). This Committee will be responsible for reviewing and making recommendations to the City Council on all issues related to Public Art on City property. They will be responsible for administering the 1% for Art that results from large city projects. This request is to establish a baseline of funds for the purposes outlined in the request. This committee also plans to apply for state and federal grants in the future. In speaking with Finance Department staff, the correct place to hold these funds, should they be approved, is the Public Art Trust fund. |
| 2025 | Citywide | Please consider the purchase of many portable bike racks for use at concerts, races, civic and school events. They can be placed in auto parking spaces, the city can advertise there will be hundreds of parking/locking spaces for bikes and accommodate/encourage the cycling public. | Elizabeth Dinan | 639 Maplewood Ave Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2025 | I95 from Woodbury overpass to Market Street underpass | Create structural sound barriers along this stretch of I95 to promote and maintain health in the noise polluted neighborhoods close by. According to the EPA (and numerous other agencies,) "Studies have shown that there are direct links between noise and health. Problems related to noise include stress related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity. Noise Induced Hearing Loss (NIHL) is the most common and often discussed health effect, but research has shown that exposure to constant or high levels of noise can cause countless adverse health affects."<br>https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution#:~:text=Health%20Effects,sleep%20disruption%2C%20and%20lost%20productivity.<br>Please also reference<br>-- Clean Air Act (Title IV – Noise Pollution)<br>-- The Noise Control Act of 1972 (42USC7641)(21 pp, 890K, About PDF), from U.S. General Services Administration (GSA)<br>-- The Quiet Communities Act of 1978 | Jessica Dolan | 635 Maplewood Avenue Portsmouth, NH 03801 | Existing CIP Projects | There is an existing CIP project (FY24 #BI-07-PW/NH-44 "Sound Barriers in Residential Area Along I-95") that addresses this issue. The NHDOT has determined east side of I-95 is not eligible for State and Federal Funding. Staff has reached out to determine if a solely City funded project could be completed. Previously allocated funds can be used to study this request and determine the appropriate funding level for a sound barrier project. Please see the Sound Barrier project page on City's website for the most current information https://www.cityofportsmouth.com/publicworks/sound-barriers |
| 2025 | Portsmouth | In the CIP, policy makers should set aside 2% ($2.7 million in FY24) of the budget annually for the purpose of land conservation and open space protection. We should be prepared to quickly purchase new properties that are contigous with our existing conservation areas. The one thing that there is no more of is land. Additionally, we should be ready to protect our core downtown open spaces, which today are parking lots, by obtaining voluntary first rights of refusal from current land owners. For instance, an example is the TD Bank lot next to the Old South Church. Wouldn't it be better for the city to put a future pocket park there instead of a 70 foot tall development built curbline to curbline? | Thaddeus Jankowski | 27 Franklin Street Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | Although there is an existing CIP item for Land Acquisition for conservation purposes (CIP FY24 Project #BI-95-PL-21), the creation of a funding level policy/percentage is a policy decision of the City Council and not a capital request. |
| 2025 | All of the local public schools | AC units for the many classrooms that don't have it. Kindergarteners shouldn't be in 90 deg rooms. If necessary, also increase the elecrical capacity of the schools to support more AC units. | Charles Smith | 139 South Street, Unit A Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Portsmouth Elementary Schools | Air Conditioning in all schools! | Meg Aldrich | 225 Marcy Street Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Little Harbour Schoool/ Elementary Schools | See above | Saroj Fleming | 391 Miller Avenue Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2025 | Little Harbour Scool | Add AC to little Harbour school | Emily Doe | 127 Willard Ave Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Little Harbour Elementary and Dondero Elementary Schools will require upgrades to electrical service and is estimated to cost approximately $6 to $8 million. Staff does not recommend putting forward this project in its entirety in the timeline of this CIP (FY25 - FY30) due to funding constraints and competing priorities for school capital needs. |
| 2025 | Portsmouth Schools | Add Air Conditioning to the Schools | Sarah Carter | 145 Thaxter Rd Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Portsmout hSchools | Add ACs to the schools | Katie Swenson | 103 Wibird Street Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Schools | Add air conditioning to schools | Molly Shaw Wilson | 1360 South st Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Schools | Add AC to schools | Jessica Harris | 2 Monroe St Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Dondero elementary | Please add air conditioning to our schools that don't have it like Dondero Elementary. With climate change occuring, extreme temperatures make learning very challenging and in some extreme cases dangerous . | Kenneth Buttermore | 545 FW Hartford Dr Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Little Harbour Elementary and Dondero Elementary Schools will require upgrades to electrical service and is estimated to cost approximately $6 to $8 million. Staff does not recommend putting forward this project in its entirety in the timeline of this CIP (FY25 - FY30) due to funding constraints and competing priorities for school capital needs. |
| 2025 | Little harbor school | Please consider adding AC to the schools. The poor kids cannot focus when it is so hot. Some children have a hard time breathing, like my daughter who has asthma. In extreme heat it is so difficult for the kids | Aly Scott | 271 Sagamore ave Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Little Harbour Elementary and Dondero Elementary Schools will require upgrades to electrical service and is estimated to cost approximately $6 to $8 million. Staff does not recommend putting forward this project in its entirety in the timeline of this CIP (FY25 - FY30) due to funding constraints and competing priorities for school capital needs. |
| 2025 | Portsmouth Public School | Add AC in the schools | Sheridan Doremus | 1036 Islington Street Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |

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| 2025 | Schools in Portsmouth | Add air conditioners at the schools. The heat wave this past week underscores the need for this. Teachers and school kids need a cooler, healthier environment for learning. | Sarah Holly | 122 Thaxter Road Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Little Harbour Elementary & all public schools | Schools need AC, it's too hot to learn, too hot to think | Corey McAveeney | 282 Rockland St Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Public schools | Air Conditioning in public schools please. | Jenna Thomson | 225 Spinney Rd Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Portsmouth Schools | Air conditioning for our schools. The extreme heat this summer has highlighted the fact that some of our schools do not have air conditioning. This type of heat is predicted to become a regular occurrence here and our city should plan for the future. It is a detriment to our kids, the teachers and staff to try and function in such incredibly hot conditions. It's unreasonable to expect kids, especially elementary kids, to focus or learn anything when they are sweltering. Even before this summer the south facing classrooms at LHS would become saunas on sunny and hot days. With the added restrictions of keeping doors closed (ALICE protocols) and teachers not being allowed to bring in window units (both reasonable policies), we owe it to our kids and staff to provide a solution. The kids and staff deserve a comfortable and safe learning environment which means we must add central air conditioning to schools that do not have it. | Shannon Palace | 35 Elwyn Avenue Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |

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| 2025 | Portsmouth schools | Add AC in the schools | Leah Campbell | 287 middle road Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Dondero | Almost all of SAU50 has mini splits in classrooms and half of the Portsmouth Schools. | Leslie Scuderi | 311 Spinney Road Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Schools | Add AC to Schools | Eric Doremus | 1036 Islington St. Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | LHS, PHS, DON schools | Install central AC in LHS, PHS language wing, and DON schools | Tamara Carrigan | 45 Rogers Street Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Portsmouth Schools | Air conditioning for all Portsmouth school buildings. | Tara Schoff | 934 Maplewood Ave Portsmouth, New Hampshire 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Maple Haven | Remove old sidewalks and grass over. | Sarah Jarvis | 26 Winchester St Portsmouth, NH 03801 | Existing CIP Projects | This project is part of a larger, existing project (CIP FY24 Project #: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program). |
| 2025 | Maple Haven | Pedestrian, bicycle, non-motorized study of neighborhood and surrounding areas. (Additional Note added later) "The failed sidewalk project brought up many issues with the neighborhood and surrounding area in regards to how residents use the streets. It was also brought up how our neighborhood will be connected into the rail trail as well as future multi use paths on route 1." | Sarah Jarvis | 26 Winchester St Portsmouth, NH 03801 | Existing CIP Projects | An update to the Bicycle/Pedestrian Plan is in progress with an RFP going out in the fall of 2023 to update the 2014 plan. |
| 2025 | Maple Haven | Bicycle access from Maple Haven to currently in construction rail trail. Options discussed have been multi use path on Ocean Road or possible trail construction behind playground. (Additional Note later added). "Maple Haven has the opportunity to be one of the most connected neighborhoods in the City. With the construction of the rail trail we have fantastic off road access to downtown. I usually bike with my kids down route one and then Heritage to Banfield to ge tto the trail. We need better and safer access." | Sarah Jarvis | 26 Winchester St Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | South End | (See folder with 4 photos) here are a number of issues addressed in this request. 1) identifying, protecting and making accessible the water public rights of way for public physical and view access. 2) Climate change and the increasing storms with high tides and flooding 3) Protecting sewer and water access to the south end in the area of Sanders Lobster Pound.<br><br>There are numerous public right of ways to the water throughout the city that have been on historic maps for a century. But to my knowledge the city has not formally nor publicly addressed them. (I have asked for clarification and not received any legal finding). My understanding has been that the roads ending at the water on the map (in our neighborhood that would be I feel strongly that these right's of way are just that, protections for the public to access and enjoy the water and that it is the city's responsibility to address these fairly. We have chosen to live and pay high taxes in Portsmouth for the proximity and access to the water. This access is being threatened by benign neglect, indifference, or fear of repercussions from abutters, encroaching and at times assuming the right of way as their own public property.<br><br>The most pressing issue/ example of this is the Sanders dumpster blocking the end of the right of way at Partridge, an area that used to be the town boat launch. There is a danger that dumpster placing in public right of ways will become a permanent solution for preventing access and impeding the view for all that live or visit here. There is a danger that the landowner will therefore be granted de facto ownership.<br>This site is also subject to major climate change rampage, the erosion of the road at the end of Partridge is seemingly undermining the water and sewer infrastructure there. There is increased flooding at that location. I do not see a CIP to address this. It is not clear to me who owns the land that the sewer and water main drain are located nor if there is a legal agreement with the owners to run that infrastructure under the road . The Sanders have posted this area as private making Partridge and Pray dead ends. I would like Legal clarification and explanation of the City/Sanders arrangement.<br><br>A sea wall at this location similar to that at the end of Pickering between the South End Yacht Club and Gino's INCLUDING stairs down to the water, with street markings that say "No Parking Public Access" could be a solution to this problem. (I am not familiar with current climate change recommendations. Possibly this as been addressed? If so I'd like to be informed of that.) At the same time as the upgrade is made to the infrastructure I would like to see a storm drain installed so that the neighborhood can send the sump water into it. The road is very icy in the winter.<br><br>DES has approved the moving of the boat house owned by Thompson's at the end of Salter providing they upgrade the retaining wall. Adjacent to this is an identified and marked public right of way. I suggest that should this project go forward the city piggyback on that project and extend the sea wall the extent of the right of way INCLUDING stairs such as those at the end of Pickering. Should the sea wall be extended without stairs I believe you will be preventing free and public access. Those of us without docks or direct water access go over the rocks there to get in to the water. It's precarious but at least we do not have to | Susan MacDougall | 39 Pray St. Portsmouth, NH | Better Served by Another Process or Ineligible as a CIP Project | This submission does not qualify as a City Capital Project. The City will evaluate if coordination with the private project is feasible for City eligible portions. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Dondero Elementary | Add a/c to our classrooms - it is continuously hot at the start of the academic year for AT LEAST a month, including hot in May - keep our kids cool so they can focus, be comfortable, breathe well and learn! | Jennifer Smith | 163 Spinney Rd Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | all portsmouth schools | air conditioning throughout all schools, in all locations | Martin Carter | 1 Denise Street Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Portsmouth High School (Language wing) | Right now the language wing is one of the few areas of Portsmouth High School lacking air conditioning. Teachers rely on large fans that make it harder to hear lessons. The heat also makes it challenging for students to focus, and lots of students feel tired, out of it, and lacking motivation on hot days. These conditions are even more detrimental to teachers who are expected to spend their entire day in classrooms lacking air conditioning. It would be incredibly beneficial if the school board helped the language wing get AC, encouraging language learning and making it a better experience for students and staff. | Kay Rapaport | 139 South Street, Unit A Portsmouth, NH 03801 | Existing CIP Projects | The current Portsmouth High School (PHS) facility and its systems are nearing 25 years of service. Additionally, the Career and Technical Education Center (CTE) is also reaching 25 years and is expected to receive state support of 50%-75% for renovations in the 2030-31 biennium. The period of anticipated renovation in the years FY30 to FY35 would provide the most cost-effective opportunity with least possible program disruption for extending air conditioning into those portions of PHS and CTE not currently served by that technology. |
| 2025 | Little Harbour School | The LHS playground is in desperate need of a total overhaul. The structures haven't been updated since the 1990's and many parts are in a state of disrepair. There are shards of exposed metal/rust, exposed concrete, and other malfunctions/safety issues due to the age and state of the playground that need to be addressed as soon as possible. This project is long overdue and the LHS PTA has created a committee to begin addressing this project. We desperately need the support of the city to make this project a reality for the children of LHS and the community that uses this outdoor space. | Kate Hatem | 1 Ash St. Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | The School Department validates the need for upgrades to the Little Harbour School playground. Staff appreciates that the location of this play space will likely necessitate careful attention to compliance with local wetlands and state ocean wetlands regulations. This project can be addressed through continued collaboration between the LHS PTA and the School Department. |
| 2025 | Coakley Road and Larry Lane | Repaving of Coakley Road and Larry Lane is desperately needed! | Thomas Morley | 30 Coakley Road Portsmouth, NH 03801 | Existing CIP Projects | Street paving is prioritized based on the volume of traffic, the condition of pavement, and the City's Pavement Management Program. This request is existing in CIP24 Project#: TSM-94-PW-78: Street Paving, Management, and Rehabilitation plan documents the upcoming streets to be paved. |
| 2025 | Little Harbour Elementary School | It is TOO HOT in LHS! The temps last week provided an unsafe learaning envorment for our studdnets and teachers. Schools are suppose to keep our kids safe! No a/c is not safe in these temps. Pleaase install a/c in all Portsmouth Schools that are without. LHS, Dondero, PHS lanugage wing | Lindsay Pappas | 2 Brackett Lane Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Little Harbour Elementary and Dondero Elementary Schools will require upgrades to electrical service and is estimated to cost approximately $6 to $8 million. Staff does not recommend putting forward this project in its entirety in the timeline of this CIP (FY25 - FY30) due to funding constraints and competing priorities for school capital needs. |

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| 2025 | Little Harbour School | AC for the classrooms | Katie Widener | 1020 South St Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | Madison Street b/t Austin St. and State St. | Residents are parking on the front lawn of the Madison Street Apartments. Madison Street residents are requesting curbing, tree plantings, and other roadway improvements, including parking. This project was added to CIP in 2019 to be completed in 2025, but was then delayed to 2029. Residents are requesting it be restored to its original 2025 timeline. | Lee Frank | 169 Madison Street Portsmouth, NH 03801 | Existing CIP Projects | This project already exists in the Capital Improvement Plan (FY24 Project # TSM-20-PW-82). Funding for this project is current shown in out-years due to funding available. |
| 2025 | Portsmouth School Department at Little Harbor Elementary, Dondero Elementary and PHS Foreign Language Wing | Currently, Little Harbor Elementary School, Dondero Elementary School and the PHS Foreign Language wing do not have Central AC and should be a priority to update. With increasing temperatures, we need to add central air conditioning in these places in order to allow children and teachers to pursue education in workable, humane conditions and provide equity to what we have in other school buildings, and what we have in Portsmouth City Offices as a whole. Last week, in the period of high heat and humidity, classrooms were hitting 90 degrees for multiple days. This is inhumane and unsafe for education to be prioritized. Box fans that push warm, humid air around is not a healthy solution. Last summer, people surrounded a car in the Market Basket parking lot on a hot day with a dog locked inside, and broke the windows to save the dog. However, we march our children and teachers into a building without central air on the hottest days and ask them to edure this. Schools should be for educating and not for learning how to endure unhealthy air in their working building. We keep giving a pile of weak excuses on why we allow this to continue, like this: * Well, it is only for a couple of days until school gets out or in the beginning...they can do it. Reality is that these buildings are used year round with people in them all during the summer who deserve to work in tolerable conditions. *Well, I dealt with hot classrooms when I was a kid. Reality is that we are seeing undeniable signs of global temperature change and going forward, there are no signs that this will reduce. *Most of the schools have AC already. Reality is that the inequity of this makes it even worse, that this should be an expectation of our school system and city that we are able to work and educate in tolerable and humane conditions....last week was not. I have heard from several councilors that they did not know that there are still schools/spaces without AC. I think we need to let them know this. *Let's drop some window/portable AC's in to save money. Well, last week we tried this experiment. Parents at LHS responded and sent in portable AC units to try. My survey results from LHS show that this definitely helped with humidity and temp by a few degrees, and was worth the quick time to install, but that there were electricity interruptions and teachers needed to adapt and unplug other devices. Message heard loud and clear that this was worth it to try and is better than going without, but not in any way a solution that negates needing central air installation. Great NHPR article about how portable units don't account for electric grids and what they can handle. | Erin Bakkom | 1275 Maplewood Ave #12 Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |
| 2025 | LITTLE HARBOUR SCHOOL | AIR CONDITIONERS ADDED TO ELEMENTARY SCHOOL | Jill Maloney | 389 Lincoln Ave Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Little Harbour Elementary and Dondero Elementary Schools will require upgrades to electrical service and is estimated to cost approximately $6 to $8 million. Staff does not recommend putting forward this project in its entirety in the timeline of this CIP (FY25 - FY30) due to funding constraints and competing priorities for school capital needs. |
| 2025 | Elementary schools and high school | Centralized air in all city schools | John Martin | 11 Dwight Ave Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Dondero and Little Harbour Elementary Schools will require upgrades to electrical service and is estimated to cost between $6 and $8 million. The need for air conditioning of spaces at Portsmouth High School and the Career and Technical Education Center can most efficiently be addressed as part of the anticipated capital renovation of that building and its systems in the years FY30 to FY35. The beginning of that work is reflected in the School Department's CIP 25-30 submission. Staff does not recommend putting forward this project in its entirety due to funding constraints and competing priorities for other school capital needs. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Maple Haven | (None given) | Alana Brown | 71 Winchester Street Portsmouth, New Hampshire 03801 | Existing CIP Projects | This project is part of a larger, existing project (CIP FY24 Project #: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program). |
| 2025 | The Woodlands . . .FW Hartford Dr and TJ Gamester | Replacing existing sidewalks as they are uneven, riddled with cracks and mostly unsafe. Forces people to walk in the road which creates its own hazard for motor vehicles & pedestrians themselves | Anthony Balakier | 230 FW Hartford Dr Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | The Woodlands | Fix crumbling/uneven/unsafe sidewalks throughout the neighborhood | Angela Bissonnette | 220 F.W. Hartford Dr Portsmouth, New Hampshire 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Madison Street | Residents are parking on the front lawn of the Madison Street Apartments. Madison Street residents are requesting curbing, tree plantings, and other roadway improvements, including parking. This project was added to CIP in 2019 to be completed in 2025, but was then delayed to 2029. Residents are requesting it be restored to its original 2025 timeline. | Abbie Frank | 169 Madison Street Portsmouth, NH 03801 | Existing CIP Projects | This project already exists in the Capital Improvement Plan (FY24 Project # TSM-20-PW-82). Funding for this project is current shown in out-years due to funding available. |
| 2025 | The Woodlands | The sidewalks are crumbling in our neighboard. Its dangerous for disabled people or strollers. Or even able-bodied people and kids can accidently step on an uneven surface. | Adam Marcionek | 595 FW Hartford Drive Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Woodlands | Sidwalk reconstruction. | Michael McCann | 115 FW Hartford Drive Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | woodlands sidewalks | repair or replace sections of sidewalks | arthur hosser | 540 F.W. Hartford Dr. portsmouth, nh 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Woodlands Neighborhood | Woodlands sidewalks are in need of some TLC maintenance | Nicolaus Goldstein | 170 FW Hartford Drive Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Maplewood Avenue between the Route 1 Bypass and Congress St | Please return the "Maplewood Downtown Complete Streets" project that was removed from the CIP last year. This is an overly wide and dangerous street created during "urban renewal" and a prime candidate for narrower/reduced driving lanes, buffered bike lanes, pedestrian islands, and improved pedestrian crossings. Lane reconfiguration/striping could be done at little cost, or a bigger streetscape rebuild would greatly benefit this growing area as a pedestrian space. It is a high priority in the Bike/Ped plan to connect the outer Maplewood bike lanes to the downtown core and make a real network, including a safe route to school for residential neighborhoods to the north. In places parking could remain or even be added if it benefits traffic calming, but proximity to both parking garages makes street parking less essential. Seacoast Area Bicycle Riders, the Transportation and Climate Action Group, and many of the people we speak with would like to request this project for the CIP. | MATTHEW GLENN | 34 Harrison Ave portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | Update the 2014 City of Portsmouth Bicycle and Pedestrian Plan | Bring the plan up to date with community needs, align with new Climate Action Plan, reprioritize infrastructure investments to move toward intended future complete bicycle network. | William Lyons | 62 Mendum Avenue Portsmouth, New Hampshire 03801 | Existing CIP Projects | An update to the Bicycle/Pedestrian Plan is in progress with an RFP going out in the fall of 2023 to update the 2014 plan. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Maplewood Downtown bike project | Reinstate Maplewood Downtown project for bike nework connectivity and better walking dowtown; align project with new Portsmouth Climate Action Plan. | William Lyons | 62 Mendum Avenue Portsmouth, New Hampshire 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | Middle Street corridor into downtown | Reinstate Middle Street Downtown project for bike network connectivity and better walking access to and within downtown | William Lyons | 62 Mendum Avenue Portsmouth, New Hampshire 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | City Hall | Conservation Assessment is a necessary first step in creating a public/private archival facility. It will determine the scale and scope of the collections held by multiple city departments including Finance, City Clerk, Library, Legal, School Department, Police and Fire, along with collections held by the Portsmouth Athenaeum, Strawbery Banke and the Portsmouth Historical Society. This public/private facility will reduce redundancies and make a more cost effective long-term solution to the broad shared interests in protecting Portsmouth history for future generations. (see 2 attachments) | Vincent Lombardi (on behalf of the Archive Blue Ribbon Committee) | 75 Aldrich Rd Portsmouth, NH 03801 | Eligible to be a CIP Project | The City has been challenged with the housing and maintenance of its historic records and artifacts. A Public/Private Partnership (PPP) to provide a museum quality historic archival facility would be beneficial to the whole city in helping preserve and make available historic documents and artifacts as well as offering a single location for all historic citywide records (aiding in the cost effectiveness of the construction and running of said facility). An assessment of City Records (volume, locations, etc.) would be beneficial to the city for both this potential shared archival project as well as its own records management needs. The City has a vast wealth of required documentation as well as numerous historic artifacts to review for preservation needs and cost. Upon the completion of the records and artifact assessment, the second proposed study (that of architectural needs) would be necessary to ascertain an archive location, building size needs, as well as any security and environmental needs of each specific organization within this public/private partnership. The Archive Committee should also work closely with the City Staff to ensure that any project moving forward would be in tandem with Local, State and Federal Laws. This project could also potentially benefit from grant funding. |
| 2025 | Woodlands | replace most of the existing sidewalks on FW Hartford and TJ Gamester. They are in horrible condtions in many sections | Ted Ristaino | 35 FW Hartford Dr Portsmouth, NH 03801 | Existing CIP Projects | Mayor's Blue Ribbon Task Force on Historical Archives Committee Page |
| 2025 | Gosling Rd | Complete the Multi Use path on Gosling Rd, as recommended in the Bike/Ped plan: Remove travel lane and/or median for two-way cycle track on south side of road from Woodbury Ave to Spaulding Tpk ramps. | Anne Poubeau | 160 Bartlett Street Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | Woodbury Ave between Gosling Rd and Market st Ext | Create a multi-use path/protected bike lanes on Woodbury Ave between Market St extension and Gosling Rd to connect the residential (Gosling Meadows, Oriental Gardens) and commercial areas to the rest of the town. | Anne Poubeau | 160 Bartlett Street Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | Woodbury Ave | Install traffic calming measures all along Woodbury Ave from Market Street Extension intersection to the Bartlett Street intersection with a specific attention to the area between I-95 and Dennett. | Anne Poubeau | 160 Bartlett Street Portsmouth, NH 03801 | Existing CIP Projects | Buildings and Infrastructure - Parks, Playgrounds & Recreation |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Maplewood Ave | Reinstate Maplewood Downtown project for bike newtwork connectivity and better walking downtown. | Anne Poubeau | 160 Bartlett Street Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | Citywide | Update the 2014 Bicycle and Pedestrian Plan as informed by the Climate Action Plan with realistic goals for what can be accomplished in the next five years | Anne Poubeau | 160 Bartlett Street Portsmouth, NH 03801 | Existing CIP Projects | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | Jones Ave | Sidewalk on Jones Ave | Donald Stickney | 213 Jones Ave Portsmouth, New Hampshire 03801 | Better Served by Another Process or Ineligible as a CIP Project | Sidewalk expansion requires a consensus from the entire neighborhood, and documentation from the neighborhood is required of this consensus. Staff recommends that the interested parties send this request to Parking, Traffic and Safety Committee to gain neighborhood consensus. This is potentially a future CIP Eligible project. |
| 2025 | Portsmouth Elementary Schools | Little Harbour School and Dondero Elementary School and one wing of the High School need to be upgraded with air conditioning to have all school buildings have the same conditions. | Lisa Lisbon | 37 Taft Rd Portsmouth, New Hampshire 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Little Harbour Elementary and Dondero Elementary Schools will require upgrades to electrical service and is estimated to cost approximately $6 to $8 million. Staff does not recommend putting forward this project in its entirety in the timeline of this CIP (FY25 - FY30) due to funding constraints and competing priorities for school capital needs. |
| 2025 | Woodlands Neighborhood FW Hartford Drive | Please prioritize sidewalk replacement/repair at the Woodlands (FW Hartford Drive/TJ Gamester). Older adults are using the street to avoid falls which is dangerous. There are many holes and uneven surfaces. Thank you | Suzanne Dinsmore | 85 FW Hartford Drive Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Little Harbour School | Our family is writing to request the city invest in an air conditioning system to cover all of Little Harbour Elementary school. The first two weeks of school were unbearably hot for our third and fifth graders, making them sick and unable to learn. There are sure to be other hot days this fall and then again in the spring. Even when we brought in a portable air conditioner for our son's fifth grade class to use, they were only able to use it when the classroom next door wasn't using theirs, or a circuit would blow. The temperature was 85 degrees and the portable AC brought it down to 80 degrees before they had to shut if off to allow another class to use the circuit. Temperatures are getting warmer, and schools should have modern HVAC systems for their teachers and children without relying on the kindness of parents to lend air conditioners, especially with circuits already overloaded on plugs in the classroom. | Duncan Craig | 175 State Street Portsmouth, NH 03801 | Eligible to be a CIP Project | In the earliest and latest days of the school year there are times when the temperature and humidity in some school spaces are driven way up. Considered only by itself, the need for air conditioning is simple and compelling. But given a limit to the capital resources available, other capital improvement projects outweigh the need for air conditioning on a relatively small number of school days. Air conditioning throughout Little Harbour Elementary and Dondero Elementary Schools will require upgrades to electrical service and is estimated to cost approximately $6 to $8 million. Staff does not recommend putting forward this project in its entirety in the timeline of this CIP (FY25 - FY30) due to funding constraints and competing priorities for school capital needs. |
| 2025 | Buckminster Way/Ocean Road | Sidewalk between two Buckminster Way entrances. (Additional Note Added) "Hello. Our Stonegate neighborhood includes 30+ homes representing several families, young children and pets. Although we understand that Ocean is a state road, we have observed several sidewalks installed over the years. Our residents walk along the stretch between the Buckminster Way entrances where there is not only no sidewalk, but no safe shoulder either. Several residents have voiced the need for this safety improvement over the years, even requesting it to the sitting mayor and city council years ago. We look forward to your consideration. " | Wendy Formichelli | 550 Ocean Road Portsmouth, NH 03801 | Existing CIP Projects | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Middle Street Downtown bike lanes/ Complete Street | This project, TSM-21-PL-53, was dropped from the previous CIP due to "changing priorities", but the Bike-Friendly Community Policy and Complete Streets Policy remain. Both street and sidewalks are due for improvement between Congress and Highland, and it should be a complete streets improvement including bicycles to allow an essential link at the center of the downtown network. Improved bus stops and crossings should be included. This request is a priority of Seacoast Area Bicycle Riders as well as the Transportation and Climate Action Group. | Matthew Glenn | 34 Harrison Ave portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | US Route 1 New Sidepath from Andrew Jarvis to Wilson | This project is described in the CIP as TSM-08-PL/NH-61, but the scope of that state DOT project #29640 is now from Wilson south to Ocean road. Safe bicycle and pedestrian sidepaths are needed on both segments of this high traffic corridor, but they may need to be separate CIP entries. The portion between Jarvis and Wilson is highlighted in Portsmouth's 2025 Master Plan as a gateway district to benefit from new housing, better transit, walking, and biking. Several new housing projects are now in the works and there is a need to start planning a complete streets project for Route 1 as well. This is a priority of Seacoast Area Bicycle Riders and the Transportation and Climate Action Group. | Matthew Glenn | 34 Harrison Ave portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | This request will be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. Pending the results of that review this may be a future eligible CIP project. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY24 # TSM-15-PL-59 "Bicycle/Pedestrian Plan Implementation"). |
| 2025 | Bicycle and Pedestrian Plan Update | There is a need for an updated Bicycle and Pedestrian Plan. This planning effort was last done in 2014, and there was one staff update or progress report to the council in 2018. Ideally there would be annual reporting and regular updating. This Plan should be informed by the Climate Action Plan and have realistic goals to prioritize projects that can be completed in the next five years. This request is a priority of Seacoast Area Bicycle Riders and the Transportation and Climate Action Group, a subgroup of Portsmouth Climate Action. | Matthew Glenn | 34 Harrison Ave portsmouth, NH 03801 | Existing CIP Projects | An update to the Bicycle/Pedestrian Plan is in progress with an RFP going out in the fall of 2023 to update the 2014 plan. |
| 2025 | | Active Purification Installed Within the HVAC Systems in the School District (See attachment for details) | David Leigh Hudson | 384 Lang Rd Portsmouth, NH 03801 | Eligible to be a CIP Project | This request proposes a specific commercial solution about which the School Department staff have only cursory knowledge. The administration's preliminary estimates for purchase and implementation exceed $2.2 million and are predicted to require approximately $250k in electrical and service upgrades for completion. Annual maintenance and support costs are projected at $168k. Further, a project of this scope would require professional design and comprehensive planning at additional expense.Efforts are ongoing through the CIP to fund HVAC upgrades and improvements to indoor air quality as well as HVAC efficiencies while operating our schools in a cost-effective manner that meets today's recommended HVAC standards. This process started with the high school in 2004, middle school in 2011, and with our most recent elementary school HVAC upgrades from 2015 to 2019. Proposed FY30 funding will begin the process of evaluating and upgrading the high school HVAC systems alongside anticipated Career Technical Center renovation. The selected mechanical engineering firm will be requested to evaluate school air purification options, filtration options, and cost analysis to install and maintain. The School Department will consider contemporary solutions through that process and may continue to consider implementing solutions like the one proposed as future renovations are completed throughout the district. |
| 2025 | Peirce Island, Outdoor Pool | Splash Pad at the Outdoor Pool | Deavan Quinn | 199 Gates St, Portsmouth | Existing CIP Projects | In the recent updated Recreation Needs Study, there is support for building a splash pad somewhere in the city. We have been looking at various options for where to plan for this. One of the most important aspects of the location of the splash pad is in regard to equity and accessibility. The outdoor pool location is not one that is recommended due to the lack of bus service or bike lane access to the island. In creating the Greenland Road Recreation Facility (CIP24 Project # BI-20-RC-31), the thought was to add a splash pad to an upcoming phase, which is currently in FY30, but also continuing to analyze other locations that might be better for accessibility. |
| 2025 | FW Hartford Dr/ TJ Gamester Ave | Sidewalk repavement in the Woodlands neighborhood. The current sidewalks are very uneven and unsafe for pedestrians (especially children). It's very difficult to use a stroller or for my child to ride a scooter/bike safely. We've had numerous falls due to uneven, cracked and poorly repaired pavement on these sidewalks. | Riddy Quinney | 160 FW Hartford Dr Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |
| 2025 | Cate Street Bridge | Reconstruct Cate Street Bridge over Hodgson Brook. Its a NHDOT red listed bridge. Its only rated for 6,000 lbs. Fire equipment can not cross it and therefore endangering life and property on the Cottage Street Area. Its been on CIP for like 15 years. | Jim Hewitt | 726 Middle Road Portsmouth, NH 03801 | Existing CIP Projects | This project is already found in the CIP (FY24 CIP # TSM-18-PW-74 - "Citywide Bridge Improvements") for FY24 and FY25. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Elwyn Road Side Path | Elwyn Road Side Path. This project was in CIPS for 7-10 years then it disappered. Construction date ? | Jim Hewitt | 726 Middle Road Portsmouth, NH 03801 | Existing CIP Projects | This project has already been funded and is in the queue for construction. Please see the City's Project page for the most up-to-date information on this item. The project was removed from the CIP once it was fully funded. Projects are removed from the CIP for two distinct reasons 1) They are fully funded. 2) They are no longer possible given the current project conditions within the CIP timeline or are no longer desired by the City's Policy making bodies. Projects that are fully funded and are in process are found on the City's Project Page https://www.cityofportsmouth.com/publicworks/projects. |
| 2025 | Maplewood Ave Culvert Bridge Replacement | Replace the Maplewood Ave Culvert Bridge. It is an NHDOT Red listed Bridge. Its been on CIPS for like 15 years then it disappeared. When will this decrepid bridge be rebuilt ? | Jim Hewitt | 726 Middle Road Portsmouth, NH 03801 | Existing CIP Projects | This project is in design and has already been funded. Please see the City's Project Page for the most up-to-date information on this item. The project was removed from the CIP once it was fully funded. Projects are removed from the CIP for two distinct reasons 1) They are fully funded. 2) They are no longer possible given the current project conditions within the CIP timeline or are no longer desired by the City's Policy making bodies. Projects that are fully funded and are in process are found on the City's Project Page https://www.cityofportsmouth.com/publicworks/projects. |
| 2025 | Peverly Hill Road Reconstruction | Reconstructed Peverly Hill Road. Its been on CIPs for like 15 years then it disappeared. What is the construction date / year ? | Jim Hewitt | 726 Middle Road Portsmouth, NH 03801 | Existing CIP Projects | This project is moving forward, please see the City's website for the most up-to-date status of this project.. The project was removed from the CIP once it was fully funded. Projects are removed from the CIP for two distinct reasons 1) They are fully funded. 2) They are no longer possible given the current project conditions within the CIP timeline or are no longer desired by the City's Policy making bodies. Projects that are fully funded and are in process are found on the City's Project Page https://www.cityofportsmouth.com/publicworks/projects. |
| 2025 | Bartlett Street RR Trestle | Widen and raise RR underpass. This project was in CIPs for like 15 years then it disappered in the 2016 CIP. What is the plan to get this bridge out of the Model T era ? | Jim Hewitt | 726 Middle Road Portsmouth, NH 03801 | Existing CIP Projects | The City has secured grant funding to study the reconfiguration of the RR bridge and intersection which will determine the feasibility and cost of these changes. |
| 2025 | Between Fox Point, Newington and Wagon Hill, Durham | Seacoast Drinking Water Reliability Project - New Water 20 in Diameter Main under Little Bay. Project Bids opened on September 5, 2023 and low bid was $ 27 million. City budgeted $ 5 million. Need new CIP allotment of $ 22 million needed to cover this project | Jim Hewitt | 726 Middle Road Portsmouth, NH 03801 | Existing CIP Projects | This project is currently funded and in redesign. This project will be completed in phases. The first phase will be out to bid in 2024. |
| 2025 | The Woodlands | Our sidewalks are i walkable, and our roads need to be re-saved (as the city if doing in our neighbors Elwin Park) | Susan Tober | 55 TJ Gamester Ave Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Woodland sidewalks added to CIP list. The City's Sidewalk Reconstruction Program Sidewalk List represents a backlog of high priority sidewalk projects as identified by the Sidewalk Conditional Assessment and other capital projects. The amount of work completed depends on available funds and construction bid prices. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2025 | Maple Haven Neighborhood - North Side | This CIP request is regarding the improvement/optimization of the existing sidewalks in the North side of the Maple Haven neighborhood and is submitted on behalf of the Maple Haven Neighborhood Association (MHNA). In late 2021/early 2022, the City of Portsmouth was planning a multi-phase project to improve/optimize the sidewalks throughout all of Maple Haven because they've consistently been identified as being in fair or poor condition by the City since the adoption of the 2017 CIP. They were also going to add a sidewalk along Winchester St and crosswalk across Ocean Road to connect the two neighborhoods for safer walkability. However, the project was put on hold due to some questions/concerns raised by residents and the inability to easily add a new sidewalk on Winchester St due to public ROW restrictions & easement requirements with the proposed crosswalk design. After 3 public meetings in 2022, the City requested the neighborhood gain consensus on how to move forward with the various proposed improvements, thus the MHNA was formed in conjunction with the Citywide Neighborhood Committee. Based on the issues encountered in 2022, it was decided the best path forward would be to split the proposed improvements into 3 separate CIP requests: 1) Fixing/optimizing existing sidewalks on Maple Haven North (which is this CIP request) 2) Fixing/optimizing existing sidewalks on Maple Haven South 3) Adding a crosswalk across Ocean Road to safely connect the North/Side sides of the neighborhood<br>Fixing the sidewalks will generally improve the overall safety and walkability within Maple Haven for all residents since the current sidewalks are essentially unusable and people have to walk in the street. Based on door-to-door surveys conducted by residents, more than 50% of the Maple Haven North residents generally support the City's proposal along with 24 residents in Maple Haven South, as long as any tree that gets removed be replaced with appropriate, low root-growing tree that won't damage the new sidewalks in the future. See signatures attached to this request. Since the City's proposal was made and many of the signatures were obtained, a stop sign was installed at the corner of Suzanne/Simonds Rd. So, the location of the Simonds Rd sidewalk would now appear to make more sense on the opposite side of the original proposal. See the attached markup of the City's proposal with this potential adjustment to Simonds Rd. | Charles Raye | 21 Wallis Road Portsmouth, NH 03801 | Existing CIP Projects | This project is an existing project (TSM-95-PW-69: Citywide Sidewalk Reconstruction Program). Maple Haven sidewalks are on the CIP list. |
| 2025 | Maple Haven Neighborhood - North Side | This CIP request is regarding exploring options for the addition of a crosswalk on Ocean Rd to safely connect the North and South sides of Maple Haven neighborhoods and is submitted on behalf of the Maple Haven Neighborhood Association (MHNA) more safely. In late 2021/early 2022, the City of Portsmouth was planning a multi-phase project to improve/optimize the sidewalks throughout all of Maple Haven because they've consistently been identified as being in fair or poor condition by the City since the adoption of the 2017 CIP. They were also going to add a sidewalk along Winchester St and crosswalk across Ocean Road to connect the two neighborhoods for safer walkability. However, the project was put on hold due to some questions/concerns raised by residents and challenges with adding a new sidewalk on Winchester St due to confusion about public ROW locations & easement requirements with the proposed crosswalk design.<br>After 3 public meetings in 2022, the City requested the neighborhood gain consensus on how to move forward with the various proposed improvements, thus the MHNA was formed in conjunction with the Citywide Neighborhood Committee. Based on the issues encountered in 2022, it was decided the best path forward would be to split the proposed improvements into 3 separate CIP requests: 1) Fixing/optimizing existing sidewalks on Maple Haven North 2) Fixing/optimizing existing sidewalks on Maple Haven South 3) Adding crosswalk across Ocean Road to connect the two sides of the neighborhood (which is this CIP request)<br>Adding a crosswalk is something that nearly all residents expressed interest in, with over 50% of Maple Have North residents and another 24 residents in the South in support. See signatures attached to this request. However, due to the issues City's original plan requiring an easement that has not yet been obtained, the MHNA requests the City look reassess all potential options for the location of the crosswalk within the closest proximity to both Suzanne Rd and Winchester St. See attached screenshot for an example of some potential crosswalk locations that could make the project more viable, but there may be other options the City could propose that would be great to discuss. | Charles Raye | 21 Wallis Road Portsmouth, NH 03801 | Existing CIP Projects | Existing Project: TSM-95-PW-69: Citywide Sidewalk Reconstruction Program. Maple Haven sidewalks added to CIP list. |
| 2025 | Maple Haven Neighborhood - South Side | This CIP request is regarding the improvement/optimization of the existing sidewalks in the South side of the Maple Haven neighborhood and is submitted on behalf of the Maple Haven Neighborhood Association (MHNA). In late 2021/early 2022, the City of Portsmouth was planning a multi-phase project to improve/optimize the sidewalks throughout all of Maple Haven because they've consistently been identified as being in fair or poor condition by the City since the adoption of the 2017 CIP. They were also going to add a sidewalk along Winchester St and crosswalk across Ocean Road to connect the two neighborhoods for safer walkability. However, the project was put on hold due to some questions/concerns raised by residents and the challenges with adding a new sidewalk on Winchester St due to confusion about public ROW locations & easement requirements with the proposed crosswalk design. After 3 public meetings in 2022, the City requested the neighborhood gain consensus on how to move forward with the various proposed improvements, thus the MHNA was formed in conjunction with the Citywide Neighborhood Committee. Based on the issues encountered in 2022, it was decided the best path forward would be to split the proposed improvements into 3 separate CIP requests: 1) Fixing/optimizing existing sidewalks on Maple Haven North 2) Fixing/optimizing existing sidewalks on Maple Haven South (which is this CIP request) 3) Adding crosswalk across Ocean Road to connect the two sides of the neighborhood . Fixing the sidewalks will generally improve the overall safety and walkability within Maple Haven for all residents since the current sidewalks are essentially unusable and people have to walk in the street. Based on door-to-door surveys conducted by residents, more than 50% of the Maple Haven North residents generally support the City's proposal along with 24 residents in Maple Haven South, as long as any tree that gets removed be replaced with appropriate, low root-growing tree that won't damage the new sidewalks in the future. See signatures attached to this request. | Charles Raye | 21 Wallis Road Portsmouth, NH 03801 | Better Served by Another Process or Ineligible as a CIP Project | Feasibility Study needed in order to evaluate if it is possible to proceed, recommend to Parking, Traffic and Safety for follow-up. |
| 2025 | Route 1 North and South Directions | Sidewalks for pedestrian and bicycle commuting | Tania Huusko | 171 Elwyn Ave Portsmouth, NH 03801 | Existing CIP Projects | Portions of this request are in design. There is an existing CIP project that plans for complete streets. |
| 2024 | Borthwick Ave/ Greenland Road/ Sherburne Road | Redesign the intersections containing these 3 roads with stop signs, speed humps and new wider sidewalks. These changes would increase safety for pedestrians, bicyclists and other motor vehicles by slowing traffic. | Alexander Mulcahey | | Existing Project in the CIP | Funding has been set aside from the development of Eileen Dondero Foley Ave for the design of these improvements. Additional Funding will be requested if needed upon completion of this design. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | Cate Street Bridge over Hodgson Brook | Replace NHDOT Red-Listed Cate Street Bridge (under documents cited: Project in CIP through 2022-2027) | James Hewitt | | Existing Project in the CIP | This project is already found in the CIP (FY23 CIP # TSM-08-PW-68 - "Cate Street Bridge Replacement"). The FY23 CIP lists funding for FY24 and FY25. |
| 2024 | City Buildings | Switch interior and exterior lighting at City properties with energy-efficient LEDs. A) Investigate what types of bulbs/lamps are used inside buildings (corridors, rooms, desk lamps etc.) and on the outside of buildings (Security Lights) b) calculate electricity cost savings and CO2 Savings to be gained from switching from less-efficient to most efficient lighting options c) investigate, and if indicated, replace, lighting automation systems- so that most lights and switched off when not in use, or go to a suitable low-power mode. | James Christie | | Existing Project in the CIP | This is an on-going City initiative that is being funded through an existing CIP item (FY23 #BI-01-PW-42 "Citywide Facilities Capital Improvements"). |
| 2024 | Citywide | This is to create a budget to plant trees in the City of Portsmouth. The City should designate a number of trees to be planted each year, not just the 400th Anniversary year. The City should use it's bulk buying power to buy trees for planting by the City as well as for residents to plant on their properties. More trees will help decrease green house gases and reduce heat island effects with the shade trees can provide. (under documents identifies "Portsmouth Master plan, should also be in the Climate Action Plan") | Allison Tanner | | Existing Project in the CIP | There is an existing, ongoing CIP item (FY23 # BI-04-PW-32 "Citywide Tree & Public Greenery Program") that provides funds annually for this program. |
| 2024 | Citywide | At the September 14, 2022 Portsmouth Conservation Commission meeting, the commission voted to request a $500,000 land acquisition item in the FY 2023 - FY28 CIP be funded for the purchase of conservation lands and/or easements. Funding was removed for this item in last year's CIP and the conservation commission requests funding for the next 5 years starting this year. For the last several years, the conservation commission has worked closely with city staff to identify and prioritize undeveloped properties that follow recommendations from the Open Space Plan (2020). The Open Space Plan is a comprehensive plan following the Portsmouth Public Undeveloped Lands Assessment (PULA) study (2010), and included a public process to research and prioritize additional undeveloped land for protection, provide land stewardship guidance for existing open space lands, and identify opportunities to expand connectivity between existing open space assets, neighborhoods and trails. The Plan also considers integration of climate resiliency objectives as they relate to open space. Having funds available to respond to conservation land opportunities as they become available is crucial to implementing the plan and conservation commission and city staff follow-up research and planning. As a sustainable community, there are many additional benefits to securing these funds for conservation lands: 1) Preserving open space has been one of the primary concerns of the citizens of Portsmouth and is prominent in the Master Plan. 2) Open space provides a balance for increasing density of development and urbanization occurring in Portsmouth. 3) Purchasing land for conservation is the only sure method to permanently preserve land for future generations. 4) Limited existing Current Use conservation funds can be leveraged along with potential grant funding. 5) Conserved land can improve air and water quality, provide habitat that supports biodiversity and support reductions in greenhouse gases. 6) Maintaining this line item in the CIP is an action that this council can take to keep our environment healthy and sustainable for residents of Portsmouth now and in the future. | Barbara McMillan (Portsmouth Conservation Commission Chair - on behalf of the commission) | | Existing Project in the CIP | There is an existing CIP item for this project (FY23 CIP # BI-95-PL-16 "Land Acquisition") with current funding for FY24 set at $500,000. Changes to the funding can be made by either the Planning Board or City Council throughout the CIP process. |
| 2024 | Citywide Cemeteries (Union Cemetery, North Cemetery, Point of Graves, Pleasant Street, Old Hall, Cotton Cemetery, and Elmwood Cemeteries) | Completion of the 2013 Existing Conditions Assessment Report and Restoration Plan. The remaining twelve projects are starting to become time sensitive. Conditions have become worse in the last 10 years. We are writing grants and planning a capital fundraising plan, however those are not guaranteed. The following are options that you might consider during the budgeting process. $50,000 would finish seawall at North. $30,000 would start wrought iron replacement or headstone repair, $15,000 would complete three small projects that are equally important in the restoration. (also see provided project list totaling $408,000 for project suggestions). | Portsmouth Historic Cemetery Committee | | Existing Project in the CIP | There is an item in the CIP project (FY23 # BI-05-PW-39 "Historic Cemetery Improvements") that is funded at $40,000 per year, providing annually for this program. A sheet naming the Cemetery Committee's list of backlog projects can be added to the existing project. Funding adjustments can be made during the CIP process. |
| 2024 | Community Campus turf field to DPW Driveway | The new athletic fields were proposed to include direct bike/ped access from the DPW Driveway on Peverly Hill Road, but that piece was cut out of Phase 1. Please allow public access immediately and construct a side path past the Pike Industries driveway before the Peverly Hill project is completed. https://www.cityofportsmouth.com/sites/default/files/2019-11/RecreationFieldsBikePathPhase1.pdf. | Matthew Glenn | | Existing Project in the CIP | Funding for this project has been identified in an existing CIP project (FY23 # BI-12-RC-24 "Additional Outdoor Recreation Fields"). |
| 2024 | Elwyn Road Side Path | Elwyn Road Side Path (identified in document FY2021-2026 CIP. . Then it disappeared). | James Hewitt | | Existing Project in the CIP | The project has been funded and is in the design phase. The project was removed from the CIP once it was fully funded. Projects are removed from the CIP for two reasons 1) They are fully funded. 2) They are no longer possible given the current project conditions within the CIP timeline or are no longer desired by the City's Policy making bodies. The majority of projects that are fully funded and in process are found on the City's Project Page https://www.cityofportsmouth.com/publicworks/projects. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | Four Tree Island | This spring I observed that one of the lamp posts was tipped over and submitted a picture to Portsmouth DPW via the Click Fix App. Yesterday I received a notification that the lamp post has been removed but the staff determined that the scope Is a capital project that goes beyond routine maintenance. They suggested that a new lighting system should be requested through the CIP Process. I don't believe that any of the lamp posts have been lighted all summer. | Julie Cousins | | Existing Project in the CIP | Four Tree Island is managed as part of Prescott Park. Capital Funding is identified in the CIP project (FY23 #BI-11-PW-34 - "Prescott Park Facilities Capital Improvements") for upgrades to Prescott Park's infrastructure. This item will be added to projects to be completed. |
| | Frank Jones Farm Neighborhood for the area from Woodbury Avenue between Granite Street and Bartlett Street Intersections as well as involved connecting streets | Major traffic and safety challenges have impacted the 1.10 mile distance that includes residential Woodbury Avenue and connecting streets. This application is in reference to the current accesses and egresses to and from residential Woodbury Avenue: This one-mile-plus stretch of Woodbury Avenue between Market Street Extension/Granite Street traffic lights and the Bartlett Street intersection has: No stop signs, One radar speed-limit sign, without data collection, on one side of street, No speed humps or tables, One raised pedestrian crossing. No crossing signs at school bus stop intersections , No signage or pedestrian crossing at access and egress for New Franklin Elementary School. The last vehicle count on this stretch was over 57,000 vehicles per week in a then SR2-zoned neighborhood. The most recent count public records online are from 1998. There is no current count available. In summary, there are 23 accesses and egresses on residential Woodbury Avenue, not including more than 50 residential driveways, at which vehicles are not ever required to stop. Two persons have been killed in traffic accidents on Woodbury Avenue, one on nearby commercial section and one at the intersection of Dennett Street. The number of minor and major accidents involving vehicles, pedestrians, pets, property damage, and near misses, are numerous. Those reported are available in City records, have been reported in local newspapers and recounted by Frank Jones Farm Neighborhood residents and witnesses. This acute traffic and safety situation demands a systemic, complete solution, rather than a piecemeal, temporary response. Residents and homeowners in the Frank Jones Farm Neighborhood have submitted numerous requests and petitions with detailed measures that should be implemented to make our neighborhood safe, many of which are included in this request. | Lenore Bronson | | Existing Project in the CIP | Traffic calming along Woodbury Avenue is currently funded and in design. Funds were previously approved to make improvements to the gateway to this neighborhood which will include traffic calming. |
| 2024 | Haven Park, Pleasant Street | Improve Lighting - The park is very dark at night, please find some way to provide lighting along the path. | Mary Cline | | Existing Project in the CIP | There is an existing CIP project (FY23 #BI-02-PW-31 "Citywide Park & Monument Improvements") that may address this project. This item can be added to the list of maintenance upgrades. |
| 2024 | I-95 Sound Walls (2 Requests) | Construct Sound Walls for Pannaway Manor, from Woodbury to Maplewood, and New Franklin School (under document "Identified in CIPS from 2007 to 2022). The constant noise pollution coming from this major highway through the Portsmouth neighborhoods along this section is tremendous and has increased over the years. My family and neighbors can no longer leave their porch doors and windows open while inside having a conversation, phone call, or work meeting or have a gathering outside due to the noise and inability to hear anything else. The intense noise has brought the property value of this neighborhood down, along with the litter created. Unfortunately speed humps and medians have been added to Maplewood Avenue: trucks, trucks with trailers & equipment, dump trucks, school buses, campers & RVs (all scrape, clang, people that drive over them intentionally with increased speed, people that "Whooooo!" when driven over them, have added to the loud constant baseline from 95. I could go on if needed and will if that helps get something, anything initiated to alleviate this problem. (Identified in document: Identified in CIPS from 2007 to 2022) | James Hewitt & Jessica Dolan | | Existing Project in the CIP | There is an existing CIP project (FY23 #BI-07-PW/NH-41 "Sound Barriers in Residential Area Along I-95") that addresses this issue. The NHDOT has determined east side of I-95 is not eligible for State and Federal Funding. Staff has reached out to determine if a solely City funded project could be completed. Previously allocated funds can be used to study this request and determine the appropriate funding level for a sound barrier project. |
| 2024 | Maplewood Ave Culvert / Bridge | Replace NHDOT Red-Listed Bridge (under documents cited: Portsmouth CIP to FY 2022-2027 CIP) | James Hewitt | | Existing Project in the CIP | This project is in design and has already been funded. The project was removed from the CIP once it was fully funded. Projects are removed from the CIP for two distinct reasons 1) They are fully funded. 2) They are no longer possible given the current project conditions within the CIP timeline or are no longer desired by the City's Policy making bodies. Projects that are fully funded and are in process are found on the City's Project Page https://www.cityofportsmouth.com/publicworks/projects |
| 2024 | Market Street and Russell Street | Potential Roundabout Intersection (Identified in document: Last year's CIP TSM-16-PL-66) | James Hewitt | | Existing Project in the CIP | This intersection is an existing CIP project (FY23 #TSM-16-PL-57 "Russell/Market Intersection Upgrade"). |
| 2024 | Market St from Kearsarge Way to Woodbury Avenue | Expanding/reconstruction of existing asphalt pedestrian path to a multimodal path for pedestrians, biking, and micro mobility vehicles. To include priority crossing at all road crossings (Kearsarge Way, Spinnaker Way, Portsmouth Blvd), improve wayfinding, and pedestrian focus illumination along paths. | Kenneth Ferrer | | Existing Project in the CIP | There is an existing project that could encompass this request (FY23 #TSM-21-PL-56 "Market Street Sidepath"). |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | Middle Street and Middle Road | The slip lane at Middle St/Middle Rd was blocked off to increase traffic calming on Middle Rd. The removal of the slip lane has reduced the speed, as was intended. For two years, bollards have been installed to block off the slip lane. When winter comes, jersey barriers from downtown dining are moved into place for the winter months. It seems time to make the removal of the slip lane permanent and more attractive. There is an active CIP request in the CIP concerning traffic calming measures for Middle Rd. It would be nice if the slip lane removal could be rolled into that projected work, with money added to accomplish the work if necessary. | Liza Hewitt | | Existing Project in the CIP | This request is currently in the planning process and will be completed with funds identified in CIP item (FY23 #TSM-21-PW-71 "Traffic Calming") |
| 2024 | Pannaway Manor | Complete Street Program - Pannaway Manor was established in 1940 making utilities (water, sewer & drainage) 82 years old and past their designed lifespan. Sidewalks and roadway reconstruction are scheduled in 2023. Pannaway is in need of a complete street makeover and not just sidewalks and roadway repairs. | Tyler Dow | | Existing Project in the CIP | Roadway paving is scheduled based on the City's Pavement Management Plan which is revised annually. Sidewalks are programmed to be upgraded starting in 2023. No further action is recommended. |
| 2024 | Parrot Avenue | On parrot Avenue there is no sidewalk from Junkins Avenue to Fleet Street. Request that a sidewalk be installed in this area. | Ken Goldman | | Existing Project in the CIP | This project is part of an existing project (FY23 TSM-15-PW-74 "Junkins Avenue Improvements"). |
| 2024 | Robert Lister Academy - Far right side of the driveway located in front | Sidewalk - continue the concrete sidewalk with curbs where needed to Borthwick Avenue. The existing sidewalk disappears in places. What is existing is unsafe to walk on. | Donna J. Garganta | | Existing Project in the CIP | CIP item exists. Will be included in the Pannaway Manor Sidewalk project. |
| 2024 | South Playground | There is a desperate need for public restrooms for Spring-Summer and Fall use of the South Playground. Currently what exists are 3 porta-potties which are very unhealthy. The fields are used daily by 100's of pickleball players, dog park attendees, playground attendees, tennis courts, basketball courts, ballfields, etc. The construction of seasonal restrooms for public use between hours of 8am and 8pm and months of April to November would be a huge addition to our beautiful recreation facility. To be able to use the facility/ wash hands/ privacy etc. would be a highly appreciated for the hundreds of South Playground users. Perhaps similar to what is at Prescott Park | Brooks Stevens | | Existing Project in the CIP | This project is part of a new recreation project submission for FY24. |
| 2024 | Thorton Street Extension | Create a safer and less busy road, making this street one way or adding sidewalk | Nathan Krakow | | Existing Project in the CIP | Part of an existing CIP project COM-22-PW-99 'Creek Neighborhood Reconstruction' Funding FY25 |
| 2024 | Coakley Road and Larry Lane | Repaving of Coakley and Larry Ln, additional length of sidewalk along Coakley to entrance of neighborhood. | Thomas Morley | | Sidewalks & Roadways | Roadway paving is scheduled based on the City's Pavement Management Plan which is revised annually. Addition of sidewalk can be added as a CIP project for sidewalk upgrades. |
| 2024 | Edmond Avenue (16 Requests) | (Combined) New Sidewalk - Edmond Ave needs a sidewalk. There are many cars that use that road along with many children that take that road to go to school or home. It becomes very dangerous at night where there is no clear path for pedestrians. | Beatriz Alden, Mari Lister, Ryan Cress, Cayleigh Dalrymple, Tray George, Bill Shea, Cassandra L Jones Rev Trust, Brianna Spechvilli, Marie Lyford, Tyler Bradbury, Katheryn Avger-Campbell, George Silva, Phyllis O'Connell, Kellie O'Connell Lang, Ralph Minderhoud, and Caitlin Burke | | Sidewalks & Roadways | This request can be incorporated into the existing Edmond Avenue Capital Project COM-23-PW-95. This request will require additional funds to be included and will extend the timeline of the project. |
| 2024 | Lafayette Rd, southbound side from Ocean Road to the entrance to Portsmouth Green (McKinnon's) | Sidewalk - This is a fairly high speed, and very highly trafficked area, with many pedestrians from Hillcrest, Beech stone, Patriot Park and the like. Accidents involving pedestrians, scooters, and bicycles are not uncommon here. | Scott Bornstein | | Sidewalks & Roadways | There is an existing CIP Project (FY23 # TSM-08-PL/NH-57 "US Route 1 New Side path Construction") that would be able to encompass this request if desired. It could be added to the existing list of projects. |
| 2024 | Ocean Road (4 Requests) | (Combined) Construct a sidewalk along Ocean Road starting at Winchester Street and ending at the rail trail. I'm aware this is a state road so it would require state approval, but it would provide a safe way for residents of the Maple Haven neighborhood, Ocean Road and other adjacent neighborhoods to walk to the rail trail. - and- As discussed in the suburban Master Plan, connecting the suburban amenities through sidewalks, and bike paths will both connect the suburbs with downtown, as well as allow pedestrian and bike access to all of the amenities from Green Rd over to Rt 1/Lafayette and in between. | Charles Raye & Phil Casey & Fred & Elaine Butts (2 requests) | | Sidewalks & Roadways | This is a busy street and would warrant a side path. Further investigation is needed for implementation. |
| 2024 | Corner of Topaz & Onyx | The blind turn on Topaz/ Onyx is so dangerous. Cars can't see kids and 3 with about 21 kids in the neighborhood biking/ walking. Someone will get hit. | Briana Spechvilli | | Sidewalks & Roadways | This request can be incorporated into the existing Edmond Avenue Capital Project COM-23-PW-95. This request will require additional funds to be included. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | Peverly Hill Road | Add sidewalks for Peverly Hill Road (under documents cited: Portsmouth CIP until 2020-2025 then it stopped) | James Hewitt | | Sidewalks & Roadways | Funds have been allocated for this project. Additional funds will be requested if the opinion of cost indicates more funding is needed. |
| 2024 | TJ Gamester Ave/FW Hartford Drive | Replace sidewalks, which are mostly deteriorated and not in good shape. Sidewalks are about 30 years old and are cracking, uneven, eroded. I think maintaining existing sidewalks should take precedence over constructing new sidewalks. | David Heller | | Sidewalks & Roadways | There is funds currently identified for sidewalk improvements every 2 years (TSM-95-PW-64 "City Sidewalk Reconstruction"). This request can be put on the list of sidewalk projects to be scheduled to be rehabilitated. |
| 2024 | Banfield Rd - 850 BANFIELD RD, map-lot 0275-0005-0000 (City Owned parcel) | Parking for the rail trail will be necessary for many of the residents in the suburban area because bike paths are not available to get to the Rail Trail. Equally important, having a small park where riders can pull off the trail and eat lunch or rest would significantly increase the enjoyment of the trail for riders and local residents. I will be submitting other CIP's for an increase in parks in the greater Ocean Rd and Banfield Rd Suburban areas as well. | Fred & Elaine Butts | | Bicycle & Pedestrian | During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current project set aside to fund projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |
| 2024 | Citywide (with an emphasis on school and downtown areas) | (abridged) "The goal of this proposal is comprehensive, safe bicycling infrastructure for the city of Portsmouth". Example Project #1 Congress and State Street reroute. Shut down Congress street to automobile traffic from Maplewood all the way through Daniel Street up to Bow St/Scott Ave. Example Project #2) Create a bike and pedestrian centric route from Market Street to Gosling Road; Market Street all the way from the heart of downtown to Gosling Road and into Newington and into the commercial entities there achieved through road narrowing and bike/ped path widening as well as other road and street modifications. Example Project #3) New Franklin School - Safe Routes to School path for the kids to bike to school. Example #4) North Mill Pond Trail and Greenway: Improved Bike/ped accommodations along the bank of North Mill Pond as well as access roads such as Bartlett and Maplewood. | Rebecca M. Hanley | | Bicycle & Pedestrian | During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |
| 2024 | Downtown | Expanding Sidewalks along popular streets. Downtown Portsmouth has narrow sidewalks but large number of on street parking spaces. This proposal asks that the City consider eliminating some parking spaces and widening sidewalks. This would help redesign the downtown experience, making it a much more pleasant place to visit. Multiple other benefits can be realized: wider sidewalks are needed for ADA reasons, as well as giving pedestrians enough space to move in busy months; wider sidewalks give opportunity to plan more social space as well as on-street dining options; air quality improves due to fewer cars, less idling, etc.; widening the sidewalks creates more opportunities to plant trees, thereby increasing shade and reducing the urban heat island effect. More trees help clean the air also; reducing parking is shown to actually encourage commercial activity - shops won't lose customers, but may gain; Removing all spots (except handicapped) from streets reduces the amount of cars cruising for a spot Two key locations to consider: Market St between Bow and Daniel St: remove all parking except for handicapped. & Top of Congress St: narrow road to one or two lanes instead of three. Remove all parking except for handicapped.<br>Supporting material: Reducing parking makes cities more livable(EESI) https://www.eesi.org/articles/view/how-eliminating-parking-actually-makes-cities-better, Eliminating parking does not reduce visitor count or commercial activity. https://content.tfl.gov.uk/walking-cycling-economic-benefits-summary-pack.pdf | James Christie | | Bicycle & Pedestrian | This is a broad request but can be reviewed as a part of the update to the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current project set aside to fund projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |
| 2024 | Gosling Rd from Pease Blvd to Woodbury Ave | Cycle track or Multi Use path on Gosling Rd, as recommended in the Bike/Ped plan: Remove travel lane and/or median for two-way cycle track on south side of road from Woodbury Ave to Spaulding Tpk ramps. Install sidewalks on both sides in conjunction with cycle track reconstruction. | Matthew Glenn | | Bicycle & Pedestrian | A section of this project has been completed, from the McDonalds on Gosling Rd to Woodbury Ave. The remainder of this request could be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | Hampton Branch Rail Trail | (Combined) To make the soon to be created Hampton Branch Rail Trail as useful as possible the city should consider adding bike lanes to the roads that connect to the business corridor on Route 1 South. And so there should be bike lanes on Heritage Ave and Ocean Road. - and - Improve bike/ped access to the new Rail Trail, Skate Park and Peverly Hill path. From the 2018 update to the Bike/ped plan: Project 19: "Widen existing sidewalk on south side of Portsmouth Plains Field for side path connection from Peverly Hill Rd to Hampton Branch Trail. Provide side path connection through future athletic fields with parking access for trail users. " Project 20: "Provide trail link to existing sidewalk at NH 33 overpass. Widen existing sidewalk for side path from tail to Greenland Rd. Reconstruct sidewalk on Greenland Rd. Bike boulevard on Greenland Rd requires traffic calming near intersection with NH33 to provide low-stress connection to Borthwick Ave over existing pedestrian bridge." | Jonathan Sandberg | | Bicycle & Pedestrian | There is a current CIP project that exists that can be used to accomplish this request (FY23 # CIP-15-PL/NH-51 "Hampton Branch Rail Trail"). Currently there are a number of projects identified that will improve bicycle access to the new rail trail. This request can be added to the list of identified projects for this CIP funding. |
| 2024 | Lafayette Road from Wilson Rd to Andrew Jarvis Drive | Construct Side paths on both sides of Route 1. The state project (#29640) from Wilson south to Rye is crawling along, but there is a real need for a safe bike route across Sagamore Creek. From the Bike/Ped plan: Based on NHDOT existing Rte. 1 corridor study, construct side paths on each side of road in available ROW. No alteration of existing traffic patterns necessary. | Matthew Glenn | | Bicycle & Pedestrian | Parts of this request are addressed in a number of other capital projects. |
| 2024 | Mirona Rd and Lafayette Rd (at the intersection). On the side of Lafayette Rd. | Creating walking and biking access to the Urban Forestry from Lafayette Rd would allow people to gain access to the park without having to walk or bike along dangerous sections of Lafayette Rd and Elwyn Rd. There is actually a makeshift path that goes from the UF trails to Lafayette, but it's not intentional or particularly safe as its overgrown. | Fred & Elaine Butts | | Bicycle & Pedestrian | There is an existing CIP Project (FY23 # TSM-08-PL/NH-56 "US Route 1 New Sidepath Construction") that would be able to encompass this request if desired. It could be added to the existing list of projects. |
| 2024 | Ocean Road | Multi-use path on Ocean, connecting Maple Haven to Rail Trail | Sarah Jarvis | | Bicycle & Pedestrian | This request could be reviewed in conjunction with the update to the Bicycle/Pedestrian Plan. During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current ongoing CIP project to fund capital projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |
| 2024 | Urban Forestry Center connection to Gosport Road | With the Elwyn Road side path project starting soon, there should be a better bike/ped connection on through to Gosport Road. At a minimum the existing narrow dirt trail could be leveled and widened with signage. From the 2018 update to the Bike/ped Plan. "Shared-use path through Urban Forestry Center connecting to Gosport Rd/ Odiorne Point partially through existing utility easement. Signed bicycle route on Gosport Rd/ Odiorne Point to connect to Sagamore Rd." | Matthew Glen | | Bicycle & Pedestrian | During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current project set aside to fund projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |
| 2024 | Woodbury Ave from Gosling Rd to Market Street | Bike ped improvements to Woodbury Ave, as outlined in the 2018 Bike/ped plan update: Cycle track one-way each side for access to shopping and residential areas. Short term, may be street-level with flexible bollard separation; long term, full reconstruction with permanent separation. Lane narrowing and/or travel lane reduction require. Reconstruct and widen sidewalks on two sides for improved and ADA access to shopping and transit. Short term, make all crosswalks ADA-compliant. Long term, reconfigure travel lanes and create vegetated center median to facilitate pedestrian and bicycle crossing. | Matthew Glen | | Bicycle & Pedestrian | During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current project set aside to fund projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |
| 2024 | Woodbury Ave | Woodbury Ave Complete Street Reconstruction (City of Portsmouth Bicycle and Pedestrian Plan 2014) Project ID: 60 Sub Project ID 4. Cycle track one-way each side for access to shopping and residential areas. Short term, may be street-level with flexible bollard separation; long term, full reconstruction with permanent separation. Lane narrowing and/or travel lane reduction require. Reconstruct and widen sidewalks on two sides for improved an dADA access to shopping and transit. Short term, make all cross walks ADA compliant. Long term reconfigure travel lanes and create vegetated center median to facilitate pedestrian and bicycle crossing. | Kenneth Ferrer | | Bicycle & Pedestrian | During the updating of the 2014 Bicycle/Pedestrian Master Plan, this project could be considered as an addition to the project list. The Updated Bike/Ped Master Plan seeks to consider current community needs and values in its choices and prioritization of projects. There is a current project set aside to fund projects that are listed in the Bicycle/Pedestrian Plan (FY23 # TSM-15-PL-52 "Bicycle/Pedestrian Plan Implementation"). |

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| 2024 | Prescott Park | Make use of the rectangular cutout to the left of existing piers by adding floats so boats can dock. The use of existing granite stairs can be restored. Look at what Newburyport Mass did with their waterfront for ideas. More floats along the existing areas will allow visitors by boat to doc and explore the park and Portsmouth. There is significant room for expansion along the city waterfront for adding places for visitors to come by water. | Marc Stettner | | | This project would be eligible for consideration as part of Project FY23 BI-19-PW-33 "Prescott Park Master Plan Implementation." |
| 2024 | Citywide | In the CIP the city should include funding of $500,000 per year for the transition of gas powered maintenance equipment to all electric, in the both city and school departments. | Ted Jankowski | | Climate Action Plan | This should be included as part of the Climate Action Plan (CAP) where technical analysis or public input can be completed. This item introduces a climate action capital investment priority in advance of the CAP. The CAP will engage the community and technical experts in a citywide discussion to determine the most impactful climate related investment priorities and timelines for implementation. |
| 2024 | TBD | Plan, design and build a solar power array and battery storage facility of sufficient capacity to power all City buildings. The purpose is to provide a local, clean energy source that can offset the electricity used by City building and vehicles. Power generated is metered and fed into the local grid. Solar panels could be sited on City Building roofs, or aggregated into one site. The Public Undeveloped Land Assessment lists several sites that may be suitable. This project is intended to bring long-term efficiency savings to the city; the initial planning and construction costs should be paid back by the reduction in the city's utility bill. | James Christie | | Climate Action Plan | This should be included as part of the Climate Action Plan (CAP) where technical analysis or public input can be completed. This item introduces a climate action capital investment priority in advance of the CAP. The CAP will engage the community and technical experts in a citywide discussion to determine the most impactful climate related investment priorities and timelines for implementation. |
| 2024 | Downtown | Plant a Shade way to give pedestrians shade and reduce urban heat. There seem to be many opportunities for placing more trees along popular routes through town. Examples: State Street in downtown, Parrot Ave from the Library to Junkins. This proposal asks that the city consider planting trees where there are wide gaps between trees now. The intention is to give pedestrians nearly unbroken shade during the hottest parts of the day. EPA: "Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration. Shaded surfaces, for example, may be 20–45°F (11–25°C) cooler than the peak temperatures of unshaded materials." Reduced energy use: Trees and vegetation that directly shade buildings decrease demand for air conditioning. Improved air quality and lower greenhouse gas emissions: By reducing energy demand, trees and vegetation decrease the production of associated air pollution and greenhouse gas emissions. They also remove air pollutants and store and sequester carbon dioxide. Enhanced stormwater management and water quality: Vegetation reduces runoff and improves water quality by absorbing and filtering rainwater. Reduced pavement maintenance: Tree shade can slow deterioration of street pavement, decreasing the amount of maintenance needed. Improved quality of life: Trees and vegetation provide aesthetic value, habitat for many species, and can reduce noise. | James Christie | | Climate Action Plan | This should be included as part of the Climate Action Plan (CAP) where technical analysis or public input can be completed. This item introduces a climate action capital investment priority in advance of the CAP. The CAP will engage the community and technical experts in a citywide discussion to determine the most impactful climate related investment priorities and timelines for implementation. |
| 2024 | Maplewood Avenue Bridge | Amendment to Existing Maplewood Avenue Bridge Replacement CIP Project - Please consider the addition of a self regulating tide gate or sluice gate to the Maplewood Avenue Bridge culvert to limit the impacts of sea level rise and flooding in the North Mill Pond neighborhoods. Such a gate would mute the high tide elevation in North Mill Pond, especially during storm events. The tide gate system should be designed in such a way that it does not inhibit recreational use of North Mill Pond (i.e. kayaks and canoes that currently pass through the culvert). | James Golden | | Climate Action Plan | This should be included as part of the Climate Action Plan (CAP) where technical analysis or public input can be completed. This item introduces a climate action capital investment priority in advance of the CAP. The CAP will engage the community and technical experts in a citywide discussion to determine most impactful climate action related investment, priorities and timelines for investment and implementation. This bridge has been identified for complete replacement in the State's 10-Year Plan, this project may be best to be revisited upon scheduling of that project. |
| 2024 | South Meeting House Marcy & Meetinghouse Hill | This building is in a terrible state of disrepair - it is historic and will soon be beyond repair if not addressed soon. | Mary Cline | | Facilities & Infrastructure | This project is part of a city building and should be referred to staff for review. This is part of an Existing CIP item (BI-01-PW-42 "Citywide Facilities Capital Improvements"). This request will be added to back log of facilities projects. |
| 2024 | 165 Woodlawn Circle - Portsmouth | I have lived in this home for over (45) years. Since new housing has been built in my neighborhood my finished basement has been flooded (3) times the last (10) years. I am not the only resident that has been affected by the ground water re-direction due to the new residences have been approved and built. If you need validation please poll all of the residents in the Woodlawn / Hillcrest and Echo Ave. neighborhoods. We would appreciate new storm water catch basins, under street culverts to mitigate this increased flooding. The underground water tables have now shifted permanently and this issue will only get worse as time goes by. If you have any questions or concerns related to this request please contact me | Jeffrey Abrams | | Facilities & Infrastructure | There is an item in the CIP COM-15-PW-96 that provides funds annually for stormwater management. This project can be added to the list of drainage projects to be completed. |

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| 2024 | Bohenko Gateway Park | Imagine a public sculpture garden welcoming visitors to Portsmouth as they take the Market Street Gateway from Interstate 95 into the city's downtown? That's the vision of the Portsmouth NH 400 Legacy Committee which is tasked with creating a project that will last well beyond the 400th anniversary in 2023, enriching the city for years to come. Located in the city's already existing Bohenko Gateway Park, this new sculpture garden will have a maritime theme, celebrating the river and all that is connected with it through public art. Just a short walk from our bustling downtown, this sculpture garden will attract visitors and residents of our Seacoast community, providing the perfect location for quiet reflection, a family picnic, or educational programs on the city's maritime history. According to city staff, the site could accommodate 6 to 8 sculptures. The task force recognizes this would be ideal but, because of time and resource limitations, it's not feasible to complete this project during the Portsmouth 400 celebration in 2023. The goal will be to start with one or two sculptures in 2023, funded through private and individual donations and grants, with plans to expand after the celebration. Over 30 artists, many of them local, have responded to the RFP, which was released in August of 2022, sharing exciting ideas for public art. In the next couple of months, the first artist will be selected by a review team including representatives from the city and from the community, chosen for their expertise in public art. The plan is to build on this in the years ahead. We are requesting $50,000 a year each year in Capital Improvement Program funding, which should provide for one new sculpture each year. This project connects with the city's action item to encourage public access, use and enjoyment of the downtown waterfront, which is included on p. 174 of the city's master plan. | Ernie (Ernestine) Greenslade | | Better Served by Another Process - Purview of Another Board, Committee or City Department | The City is forming a Public Arts Committee and this initiative should be directed to that group for consideration and prioritization. |
| 2024 | Citywide | In the CIP the city should include funding of $42,000 in FY24 for a deep tine aerator to help the DPW to efficiently aerate our parks and playing fields. Deep tine aeration allows oxygen and water to reach the roots of plants and grasses allowing them to thrive and grow. You may have noticed that many of our parks and playgrounds have become hard and impacted. Last year the DPW received a quote for $42,151 for a deep tine aerator, and i urge the city to support this needed machine and add it on the CIP. | Ted Jankowski | | | This equipment would be beneficial for the maintenance of the City's parks and fields, however, this request would be better served through the City's Rolling Stock Program which plans for future equipment purchases. |
| 2024 | Citywide (Where Street Signs Do Not Now Exist) | I moved to Portsmouth from Pennsylvania in November, 2021 and have experienced difficulty in finding my way around, mainly because of the lack of street signs. The main streets need to be identified at every cross street, not only where the main streets begin. For example, the streets leading from the light at the CVS and Islington Street to the service center on Cottage Street is poorly marked. | Mary Lou Green | | | This is not a capital request. The Department of Public Works (DPW) has a Signs and Lines group and this request will be passed on to the DPW staff. |
| 2024 | Community Campus | Quaint though it is, Puddle Duck is inadequate and over-subscribed. The city needs a municipal ice skating rink that serves everyone from hockey players to figure skaters. .. All of whom have to travel far afield to city-owned rinks elsewhere, if they can. And we are in New England! One possible model for this is Bryant Park in Manhattan - a public-private partnership that operates an outdoor rink during winter months. The contractor that installs and operates the rink removes it at winter's end, and the area returns to park land. There are fees to skate and rent skates. Portsmouth might adjust those depending on the whether the skaters reside in town. The city also might sell advertising, as pro sports stadiums do, to interested businesses. | Elizabeth Mooney | | | This project is currently under review as part of a Recreation Needs Study and may be moved forward as a capital project in a future year. |
| 2024 | Elwyn Rd, Regina Rd, Gosport | Resident is requesting a cross-walk and cross-walk signs be erected at the intersection of Elwyn Rd, Regina Rd, and Gosport Rd. When leaving Regina Rd to Elwyn Rd,m there are 2 blind corners on either side. A sidewalk would increase safety for pedestrians crossing Elwyn Rd. Frequently cars do not abide by the speed limits on Elwyn Rd and a crosswalk with signage would help alert motorists to slow to pedestrians especially when approaching the blind corners. | Joshua Carlson | | | Signage and crosswalks can be completed without a capital project. This request will be forwarded to the Parking and Traffic Safety Committee for consideration. The addition of a sidewalk or multi-use trail to improve accessibility and safety along Elwyn Road has been identified in the 2014 Bicycle and Pedestrian Plan. |
| 2024 | Emery Street | Add sidewalks and street lights so that elementary students from Cutts Cove neighborhood can safely walk to New Franklin School, and middle school students on Myrtle avenue can safely walk to the bus stop. Emery street can be dangerous with vehicle traffic, especially in winter when there are snow banks and it gets dark earlier. | Justin Maji | | | It would be most beneficial if this project were sent to the Parking, Traffic and Safety Committee for review and recommendation. |

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| 2024 | Gosling Road | Construction of Pedestrian Crosswalk with LED Signaling on Gosling Road (in the section separating Gosling Meadows from the Mall businesses in Newington). It is proposed that at least one pedestrian crosswalk path be constructed allowing Gosling Meadow residents to safely cross Gosling Road to access the businesses and the bus stop on the other side of the street including the mall businesses. The crosswalk should include LED flashing lights and an adequate timed duration so that safe crossing of the street is possible for seniors, mothers with baby-carriages as well as everyone else. The design and location should be determined after consulting with Gosling Meadows residents and the Portsmouth Housing Authority, which oversees the Gosling Meadows neighborhood. | Joan Hamblet & Peter Somssich | | | Mid-block crossings are not considered safe. Crosswalks with pedestrian signals already exist on Gosling Rd. This project should be reviewed by the Parking, Traffic and Safety Commission for further review of potential changes to this roadway. |
| 2024 | Greenleaf Avenue | Speed Bump or table on Greenleaf Avenue just southwest of where it intersects Lafayette Road. Traffic traveling southwest on Greenleaf Avenue using it as a shortcut to the Route 1 bypass travels at speeds well beyond the posted 20 MPH. A Zoom was conducted to two years ago to discuss road alterations, though a speed bump may be a more cost-effective solution. | Gregory Hebert | | | Traffic calming is identified in the CIP item TSM-21-PW-71. This item will need review and approval by the Parking and Traffic Safety Committee. |
| 2024 | Historic Areas | Replace all aluminum square sign (Stop, No Turn, Etc.) posts in/near market square - All the Stop, No Turn, etc. square aluminum sign posts need to be replaced. They are very ugly, dilapidated and do not match the street lamp posts. The city should form a committee just for this purpose to see what types of street sign posts are available that better match the lamp posts. Also the sign placement is confusing in some location and should be reviewed if these sign posts are replaced. | Marc Stettner | | | These sign posts can be replaced with crashworthy posts that meet current safety standards and are black. This can be done as part of regular sign maintenance. This would benefit from being referred to the Parking, Traffic and Safety Committee for further direction. |
| 2024 | Maple Haven Park | Water fountain upgrade. | Scott Young | | | This request should be referred to the City's Public Works Department. There is covered by an existing CIP project that covers upgrades to park infrastructure of this nature, and it could be added to the repair schedule for the maintenance of parks program. |
| 2024 | Marcy Street from Pleasant to Hancock | Traffic Calming - Marcy Street is a narrow two-way street. It is a cut-through for Maine and NH commuters in the morning and the evening. It serves as a corridor for commercial vehicles trying to bypass downtown Portsmouth. There are multiple blind driveways, multiple blind intersections and this area is frequented by pedestrians, bicyclists and pets. The speed limit is 20mph, but traffic routinely exceeds this - often by a factor of 1.5X to 2.0X (30-40mph). I would like to see speed tables - as have introduced in other areas of Portsmouth - one on either side of the highest point on Marcy Street at the south meeting house. Its only a matter of time before serious injury or property damage occurs. | Cris Forkel | | | This request falls into an existing CIP item TSM-21-PW-71. This request should start with a Parking and Traffic Safety Committee request. If deemed eligible, funding is already identified in the CIP. The next course of action is to request the Parking and Traffic Safety Committee to review. |
| 2024 | 10 Middle Street | Accessibility access at Portsmouth Historical Society is in severe need of upgrading. The access makes no sense, the incline is incorrect & people with mobility issues are having difficulty accessing the building. This is a city owned building. To redesign and upgrade the accessible entrance to the Portsmouth Historical Society. The city assisted in getting our restrooms accessible now we need help getting the entrance/exit done. | Robin Lurie-Meyerkopf (on behalf of Portsmouth Historical Society) | | | This is part off a City-owned building and should be referred to city staff to review. There is an Existing CIP item BI-01-PW-21. that could fund this item. This request could be added to the back log of facilities projects. |

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| 2024 | New Franklin School | (abridged) Proposed Safety Fence would be located on public land surrounding New Franklin School, in two locations: (1) between an abutting hotel parking lot and NFS Nature Path & Playground (see purple dotted line at right angle in map below); (2) between NFS playground and Route 1 (see purple dotted line in upper-right-hand corner). Additional detail/background for this project: On behalf of the New Franklin School PTO (of which all New Franklin School parents and teachers are members), we propose the construction of a tall, non-scalable "Safety Fence," at the sites described above, for the following, important safety reasons. Due in part to increased homelessness and lack of affordable housing in Portsmouth, it has become increasingly common for Portsmouth's homeless population to camp, and individuals to consume alcohol, smoke, and use drugs, in the public "green spaces" in and around two private hotels abutting New Franklin School - Anchorage Inn & Suites and Howard Johnson (both are visible in map above) - and in and around the Stark Street bridge crossing Route 1 (see upper-right-hand corner of map above). Our safety concerns are two-fold: First, without a proper physical barrier between these areas of known drug activity and the above pictured play areas (including the nature path and playgrounds), individuals who are camping out and/or using drugs (regardless of housing status) have access to our children. Second, without a secure barrier, beer cans, cigarette "butts," and drug paraphernalia are accessible to our children. Parents have recently witnessed many instances of these items and other evidence of drug use. This presents a serious safety issue. New England has seen multiple recent cases of children overdosing from mistakenly handling fentanyl residue. Without securing them from areas of known drug activity, our children are needlessly exposed to this risk. For all of the above reasons, building a Safety Fence on public land must be a top priority for the City of Portsmouth for as long as New Franklin School's children play and learn in immediate proximity to these corridors and hotels. | New Franklin School PTO | | | School department staff affirm the needs referenced in this proposal. This work can be better addressed as a part of the regular property maintenance and safety item through other local or federal funds. Staff will actively pursue resolution of this concern. |
| 2024 | Ocean Rd in the vicinity of the junction of map-lot 0282-0001-0000 and 0283-0018-0000 | The traffic on Ocean Rd seems to only be increasing in volume and speed. It does not seem that DOT will allow speed tables on Ocean Rd. But the radar speed-reading devices are said to be effective by Portsmouth Police Department and could help slow traffic. | Fred & Elaine Butts | | | This can be done without a capital project and should be referred to the Parking, Traffic and Safety Committee. |
| 2024 | 65 Onyx Road | Our small "jewel" neighborhood has exploded with young children over the past few years. The neighborhood is more of a loop, rather than "no outlet." Unfortunately, some drivers come through thinking that it's a quick exit to Maplewood Ave and they drive way too fast. Some delivery trucks are also guilty of excessive speed. We in the neighborhood feel that a mirror at the end of Onyx/ Topaz would be helpful for drivers to see any children that are playing and also those of us who walk. There are roughly 25 - 30 kids under 10 in our neighborhood. Thank you for your consideration. | Christine Randall | | | Mirrors are not an authorized traffic control device. A request to the Parking and Traffic Safety Committee should be made to review the road configuration. |
| 2024 | Pleasant Street at Howard Street | Speed table installation - Too many speeding vehicles, please add a speed table w speed detection corner off Howard St at Pleasant St. Ever since pleasant St was replaced and narrowed, it has become unsafe with two way traffic and for pedestrians. So many pickups in morning and late afternoons come flying down pleasant doing 35-40 mph. The same should be considered for Marcy Street between Gates and Meeting house on Marcy Street. | Peter Harris | | | This request falls into an existing CIP item TSM-21-PW-71. This request should start with a Parking and Traffic Safety Committee request. If deemed eligible Funding are already identified in the CIP. The next course of action is to request the Parking and Traffic Safety Committee to review. |
| 2024 | 35 Sherburne Road, 40 Bedford Way, 25 Granite Street | (Abridged) According to the recently released 2022 Portsmouth Housing Market Report, the short supply of affordable housing in Portsmouth has, among other trends, resulted in valued residents reluctantly migrating out of the city, current residents being severely cost-burdened, and seniors being underserved by the lack of affordable options without modern accessibility features. The private market has responded to this demand by building a significant amount of rental housing in recent years, but the Report found the increase in housing supply has not offset the sharp rent increases in the city. | Craig Welch (on behalf of the Portsmouth Housing Authority) | | | This request, which is ultimatley is a policy decision by the Council, would be well served if it were referred to the City's incoming Housing Navigator for support and coordination with Planning and Public Works Departments for a possible future CIP Project(s). |
| 2024 | Spinnaker Point Adult Rec Center | This facility is fantastic as to the variety of activities it offers for adults of all ages. It is strategically located and serves a wide catchment area. The city should own it because doing so would be a better bang for taxpayer bucks than rental and certainly cheaper than building from scratch. The building warrants an energy audit, which doesn't cost a lot to do. Unitil and Eversource have rebate programs to offset capital costs of at least some kinds of energy efficiency upgrades. There may be shared savings programs available so that up-front out-of-pocket costs are minimized. IK think energy audits for all municipal buildings should be undertaken in this capital budget cycle and money set aside now for implementing recommendations. We will save green by going green. | Elizabeth Mooney | | | This request should go through the Recreation Board. An energy audit and facilities evaluation for Spinnaker has been completed and the City has implemented a number of upgrades recommended in that report. Further investments are not warranted unless the City purchased the facility. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | Spinnaker Point Fitness Center | Completion of Spinnaker Point Fitness Center Ventilation/Heating/Cooling Projects. During the pandemic period and with the help of federal funding, the Spinnaker Point Fitness Center was significantly rehabilitated, with many deferred maintenance repairs finally being able to be completed. However, two outstanding issues were not completely dealt with: the inadequate ventilation in the Men's Locker Room, and the lack of proper heating and cooling on the Indoor Track. The adequate ventilation continues to pose a health issue, with many members having complained of respiratory illnesses such as colds and similar symptoms, stemming from the use of the Men's Locker Room. The heating, cooling and ventilation system on the track has not been properly functioning for at least a decade, resulting in members requiring coats in the winter and excessive heat/humidity in the summer. These issues have been repeatedly mentioned at various forums, e.g. City Council meetings and Citywide Neighborhood Committee forums and have been noted. It is worth suggesting that since the ventilation and heating/cooling issues may be a building-wide problem, a comprehensive Energy Audit (provided by the utilities at no cost) should be undertaken Prior To any new measures being implemented. This would be also financially relevant since many energy efficiency measures would quality for energy rebates of up to 50% from our 2 utilities (Eversource and Unitil). | Peter Somssich & Larry Cataldo (Citywide Neighborhood Committee) | | | This request should go through the Recreation Board. An energy audit and facilities evaluation for Spinnaker has been completed and the City has implemented a number of upgrades recommended in that report. Further investments are not warranted unless the City were to purchase the facility. |
| 2024 | Bartlett Street RR trestle | Raise and widen the underpass of the Bartleet St RR trestle (under planning document cited: Portsmouth CIP for 20 years until 2016-2021 CIP). | James Hewitt | | | The City does not own or control this infrastructure. Previous funding has been contributed by a developer to study potential upgrades to the RR bridge. The City is exploring contracting with a consultant that specializes in RR projects to provide assistance in applying for a Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant which would fund a study to develop alterations or possible replacement of the RR bridge. The RR has to be a partner it this effort. |
| 2024 | Islington Street and Bartlett Street and Jewell Court | Re-Align Bartlett Street to create a 4 way intersection with Jewell Court (under documents cited: Was in CIPs until 2015-2020 and then it disappeared). | James Hewitt | | | This project is not practical at this time. It would require purchasing or the taking of property. |
| 2024 | Portsmouth Harbor Wharf near Sarah Long Bridge | New Wharf / Pier (identified in document: NH DOT Ten Year Plan) | James Hewitt | | | This is not a City project. |
| 2024 | Portsmouth Traffic Circle | Modernize antiquated 1950s era single lane rotary a modern 2 lane Roundabout. (under planning document cited: Modernizing the Portsmouth Traffic Circle was in the CIP for years until the 2016-2021 CIP. Then it mysteriously disapperred) | James Hewitt | | | State Project NHDOT. This project is the highest priority project being requested to be added to the state's Ten Year Plan by the Rockingham Planning Commission. |
| 2024 | Sagamore Avenue (Route 1A) | TSMW-19-PW-62 Sagamore Avenue Sidewalk - This project extends the current sidewalk from "the old Moose Club access road" (the entrance to the Sea Star Cove Condominium Association) to Ordione Point Road in FY2024. As part of the approval for development of the 1169/1171 parcel, the developer will pay for about one third of this distance. This requirement should be enforced, and the project should be extended south to the Rye border. This is a developing part of town on a dangerous road: the 10unit Sea Star Cove association; the 6 unit development at the former Golden Egg property; The 10 unit development at 1169/1171; the sewer project. Residents walk to the Urban Forest and points in Rye such as the Atlantic Grill. | Bill Bowen | | | A portion of this project is currently in the CIP under project # (FY23 # TSM-19-PW-63 "Sagamore Ave Sidewalks") addressing the section of Sagamore Avenue that is in Portsmouth. Extending the sidewalk to Foyes Corner would entail constructing sidewalk outside the City limit in the Town of Rye . Doing this second portion of the sidewalks would require a Intermunicipal agreement between the City Council and the Town of Rye in conjunction with an agreement from the NH DOT. The secondary portion would require a policy decision and is not a capital request at this time. |
| 2024 | between the entrance to Tidewatch Condominium and Sagamore Creek Bridge on Sagamore Ave (2 Requests) | (combined) Sagamore Avenue is a popular route for cyclists traveling between Portsmouth and Rye and the southern NH seacoast. The southbound bike lane on Sagamore Ave. ends at the entrance to the Tidewatch Condominiums. Sagamore Ave at that point begins an ascent to the top of a ridge and the shoulder of the road narrows to about 12" and is bound by a curb on a riders' right. Southbound motorists cannot see approaching traffic due to the crest of the ridge. Nevertheless, impatient motorists, of which there are plenty, will attempt to pass cyclists and do not provide the required 3 feet of distance between their vehicle and a cyclist. A cyclist has no chance to move to the right due to the curb. A cyclist is very likely to be seriously injured or an automobile is likely to collide with a northbound motorist if a proper bike lane is not extended over the crest of Sagamore Ave. | Peter Wissel & Andrew Jaffee | | | Given the right-of-way, there are limited adjustments that can be completed. The current sewer project will be working to improve bicycle safety along this section. Additional upgrades to widen the road shoulder or creating a multi-use path will require adjusting the width of the road right-of-way, requiring procurement of private property. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | US 1 By-Pass and Cottage Street and Coakley Road | Remove Traffic Signal. Make the Cottage Street and Coakley Road Right-In, Right Out only on to US 1 By-Pass TSM 20-PL-71 (Under documentation : TSM-20-PL-71) | James Hewitt | | | This is a State Road and intersection. A companion project TSM-20-PL-70 has been included in the CIP in anticipation of a modification to this intersection by NHDOT. The City Council can request this is project be moved in priority by NH DOT. |
| 2024 | Full Length of Banfield Road from Ocean Road, across Peverly Road and to Rt 1 | As discussed in the suburban master plan, connecting the suburban amenities through sidewalks, and bike paths will both connect the suburbs with downtown, as well as allow pedestrian and bike access to all of the amenities from Green Rd over to Rt 1/Lafayette | Fred & Elaine Butts | | | This project request is unclear. |
| 2024 | 710 Middle Road | Monster DADU 4,000 Warehouse | James Hewitt | | | Not clear as to the request. |
| 2024 | 2-4 Woodbury Avenue | New Deck - Construction of Ground Level Deck in Rear | Steven Cook | | | Do not understand this request. Private Residence. |
| 2024 | Greater Ocean Rd and Banfield Rd Suburban area. | The expansion and growth of the Banfield and Greater Ocean Rd neighborhoods with single-family homes, condos, and workforce housing leave thousands of existing and future residents without any nearby access to parks, fields, and courts. While there is a park down in Maplehaven, it's tucked away and not heavily used by the residents outside of Maplehaven. I am proposing a committee to consider the location, design, and construction of parks, fields, and courts on one of the many City of Portsmouth Parcels of land that are scattered throughout this suburb. | Fred & Elaine Butts | | | This is a request for a committee formation which is performed by the City Council as a policy request. This is not a capital request. |
| 2024 | Citywide | Property Acquisition Fund - In the CIP, policy makers should set aside 1% ($1.3 million in FY24) of the budget annually for the purpose of land conservation and open space protection. We should be prepared to quickly purchase new properties that are contiguous with our existing conservation areas. The one thing that there is no more of is land. Additionally, we should be ready to protect our core downtown open spaces, which today are parking lots, by obtaining voluntary first rights of refusal from current land owners. For instance, an example is the TD Bank Lot next to the Old South Church. Wouldn't it be better for the city to put a future pocket park there instead of a 70 foot tall development built curb line to curb line? | Ted Jankowski | | | Although there is an existing CIP item for this type of funding (FY23 CIP # BI-95-PL-16 "Land Acquisition"), the creation of a fund or funding level policy/percentage is a decision of the City Council and not a capital request. |
| 2024 | Citywide | The city should include funding of $225,000 in FY24 for a commercial grade steamer that can kills weeds without chemicals, remove graffiti, sanitize anything (sidewalks, playground equipment, etc.), can unfreeze manhole covers, and is a year round tool. Please see this one link http://weedtechnic.com as an example of one European manufacture. While there are currently no US manufactures, there are also US contractors that have bought the machines and could provide the service. However, I would support city staff doing the work. I urge the City to support this chemical free machine and add it to the CIP for FY24. | Ted Jankowski | | | The City's Public Works Department has piloted this equipment in conjunction with reviewing how Dover is using their equipment and determined that a mechanical means of weed control such as weedwackers or manually weeding is more effective. |
| 2024 | Citywide | Collecting Compost from residents and businesses in the City, either at designated locations throughout the City or curbside, to divert organics from the waste stream. | Allison Tanner (on behalf of Portsmouth Climate Solutions & WRAD) | | | This is not a capital project. It is an operational request. This can be considered by the City Council during the City's Annual Budget Process. |
| 2024 | Islington Corridor | Hello. As part of the 2009 Islington Street Corridor Action Plan, it was identified to work with Art-Speak to implement an art program. Details can be found here: https://files.cityofportsmouth.com/economic/FINALACTIONPLAN100212_Islington_actionmatrix.pdf The ask is to fund this program. Thanks. | Gregory LaCamera | | | This is a policy question not a capital project request. |
| 2024 | 95 Mechanic Street | Conduct repairs and upgrades to make this 7 bedroom City Owned apartment building ready for occupancy | James Hewitt | | | This property was purchased to facilitate construction of a new wastewater pumping station. Investments in this property for any long term use is not recommended. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
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| 2024 | Spinnaker Point Fitness Center | Purchase of the Spinnaker Point Fitness Center. The City of Portsmouth currently leases the Spinnaker Point Fitness Center from the Spinnaker Point Association. Our current lease is in place for the next 8 years. However, the association would most likely sell this property if the City were not leasing it, and paying for its maintenance. Even though the center has been designated as the City's premier senior fitness center, there is currently no replacement in sight should the City decide not to extend the lease. At the same time, at least for the next 8 years, the City will continue spending money on maintenance and upkeep for the facility, even if they do not own it, and it only makes this asset more valuable for the owners. Any consideration of a purchase should however only be made after a thorough review of energy and maintenance needs that are identified by way of an inspection and energy audit. Some kind of a collaboration with the residents of the Spinnaker Point Association should also be part of any negotiations.<br>Membership fees, which have held steady for many years must also be part of any new ownership transition, helping to financially support a new and improved fitness center. | Peter Somssich & Larry Cataldo (Citywide Neighborhood Committee) | | | The purchase of this facility is a policy decision that should be reviewed and discussed by the City Council. |
| 2024 | Spinney Road | Construction of approximately 430 feet of curbing and sidewalk from Islington Street to Spinney Rd where no sidewalk currently exists. There is a very dangerous area to walk on the road due to the curve and elevation change on Spinney Rd resulting in a reduced sight distance. | Eric Doremus | | | This is an existing project that has been funded. Impacted property owners have not agreed to grant easements. Council will need to do a pubic necessity determination and initiate a condemnation to be able to complete the sidewalk |
| 2023 | Elwyn Road from Harding 300 feet eastward | The Elwyn Side Path project that is currently in planning would be greatly improved by extending it eastward by 300 feet to the last gate into Urban Forestry Center. The purpose of that existing project is Congestion Mitigation through bicycle and pedestrian connectivity, so of course it should connect to the broad dirt road that already exists within Urban Forestry. This will also open up the half of the Urban Forestry Center that is not currently accessible to those with disabilities. Otherwise there will effectively be a half mile paved road and a half mile dirt road that are only linked by one short and seriously degraded hiking trail. This 300 foot connection is important to do now in preparation for a future goal of the bike/ped plan, a right of way and path through to Gosport Road. This would in the future allow for a route almost entirely separated from traffic all the way from Sagamore Road to the Plains ballfield and the new athletic fields. | Matthew Glenn | | | This project has been expanded to include this request no additonal CIP funding needed. |
| 2023 | Grant Ave. | Grant Ave. Greenspace rehab prjoect. City Property. Clear cut trees and shrubs and remove excessive ground debris. This will allow sunlight to a very enclosed, dark section of narrow roadway thus increasiong visibility and safety for motorist, cylist and pedestrians. It will aide with increasing the aesthetic value of the neighborhood and decrease randowm waste disposal and abutter vegetation debris dumping on city property. | Mark Syracusa | | | This level of maintenance is above typical level of service recommend the project to Adopt a Spot |
| 2023 | Gosport Road/Urban Forestry Center | Connect Tuckers Cove to the Elwyn Side Path in Urban Forestry Center with a bike/ped path, allowing a safe route all the way from Plains Ballfield to Sagamore Rd.These two were identified in Bike/Ped Plan: 13 Bike/Ped 2A/B:Lafayette , 5A/B:South High Elwyn Rd Alternative Route Shared-use path through Urban Forestry Center connecting to Gosport Rd/Odiorne Point partially through existing utility easement. Signed bicycle route on Gosport Rd/Odiorne Point to connect to Sagamore Rd. | Matthew Glenn | | | This request appears to be across private property to which the City does not have pedestrian easements. |
| 2023 | Lafayette/Peverly Hill/Elwyn intersection | Add a walk signal & crosswalk to connect the planned side path to the Yokens plaza and Peverly Hill bike lanes. This is the only leg of the intersection without a crosswalk, but there needs to be a way to connect to the new multi use path. In bike/ped plan, project ID 7, and in CIP as TSM-10-PW-66: CITYWIDE TRAFFIC SIGNAL UPGRADE PROGRAM) | Matthew Glenn | | | Working to expand scope of th e Elwyn Road side path to include this recommendation |

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| 2023 | Route 33 between Plains Ballfield and NH Seacoast Greenway at the future skate park | Convert the sidewalk alongside 33 to a multi use path between the Plains Ballfield and the new skatepark & rail trail accessExisting project #TSM-21-PL-56: GREENLAND RD/MIDDLE RD CORRIDOR TRAFFIC CALMING AND BICYCLE/PEDESTRIAN IMPROVEMENTSIn bike/ped plan: 19 Bike/Ped 4A/B:Greenland/Borthwick High Hampton Branch Trail Connection at Middle Rd Widen existing sidewalk on south side of Portsmouth Plains Field for sidepath connection from Peverly Hill Rd to Hampton Branch Trail. Provide sidepath connection through future athletic fields with parking access for trail users. | Matthew Glenn | | | This request will be added to the backlog of pedestrian/bicycle requests |
| 2023 | Peverly Hill and Middle Road intersection | Add a walk or bike signal & crosswalk connecting the new multi use path directly to the Plains ballfield. There should be a way to cross directly-- most bike riders will not press and wait for two crosswalk signals that take them an extra distance, but darting across traffic on route 33 is not a safe option. This is also important to connect to the future skate park. | Matthew Glenn | | | Will be part of Pevery Hill road upgrade project |
| 2023 | Dept of Public Works Driveway to Athletic Fields | Allow Bike/Ped access to the new Athletic Field from the DPW driveway on Peverly Hill Road. This was planned when the fields were built, but hasn't been opened to the public yet. Ideally there should be a separated multi use path from Peverly Hill Rd through the shared DPW and Pike Industries driveway. | Matthew Glenn | | | This is part of the next phase of improvements for this property |
| 2023 | Borthwick Ave | Build a multi-use path on Borthwick from the Route 1 Bypass to Eileen Dondero Foley Drive or further, and install a bike crossing signal at the Bypass to the new multi use path on Hodgdon Way. This would connect the future North Mill Pond Greenway to many businesses and to the NH Seacoast Greenway, and would become the primary NH Seacoast Greenway route as identified in the city's own plans. If the Coakley/Borthwick connector is built it will be necessary to at least build a sidewalk here, but a shared path would be better. There is also a bus stop at this location. | Matthew Glenn | | | This is in the CIP |
| 2023 | Rte 1 and Elwyn Road | Requesting a crosswalk from the northwest side of rte 1 intersection at the corner of Peverly Hill to the north east side at the corner of Elwyn road to connect to Elwyn road sidewalk project. All of the lights at that intersection, including at Wilson road and rte 1, need to be red with no turn on red when cross sign is initiated. Furthermore, consideration of an expanded sidewalk all the way down Elwyn road is requested. | Amy-Mae Court | | | This request is covered as part of the Elwyn Road side path project |
| 2023 | Hampton Branch rail trail | TSM-15-PL/NH-51: HAMPTON BRANCH RAIL TRAIL (NH SEACOAST GREENWAY) | Anne Poubeau | | | This project is underway by NHDOT |
| 2023 | MIDDLE STREET BIKE LANES CONNECTION TO DOWNTOWN | Middle St between Highland StandIslington Street/ Congress Street Intersection | Charles Fleck Jr | | | There are sharos in place for this section of roadway |
| 2023 | Middle Road and Greenland Roadfrom Spinney Road to Harvard Street | TSM-21-PL-56: GREENLAND RD/MIDDLE RD CORRIDOR TRAFFIC CALMING AND BICYCLE/PEDESTRIAN IMPROVEMENTS | Charles Fleck Jr | | | this is a future project part of the bicyle master plan |
| 2023 | Market Streetbetween Kearsarge Way and Maplewood Ave | TSM-21-PL-57: MARKET STREET SIDE PATH | Charles Fleck Jr | | | future project of the bicyle master plan |
| 2023 | Maplewood Ave from Congress Stto Raynes Ave | TSM-16-PL-60: MAPLEWOOD AVE DOWNTOWN COMPLETE STREET | Charles Fleck Jr | | | this is on the sate NHDOT list |
| 2023 | US Route 1 from Andrew Jarvis to Elwyn Rd | TSM-08-PL/NH-58: US ROUTE 1 NEW SIDE PATH CONSTRUCTION | Charles Fleck Jr | | | Currently in CIP |
| 2023 | Former Hampton Branch Rail Line | TSM-15-PL/NH-51: HAMPTON BRANCH RAIL TRAIL (NH SEACOAST GREENWAY) | Charles Fleck Jr | | | Currently in CIP |
| 2023 | Elwyn road near Tucker's Cover/Urban Forestry Center | Alternative Route/Shared-use path through Urban Forestry Center connecting to Gosport Rd/Odiorne Point partially through existing utility easement. | Charles Fleck Jr | | | This is private property |
| 2023 | 33 Near Plains Ballfield and New Skate Park location | Convert the sidewalk alongside 33 to a multi use path between the Plains Ballfield and the new skatepark & rail trail access | Charles Fleck Jr | | | Add this to listof backloged projects |
| 2023 | Peverly Hill Rd. | Peverly Hill Rd. has major safety issues due to poor road conditions (potholes, crumbling asphalt) and heavy and speeding traffic. While some issues will be addressed with the Peverly Hill Road Improvement project (sidewalk and multi-use lane), we absolutely need some speed and traffic control. I propose adding speed bumps/ speed tables to slow down the traffic, similar to Banfield Rd. set-up, as well as signs illuminating speed if you go too fast. | Eugene Zakharov | | | This is part of an existing project |

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| 2023 | South Mill Pond Tennis Courts | Tennis courts (specifically the nets) have been completely destroyed by pickle ball players. We need new nets and the courts need to be resurfaced. It's the only facility with lights that allow to play in the evening and is a critical piece of infrastructure that needs attention. | Eugene Zakharov | | | This is a maintenance project not appropriate for CIP |
| 2023 | Portsmouth; multiple | I support SABR and all their ideas as below:Support existing projects [http://files.cityofportsmouth.com/files/planning/cip/CityCouncilCIP_FY22FY27.pdf]:TSM-15-PL/NH-51: HAMPTON BRANCH RAIL TRAIL (NH SEACOAST GREENWAY)TSM-21-PL-54: MIDDLE STREET BIKE LANES CONNECTION TO DOWNTOWNTSM-21-PL-56: GREENLAND RD/MIDDLE RD CORRIDOR TRAFFIC CALMING AND BICYCLE/PEDESTRIAN IMPROVEMENTSTSM-21-PL-57: MARKET STREET SIDE PATHTSM-08-PL/NH-58: US ROUTE 1 NEW SIDE PATH CONSTRUCTIONTSM-16-PL-60: MAPLEWOOD AVE DOWNTOWN COMPLETE STREETBuild a multi-use path on Borthwick from the Route 1 Bypass to Eileen Dondero Foley Dr or further, and install a bike crossing signal at the Bypass. This would connect the future North Mill Pond Greenway to many businesses and to the NH Seacoast Greenway, and would become the primary NH Seacaost Greenway route.Peverly/Middle Road/33 intersectionâ€" add a walk or bike signal & crosswalk connecting the new Peverly Hill multi use path directly to Plains ballfield.Convert the sidewalk alongside 33 to a multi use path between the Plains Ballfield and the new skatepark & rail trail access.Extend the planned Elwyn Road Sidepath 300 feet to the east to make a connection to the existing dirt road headed toward Tuckerâ€™s Cove, then connect Tuckers Cove to Urban Forestry Center with a bike/ped path, allowing a safe route all the way from Plains Ballfield to Sagamore Rd.Allow Bike/Ped access to the new Athletic Field at Community Campus from the DPW driveway on Peverly Hill Road | Anne Schwartzman | | | These projects have been covered in other CIP requests above |
| 2023 | (Continued from above) | Tuckerâ€™s Cove, then connect Tuckers Cove to Urban Forestry Center with a bike/ped path, allowing a safe route all the way from Plains Ballfield to Sagamore Rd.Allow Bike/Ped access to the new Athletic Field at Community Campus from the DPW driveway on Peverly Hill Road | | | | |
| 2023 | South Mill Pond at 438 and 444 Pleasant Street | Design and Planning for repair and rehabilitation of historic seawall with related landscaping and access improvements along the North side of the South Mill Pond. | Portsmouth Housing Authority Craig Welch | | | The wall in question is on PHA property. It will be investigated but no fuding at this time for that work. |
| 2023 | Borthwick Avenue | Build a multiuse path along Borthwick Avenue that allows users of the existing path on Hodgdon Way/Cate Street to continue across the bypass, to access the soon-to-be built Hampton Branch Rail Trail via Eileen Foley Drive, as well as the hospital and Pannaway Manor. | Jonathan Sandberg | | | This project is in the CIP currently |
| 2023 | Foundry Garage | Buyout Pan Am Railroad (B&M RR) deeded right to an office in the Foundry Garage. This action would significantly reduce the need for trains to idle in the Portsmouth Yard while crews utilize the office. Reducing time trains spend in Portsmouth would have a significant impact on air quality, noise, hazards and general quality of life for the Isington Creek Neighborhood and Portsmouth in general. | Tom Hiney | | | This is a policy issue more suited to the legal department. |
| 2023 | Maplewood Ave. | New bicycle lanes painted on both sides of Maplewood Ave, just after the rail crossing. There is a risk of a cyclist colliding with a door opening from a parked car (getting doored), unless the cyclist is riding to the extreme outside of the lane. Bear in mind that a cyclist heading toward downtown could be moving very fast. I suggest "share the road" stripes instead. | Thomas Smart | | | This is not a CIP project. Request should be made to Parking Traffic and Safety Committee |
| 2023 | Intersection of Middle Street and Middle Road | Make permanent the pilot removal of the slip lane at the intersection of Middle Street and Middle Road and construct a permanent "T" intersection there.( see attached) | Jim Hewitt | | | This is part of the CIP currently |
| 2023 | Cate & Barlett | Remove the pilot slip lane that the City created at Cate & Bartlett on July 16 and make that a permanent "T" intersection like the one to be constructed at Middle Street and Middle Road | Jim Hewitt | | | This is not the recommended approach |
| 2023 | Citywide | Do not install any more tourist "Wayfinding" signs. The signs pointing tourists toward City Hall and the Indoor Swimming pool are ridiculous for obvious reasons. ( $ 1.5 million total cost ?!!??) | Jim Hewitt | | | This is a policy comment not a CIP request |
| 2023 | Bartlett Street | Return the Bartlett Street RR bridge replacement project to the CIP as it was from 1997 to 2016. Use the $ 20,000 that Torrington Properties gave the City for a bridge replacement feasibility study as a condition of West End Yards approval. See attached | Jim Hewitt | | | This is a policy issue will review prior CIP requests |

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| 2023 | Citywide | The most important request is a project to restructure how the CIP is prepared. In keeping with the City's motto of "City of Open Door " and its goal to maximize transparency , the CIP introduction needs to include the following upgrades- | Jim Hewitt | | | This is an issue of City policy |
| 2022 | Elwyn Road between Harding Road and Foyers Corner | Extend a sidewalk or path the entire length of Elwyn Road from Route 1 to Foyes Corner. Itâ€™s such a dangerous road to walk or ride bikes on. It would be great to be able to walk safely to the shops and restaurants at Foyes Corner. Similarly, it would be great to have a sidewalk from Foyes Corner along Sagamore Road to Odiorne Point Road for the same reason. It would be a tremendous benefit to those businesses. | Michael Bloom | | | Consider adding to CIP once existing Elwyn Road side path project is complete |
| 2022 | Elwyn Road between Harding Road and Foyers Corner | Continue Elwyn Rd sidepath or sidewalk further down Elwyn beyond Harding toward Rye line. | Emma Chamberlain | | | Consider adding to CIP once existing Elwyn Road side path project is complete |
| 2022 | Mendum Avenue | We are writing as neighbors who reside on the one block-long Mendum Avenue to ask the city of Portsmouth to restore sidewalks to the odd-numbered side of our street. | Janet Polasky | | | DPW to address as part of city-wide sidewalk maintenance program |
| 2022 | Middle Rd (Bypass to Plains Field) & Islington St (Bypass to Plains Field) | Traffic control and space for bikes. The new sidewalks on Islington are nice, but very frightening to bring little kids on with speeds so high, same goes for Middle Rd side. The bridge over the bypass on Middle Rd is incredibly dangerous for bicycles. Blind corner with degrading asphalt shoulder. One major accident taking out telephone pole has already occurred. Speed to high over bridge. Heavily used by DPW trucks. | Stephen Parsons | | | Middle Road is part of an existing CIP project, Islington Street bike lanes not recommended in City-wide bike ped plan, future Hampton Branch Rail Trail is alternate route |
| 2022 | Middle Road | My wife and I have lived at 726 Middle Road for 6 years, which is located directly across from the 73 units at Riverbrook Condominiums. We chat regularly with many neighborhood pedestrians as our front porch is directly in front of the crosswalk from Riverbrook to the Middle Road sidewalk. Over the years we have learned our neighbors' top priorities for improvements to Middle Road are: 1) pedestrian safety and, 2) getting traffic to slow down. Therefore, I believe the City should listen to what the Middle Road residents want and spend 100% of the $650,000.00 allocated for project TSM- 21-PL-60 (attached) to achieve these two goals. With regard to pedestrian safety, the less pedestrians need to cross Middle Road, the less likely they are likely to be struck by a car. Since so many Riverbrook residents need to cross Middle Road to get to the sidewalk heading toward, or away from, downtown, the solution would be to build a sidewalk on the RIverbrook side ( north) side of Middle Road. This would eliminate the need to cross Middle Road twice, once at the Riverbrook entrance and once at the crosswalk at Lois. As shown on the attached, the proposed sidewalk would run from Essex to Peverly Hill Road for approximately 2,000 ft. Assuming 4 ft wide sidewalk is $ 100/SY and granite curb is $80/LF to build, that sidewalk would only cost about $300,000.00. The remaining $350,000.00 could go towards traffic slowing raised crosswalk tables, new signage, a westbound automated speed indicator and extra police details. I look forward to the implementation of this CIP project based on addressing Middle Road residents' top priorities, namely 1) pedestrian safety and 2) slower traffic. | Jim Hewitt | | | Existing CIP project |

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| 2022 | Pease Tradeport | I would like to see a true bike path on New Hampshire Ave, International Dr, Corporate Dr & Arboretum Dr. I would like the city, Pease Authority & Newington to collaborate on getting this under-used area to be more user-friendly for employees in the area, residents & even tourists to have the ability to get to the Wildlife Refuge area in a fun, safe & healthy way. The sidewalks are underused; the frontage of the businesses would allow for a nice wide path. The Market St pedestrian/ bike overpass and Rockingham Ave access to the bike bridge/trail are ideal and to further that into the Pease Tradeport area is a win-win. Portsmouth should be promoting this as a biking destination. We have opportunity to improve our biking infrastructure in many areas; this is just one. I encourage future bike lanes, painted sharrows and share the road signs throughout Portsmouth. Our small parks can be linked with bike & walk options and walking options are plentiful. Biking takes less time and is expanding in interest; let the city truly guide the ability for safe biking to tie in our parks, eateries and many cultural activities in the area. Tourism begs for choices such as this. Bike share abilities without safe opportunities will not work, but with safe accesss such as separated lanes & distinct paths is a win-win. I know the rail trail is in the works too, and that is great, but we can do more. Complete Streets for all. Thanks! | Anne Schwartzman | 199 Concord Way | | Review with Pease staff for future CIP project in collaboration with Newington |
| 2022 | Sidewalks on FW Hartford Drive and TJ Gamester Drive (The Woodlands) | Replace sidewalks on FW Hartford & TJ Gamester Drives in the Woodlands neighborhood. The sidewalks are owned & maintained by the City, but as President of the Woodlands HOA, I have received numerous complaints about the sidewalks (potholes, roots/bumps, uneven, etc.) over the past year with many residents stating that they walk in the street because the sidewalks are deteriorating in areas or too uneven and a safety hazard. Thank you very much for your consideration. | Todd Spencer | | | DPW to address as part of city-wide sidewalk maintenance program |
| 2021 | 140-160 Court Street | Requested improvements related to construction of new residential apartments (driveway) , stormwater upgrades, pedestrian and park improvements, and eletrical infrastructure | Craig Welch | | | These are being put forward as new CIP projects for FY21. |
| 2021 | 1030 South Street | Implementation of granite curbing along the front of my house. | Linda Plumer | | | Recommend addressing through the City's street paving, management, and rehabilitation program. |
| 2021 | City of Portmsouth Parks and Playgrounds | Following on the City's Open Space Planning process, conduct a Parks and Playgrounds Planning Study. The Study would examine and assess existing conditions and maintenance needs, the diversity of uses and programming, recreational value, equity of distribution throughout the City, opportunities for ecologically-focused design, etc. Looking at parks and playgrounds together as a collection of City assets, this study would result in actionable priorities that involve replacement/renovation of existing parks and playgrounds, and identify opportunities for constructing new ones. This set of planning goals should focus on providing a diverse and progressive set of landscape experiences throughout the City, using the latest in landscape and playscape design practices. | Alice Carey | | | Recommend addressing through CIP project for playground improvements, which is an existing project in the CIP. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2021 | Creek Neighborhood | The repaving of the cross streets between Dennett and Clinton with associated sidewalk improvements | Johnathan Wyckoff | | | Recommend addressing through the City's street paving, management, and rehabilitation program. |
| 2021 | Dondero Elementary (32 Van Buren Avenue) | Completion of Dondero Elementary School Nature Playground and Green Schoolyard Master Plan. Design and construction is ongoing, along with fundraising by the Dondero PTA. Considerable issues involving site drainage from the building and throughout the site have not been addressed to complete the full vision. City and School Department funding has previously matched private fundraising efforts, but more help is needed (beyond volunteer and PTA efforts) to realize the potential of this plan as a living/learning natural playscape and schoolyard environment, to benefit not only Dondero students but the surrounding neighborhood, for which this site serves as a public park. This request is for additional collaboration and leveraging of City resources and expertise for the completion of this important project. | Alice Carey | | | Recommend ongoing collaboration with School Department on this project. |
| 2021 | Elm Court | Paving of Elm Court | Jeffry Kisiel | 199 Concord Way | | Recommend addressing through the City's street paving, management, and rehabilitation program. |
| 2021 | Foundry Garage | The Foundry Garage lightening system needs to be completed. We were told that screens would be implemented to dim the lights. The garage lighting is still a concern and problem for us across the pond. | Dawn Przychoazien | | | Recommend addressing through the City's operations and management funding for parking garage. |
| 2021 | Harvard Street | While the city has occasionally repaired potholes on this side street, it has not kept up with the traffic on this road which consists of both residential and city truck traffic, given that both the temporary dog park and the city pump/well are along this road. Requesting that the city completely repave this side street in what feels like a forgotten neighborhood. | Jane Begala | | | Recommend addressing through the City's street paving, management, and rehabilitation program. |
| 2021 | Heritage Avenue | Complete bicycle and pedestrian plan for Heritage Road. This would allow for some access to Greenway trail, connecting Maple Haven when Route 1 improvements completed. Current state of Banfield Road and Ocean Road is unsafe for bicycle and pedestrian access to rail trail. Current shoulder on Route 1 wide enough to accommodate adult usage to Heritage, and then to trail. Further improvements would be needed for use by children or those uncomfortable biking on Route 1. | Sarah Jarvis | | | Recommend coordinating with NHDOT to pursue funding for connections along Ocean Road, which is a state roadway. Consider Heritage Road improvements once NHDOT Route 1 Corridor Improvements have been designed. |
| 2021 | Maplewood Avenue Bridge | Amend the current CIP project to address the impacts from climate change and the related sea level rise on the neighborhoods surrounding the North Mill Pond, by including this in the planning, design, and implementation of this project. See attachments hereto. | Douglas Woodward | | | Recommend incorporating into existing CIP project for Maplewood Ave bridge replacement. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2021 | Market Square | When Market Square is updated with underground utilities or sewer and water pipes please consider installing a sidewalk warming system to make it manageable in the winter. Holland, Michigan uses a water system from one of its utility plants. Not sure this is workable for Portsmouth, however, there are alternatives (similar to roof ice preventing electrical cords) that could be used. Below is an informational video on Holland's system, and a Chicago Tribune article.https://www.youtube.com/watch?v=XFWzDB7WvNI [https://www.youtube.com/watch?v=XFWzDB7WvNI]https://www.chicagotribune.com/news/ct-xpm-2014-02-01-ct-heated-sidewalks-met-20140201-story.html [https://www.chicagotribune.com/news/ct-xpm-2014-02-01-ct-heated-sidewalks-met-20140201-story.html] | Jane Nilles | | | Recommend considering as part of existing CIP project for Market Square. |
| 2021 | Middle Road | Planning study on traffic calming and safety for autos, pedestrians, and bicycles on Middle Rd and South Street. Reconfigure intersection, sidewalks, street narrowing with parking. | Rebecca McBeath | | | This is being put forward as a new CIP project for FY21. |
| 2021 | Middle Road and South Street Triangle | Crosswalk paint and reflective sticks. 1. crosswalk at Spinney and Middle -- add reflecting sticks 2. crosswalk added to cross South Street where it meets the triangle island. Place markers liked used on Middle Street bike lanes in center and in center o | Rebecca McBeath | | | Corridor-wide traffic calming and streetscape improvements are being put forward as a new CIP project for FY21. Consider implementing interim measures through the City's Neighborhood Traffic Calming program. |
| 2021 | Middle Road between Essex and Peverly | Propose curbing along sidewalk as cars use sidewalk as parking and passing lane frequently and this is the neighborhood's pedestrian access to the plains park | Janelle Clark | | | Corridor-wide traffic calming and streetscape improvements are being put forward as a new CIP project for FY21. |
| 2021 | Mill Pond Way | Improvements to city owned property to create low impact kayak launching area,offstreet parking,picnic area, and signage to inform residents. | Johnathan Wyckoff | | | This is being put forward as a new CIP project for FY21. |
| 2021 | Mill Pond Way | Build picnic tables and shelters and paths similar to Four Tree Island to encourage public access to the mill pond. Access is extremely limited on that side of the pond. | Dave Beadling | | | Recommend considering as part of existing CIP project for Market Square. |
| 2021 | Northwest Street | Pave Existing dirt turn around at the end of Northwest Street near Pump Station. | Jeffry Kisiel | | | Recommend addressing through CIP project for park improvements, which is an existing project in the CIP. |
| 2021 | Pannaway Manor | Pannaway Manor was established in 1941 making utilities, roads, sidewalks and park past their designed lifespan. Sidewalks are not walkable and are noted in the 2020-2025 CIP plan as "high priority." Pannaway Manor is in need of a complete street makeover. | Tyler Dow | | | Recommend addressing through the City's annual sidewalk improvement program and bike ped plan implementation funding which are ongoing CIP projects. |
| 2021 | Portsmouth Foundry Garage | Efforts to reduce the light pollution from the Foundry Garage have not resolved the issue for residents around the garage and across the North Mill Pond. Further efforts are needed! | Elizabeth Jefferson | | | Recommend addressing through the City's operations and management funding for parking garage. |

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|---|---|---|---|---|---|---|
| 2021 | South street between middle and Lafayette | The residents of south street have requested assistance from PTS for more than a year because of speed and volume concerns impacting safety in the area. Reconfiguration of the triangle at south/middle, sidewalks on the south side of south street, curbing to lower speeds and a crosswalk to aid pedestrians move around this neighborhood to access the high school and playground is requested. | Molly Shaw Wilson | | | This is being put forward as a new CIP project for FY20. |
| 2021 | Sparhawk and Burkitt | Vehicles are speeding down the hill with many small children and families posing a grave danger. Once cars continue through Stark stop, they speed. With construction on Islington people are driving dangerously thru the neighborhood. | Dawn Przychoazien | | | Recommend addressing through the City's Neighborhood Traffic Calming program. |
| 2021 | Sparhawk Street | I was told by the city four years ago that Sparhawk Street would be repaved in 1-2 years. I have had two sprains from the Potholes, there is grass growing up in the STREET cracks and sidewalks, The sideswalk is unwalkable and the street is quite narrow, My property has a "temporary" retaining wall that was installed almost 5 years ago, When will we see some improvement in the west end? | Elizabeth Jefferson | | | Recommend addressing through the City's street paving, management, and rehabilitation program. |
| 2021 | Sparkhawk and Burkitt | We've been waiting 11 years to have our road paved. It has been patched every other year and when we see ALL of the capital improvements all over town, we are beyond frustrated. We were told it was going to be paved 6 years ago. | Dawn Przychoazien | | | Recommend addressing through the City's street paving, management, and rehabilitation program. |
| 2021 | The Woodlands | I'd like to see the entire city modernized and have high speed fiber available to all citizens. This project would further Portsmouth a leader in technology in New Hampshire. It would also save the citizens a significant amount of money in the long run as fiber internet is significantly cheaper and hight quality than the Comcast provided Xfinity internet. Comcast charges $90 for inconsistent 150mb download speeds and fiber costs about half that for 1TB of speed and would open the door for additional saving through using online streaming services instead of paying for cable. Some neighborhoods already have this service available and I think it's time for the entire town to have the opportunity to use fiber. Selfishly, if I had to choose a neighborhood to start with, I'd choose the Woodlands where the Comcast internet often drops and Comcast contractors don't seem to be improving it. They have also cut Consolidated Communication lines here so needles to say it hasn't been a good experience with Comcast being the only option for internet. | Jonathan Weeks | | | This project is not being recommended at this time. |
| 2021 | West Road (from Lafayette to Campus Drive) | Add a sidewalk on the south side of West Rd from Lafayette Rd to the Community Campus. The bicycle/ pedestrian master plan specifies sidewalks on both sides and bicycle lanes, but to start, a sidewalk on one side would be a huge improvement for access to the senior center, Families First, New Heights, and Seacoast Community School. | Matthew Glenn | | | Consider incorporating these improvements into the City's construction of fields off Campus Drive which is an existing CIP project. |
| 2021 | Willard Ave, Orchard St, Ash St, Specifically 86-88 Orchard St | Alleviate ponding in low areas where Orchard St and driveways meet | Vicki Robinson | | | Recommend addressing through the City's street paving, management, and rehabilitation program. |
| 2020 | Atlantic Heights | The Atlantic Heights Centennial Committee would like to identify a public amenity within the neighborhood that can be rehabilitatied or built in honor of its centennial. The neighborhood has offered to fundraise. They are also interested in efforts that may make Maynard Park (now closed) safe and accessible to the public again. | Crisy Cardoso | 199 Concord Way | | The City is already coordinating with the Centennial Committee related to this request. Staff does not recommend adding a new CIP project for this item at this time. |

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|---|---|---|---|---|---|---|
| 2020 | Cutts St, Central Ave, Beechwood St, Ashland St, Leslie Drive | New/improved drainage, sidewalks, utility and pavement | Carrie Blake and Deirde Wallace | 2 Beechwood St | | This is being put forward as a new CIP project for FY20. |
| 2020 | Cutts St, Central Ave, Beechwood St, Ashland St, Leslie Drive | New/improved drainage, sidewalks, utility and pavement | Sergio Bonilla | 171 Leslie Drive | | This is being put forward as a new CIP project for FY20. |
| 2020 | Cutts St, Central Ave, Beechwood St, Ashland St, Leslie Drive | New/improved drainage, sidewalks, utility and pavement | Eric C. Kovomhav | 55 Cutts Street | | This is being put forward as a new CIP project for FY20. |
| 2020 | Cutts St, Central Ave, Beechwood St, Ashland St, Leslie Drive | New/improved drainage, sidewalks, utility and pavement | Mark Lombardi | 77 Cutts St | | This is being put forward as a new CIP project for FY20. |
| 2020 | Cutts St, Central Ave, Beechwood St, Ashland St, Leslie Drive | New/improved drainage, sidewalks, utility and pavement | Healther and Phil Pettis | 85 Leslie Drive | | This is being put forward as a new CIP project for FY20. |
| 2020 | Cutts St, Leslie Drive, Central Ave | New/improved drainage, sidewalks, utility and pavement | Johanna Lyons | 18 Cutts St | | This is being put forward as a new CIP project for FY20. |
| 2020 | Harvard St | Request for repaving of Harvard Street. | Jane Begala | 669 Greenland Road | | Recommended addressing through the City's street paving, management, and rehabilitation program. |
| 2020 | Leslie Drive | New/improved drainage, sidewalks, utility and pavement | Kyle Langelier | 304 Leslie Drive | | This is being put forward as a new CIP project for FY20. |
| 2020 | Livermore St | Request made to improve drainage, sidewalks, piping, sidewalks and the road surface. | Charlotte and Robert Holster | 46 Livermore St | | Recommended addressing through the City's street paving, management, and rehabilitation program. |
| 2020 | Pinehurst Road | Request for construction of stormwater accomodations on the road. | Everett and Carol Eaton | 155 Pinehurst Road | | This is being put forward as a new CIP project for FY20. |
| 2020 | Pinehurst Road | Request for construction of stormwater accomodations on the road. | Guy A Pronesti | 100 Pinehurst Road | | This is being put forward as a new CIP project for FY20. |
| 2020 | Pinehurst Road | Request for construction of stormwater accomodations on the road. | 34 Residents of Pinehurst Road (Samuel Witherspoon, Margaret Witherspoon, Richard Walent, Sandra Walent, Daniel Wyand, Lena Wyand, Everett Eaton, Carol Eaton, Michael Magnant, Denise Magnant, David Underhill, Linda Underhill, Anne Weidman, Mark Weidman, Guy Pronesti, Danielle Pronesti, Vicki Boyd, Anna Kay Vorsteg, David Mulhern, Sally Mulhern, Kurt Korn, Beth Korn, April Weeks, Richard Antal, Paul Hansen, Darci Knowles, Rosemary York, Robert Stevens, Jennifer Stevens, James Carmichael, Lindsey Carmichael, John Evans, Margaret Evans) | 20 Residential Addresses located on Pinehurst Road | | This is being put forward as a new CIP project for FY20. |
| 2020 | Route 1 Bypass North | Request to review the Route 1 Bypass North Gateway including streetscape and access improvements. | Johanna Lyons | 18 Cutts St | | Staff is not recommending this project at this time. Route 1 Bypass is not a City roadway. |
| 2020 | Sagamore Road | Adaptation of the West side of Sagamore Rd between Luster King Car Care and Cliff Rd into a Shared Use Path. | Ned Raynolds | 110 Aldrich Rd | | Recommend addressing through the City's annual road striping and/or CIP bicycle/pedestrian plan implementation funding if City-owned right of way is adequate to accommodate proposed design. |
| 2020 | Taft Road - near Elwyn | Request to address the road's drainage system. | Ken Brown | 68 Taft Road | | Part of existing CIP projects (Elwyn Park sidewalks and Elwyn Road sidepath), which will include evaluation of drainage improvements. |
| 2020 | To Be Determined | Playground that is accessible, Inclusive, Barrier-Free and Boundless for Children with phyiscal special needs. | Nikki Greenberg | 346 Grant Ave | | Recommend addressing through the CIP project for playground improvements, which is an ongoing item in the CIP. |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Don and Becky Bardell | 314 Bartlett | | This was added to the CIP in FY2019 (TSM-19-PW-74) |

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|---|---|---|---|---|---|---|
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | John A. Byron | 346 Bartlett St | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Jen Chapnick | 97 Meredith Way | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Alison Clode | 151 Stark Street | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Bob Cook | 112 Burkitt Street | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Anne M. D'Averson | 123 Sprawhawk St | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | William Davis | 339 Barlett Street | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Carla Dow | 6 Cuttts Ave | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Claire Dube | 173 Start St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Julia Gindele | 229 Clinton St. | | This was put forward as a new CIP project for FY19. |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Benjamin Goss | 6 Pine St | | This was put forward as a new CIP project for FY19. |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | James Gould | 248 Thornton St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Catherine Harris | 166 Clinton St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Theresa Hill | 340 Thornton St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Pamela Hodgkins | 303 Bartlett St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Marianne Janik | 21 Burkitt St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Elizabeth Jefferson | 111 Sparwhawk St | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Nancy and Brian Johnson | 81 Clinton St | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Elizabeth Kinney | 337 Thornton St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Scott McDermott | 120Thornton St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Sarah McLaughlin | 161 Thornton St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Mireille Salmon (mimi) | 232 Bartlett St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Lindsey Mogren | 11 Burkitt St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Melinda Mulligan | 130 Thornton St. | | This was put forward as a new CIP project for FY19. |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Jennifer Neslon | 149 Sparhawk St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Michael O'Connor | 153 Sparhawk St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |

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|---|---|---|---|---|---|---|
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Anne Poubeau | 160 Bartlett St. | | This was put forward as a new CIP project for FY19. |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Louie A. Prince | 302A Bartlett St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Dawn Przychodzien | 111 Sparwhawk St | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Johnathan Sandberg | 160 Bartlett St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Matthew Schaepe | 149 Sparhawk St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Jim Sparling | 108 Sparhawk St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Swanne M. Stawartz | 891 Elwyn Rd. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Barbara Timmons | 26 Sparhawk St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Sam and Amanda Tombarelli | 382 Bartlett St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Cate Street Connector | A desire to reroute traffic away from Bartlett St by way of a Cate Street Connector | Joann Wyckoff | 135 Sparhawk St. | | This was added to the CIP in FY2019 (TSM-19-PW-74) |
| 2019 | Greenleaf Ave (Intersection at Greenleaf Ave and Lafayette Road) | Close access to Greenleaf Ave from Lafayette Road for Reasons of Safety | Stephen and Suzy Gagnon | 29 Hillside Drive | | Recommend evaluating through the City's Neighborhood Traffic Calming Program process. |
| 2019 | Islington St. Crosswalk | Desire for a crosswalk at Albany St on Islington St. | Sara Curry | 800 Islington St, 10C | | This is already planned as part of the City's Islington Street Corridor project, which is currently in design. Construction is anticipated to begin in 2018. |
| 2019 | Maynard Park | Expressing a desire to reopen the park under the I-95 Bridge after the high rise rehab project is complete including an extension similar to that of the Memorial Bridge. | Jon McBride | 505 Kearsarge Way | | Once the rehab project on the bridge is complete, the City is planning to coordinate with the state about the potential for re-opening the park. |
| 2019 | Spaulding Turnpike (200) | Purchase land for public park space | Sarah Gatchell | 120 Hillcrest Dr | | Staff is not recommending this project at this time. |
| 2019 | Williard Ave | Sidewalk Repair | Lennie Mullaney | 248 Willard Ave | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Andrew Jarvis (Intersection of Andrew Jarvis Drive and Lafayette Road) | Add new traffic signal | Stephen Bergeron | 199 Wibird Street | | This was added to the CIP in FY2018 (TSM-PW-21) |
| 2018 | Elwyn Road | Install safe bike and pedestrian path along road | Christine Groleau | 30 Oakwood Drive | | This was added to the CIP in FY2018 (TSM-PW-15) |
| 2018 | Goodwin Park | Update / install new lighting for Park | Tom Waterman | 43 Cornwall Street | | Recommended addressing through the CIP project for parks and playgrounds, which is an ongoing item in the CIP. |
| 2018 | Haven Park | Park path improvements and lighting | Mary Cline | 395 Pleasant Street | | Recommend addressing through the CIP project for parks and playgrounds, which is an ongoing item in the CIP. |
| 2018 | Madison Street (between State Street and Austin Street) | Install curbs and sidewalks, plant street trees | Lee Frank | 169 Madison Street | | This is being put forward as a new CIP project for FY20. |
| 2018 | Manning Street (18) | Reconstruct curbing and build sidewalk in front of 18 Manning St | Judith L. Hiller | 18 Manning Street | | Staff is not recommending this project at this time. |

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|---|---|---|---|---|---|---|
| 2018 | Mark Street | Repave street | Jason Jenkins | 35 Mark Street | | Recommended addressing through the City's street paving, management, and rehabilitation program. |
| 2018 | Parrot/ Rogers Street | Reduce of corner radius at the intersection of Parrot and Rogers Street to slow traffic speeds | Jason Jenkins | 35 Mark Street | | Recommended evaluating through the City's Neighborhood Traffic Calming Program process. |
| 2018 | Penhallow St (126-128) | Repair / regrade brick sidewalk in front of property | Cynthia & Everett Barnes | 136 High Street, Exeter, NH | | Recommended addressing through the City's annual sidewalk improvement program. |
| 2018 | Pleasant Street | Repair/ replace sidewalks, improve street lighting, re-surface road, improve drainage | Mary Cline | 395 Pleasant Street | | This was added to the CIP in FY2018 (TSM-PW-31). |
| 2018 | Sagamore (from 150' south of little Harbor Road to Shaw Road including) | Reconstruction of Sagamore Ave road and sidewalks from south of Little Harbor Road to Shaw Road | Board of Directors Tidewatch Condominium Association | 579 Sagamore Avenue, Units #1 through #122 | | Recommended holding this project for future consideration as a CIP project. Sidewalk issues may be addressed through the annual sidewalk program. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Don and Judy Albertson | 345 Odione Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Michael and Julie Bean | 236 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Angie and Michael Bloom | 34 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | William Cassidy | 180 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Michael and Gail Clark | 175 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Kevin and Vergie Clover | 20 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | William Cassidy (duplicate) | 180 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Mildre and Joseph Errico | 154 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Jack and Rosemanry Gardner | 50 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Michael and Donna Glodziak | 68 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Gricel Goodman | 120 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Erica and Joshua Greenspan | 193 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Alexandra Heidinger | 81 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Carla Henderson | 205 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Lee Horgan | 148 Gosport Road | | This was put forward as a new CIP project for FY19. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Chiran and Jan Jayartne | 101 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Rebecca Spencer and Shawn Kulikowski | 149 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Jeff Londres | 340 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Richard Lyons | 92 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Joan Lyons | 92 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Carolyn Mannering | 340 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Don and Joyce Marchand | 63 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Michael and Lynn Marsh | 69 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Kevin and Julie McCana | 210 Ordiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Daniela and Chris O'Neill | 199 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Joyce and John O'Reilly | 119 Gosport Ave. | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Keith Orr | 260 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Kelly Orr | 260 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Ashlie and Tim Peters | 104 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Ron and Nancy Polind | 166 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | William and Susan Riffer | 163 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Kate Hester Siler | 75 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Nancy and Zachary Slater | 101 Odiorne Point Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Susan Stevens | 43 Gosport Road | | This was put forward as a new CIP project for FY19. |
| 2018 | Sagamore Ave (Approx #1163 to Odiorne Point Road Intersection) | Extend sidewalk to Tuckers Cove neighborhood | Janis Timerman | 55 Gosport Road | | This was put forward as a new CIP project for FY19. |

| CIP Year | Location | Description | Submitter | Submitter Address | Staff Analysis Category | Staff Comment |
|---|---|---|---|---|---|---|
| 2018 | Sherburne School to Borthwick Avenue | Replacement of sidewalk with concrete and curbing | Manuel S. Garganta | 471 Colonial Drive | | Recommended addressing through the City's annual sidewalk improvement program. |
| 2018 | Spinney Road (Eastern Side) | Add new sidewalk from Islington street to Middle Road | Robert Patterson | 180 Spinney Road | | This is an existing CIP project. |
| 2018 | Willard Ave | Complete road improvements, sidewalk repairs, improve drainage | William Collins | 111 Willard Avenue | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | | Patricia Edwards | 23 Willard Ave | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | Sidewalk repairs, improve drainage | Curtis and Julianne Johnson | 192 Willard Ave | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | Sidewalk repairs, improve drainage | Deborah Luff and David Luff | 97 Ash Street | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | Sidewalk repairs, improve drainage | Tim Malinowski | 91 Lafayette Road | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | Complete road and sidewalk reconstruction and address odors | Rhiis Buswell, Rachel Minnihan and Patrick Minnihan | 150 Willard Avenue | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | Completion of Willard Ave sidewalk and sewer project | John and Denise Pettigrew | 67 Willard Avenue | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | Complete road and sidewalk reconstruction, address drainage and odors | Brian and Martha Ratay | 139 Willard Avenue | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave | Completion of Willard Ave sidewalk and sewer project | Kevin and Jill Underwood | 238 Willard Avenue | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |
| 2018 | Willard Ave (Between Marsten and Lafayette) | Sidewalk repairs | Thomas Silverman | 171 Willard Avenue | | Recommend addressing through the City's annual sewer line replacement and sidewalk program. |

# Appendix II. NHDOT Portsmouth Projects

# NHDOT Portsmouth Projects

| NHDOT Project # | Route/Road | Program / Category | Scope | Funding Years* | Total State/Fed Funding* | Reference Document** |
|---|---|---|---|---|---|---|
| 43760 | I-95 Bridge | Other Federal Aid | Soundwalls/Privacy Fencing along I-95 | 2025 | $ 10,253,176 | State Draft 10-year Plan 2025-2034 |
| 20258 | Peverly Hill Rd | CMAQ | See CIP project description | 2025 | $ 7,831,635 | State Draft 10-year Plan 2025-2034 |
| 44386 | Cate Street | State Aid Bridge MOBRR | Replace Cate St Bridge over Hodgdon Brook. | 2028 | $ 1,335,663 | State Draft 10-year Plan 2025-2034 |
| 29640 | US Route 1 road improvements | Highway | Road improvements from Constitution to Wilson and from Ocean to White Cedar Blvd | 2026-2027 | $ 17,373,561 | State Draft 10-year Plan 2025-2034 |
| 40908 | Maplewood Ave RR Crossing | Rail | Reconstruct Railway - Highway crossing, roadway approaches and protective devices | 2025 | $ 862,800 | State Draft 10-year Plan 2025-2034 |
| 44225 | US1/US4/I-95 | Other Federal Aid | Engineering study to update circle. Feasibility Study. | 2029 | $ 1,100,000 | State Draft 10-year Plan 2025-2034 |
| 40562 | Portsmouth International Airport | Airport | Preservation, modernization, and/or expansion of airport facilities; planning studies. | 2025-2034 | $ 97,904,712 | State Draft 10-year Plan 2025-2034 |
| 41752 | Elwyn Rd Multi-Use Path | CMAQ | See CIP project description | 2025 | $ 1,295,626 | State Draft 10-year Plan 2025-2034 |
| 40644 | Market St Railroad Crossing | Highway | Upgrade railroad crossing | 2025-2026 | $ 802,128 | State Draft 10-year Plan 2025-2034 |
| 42608 | Market St / Russell St Intersection Improvements | Highway | See CIP project description | 2026-2029 | $ 1,449,837 | State Draft 10-year Plan 2025-2034 |
| 42611 | Grafton Drive Intersection Improvements | Highway | Intersection improvements at Portsmouth Transportation Center and Pease Golf Course | 2026-2030 | $ 675,623 | State Draft 10-year Plan 2025-2034 |
| 42612 | International Dr/Manchester Sq/Corporate Dr | Highway | Signalization of intersection | 2027-2030 | $ 405,889 | State Draft 10-year Plan 2025-2034 |
| 42874 | Electric Vehicle Charging Stations | CMAQ | Purchase and install eight electric charging stations for various locations at Pease. | 2025 | $ 52,972 | State Draft 10-year Plan 2025-2034 |
| 44411 | NH33 | Bridge | Address condition of bridge carrying NH33 over Railroad Bridge #144/115 | 2025-2031 | $ 3,738,644 | State Draft 10-year Plan 2025-2034 |
| 44404 | I-95 | TRR | Underdeck painting of the High Level Bridge | 2026 | $ 2,957,265 | State Draft 10-year Plan 2025-2034 |

*Projects may have been funded in prior years. Total funding includes prior years as well.

**NHDOT prepares updates to the State Ten Year Transportation Improvement Plan (STYP) every two years.

The STYP outlines planned projects and programs funded with Federal and State transportation dollars for the next 10 years.

The Statewide Transportation Improvement Program (STIP) is the four-year state project listing for federally-funded projects.

# Appendix III.
# Studies Listed within the CIP

| Study Name | Cited In (Project #) | Page # | Project Name |
|---|---|---|---|
| Bicycle and Pedestrian Plan 2014 | TSM-15-PL/NH-58 | 132 | Hampton Branch Rail Trail (NH Seacoast Greenway) |
| | TSM-15-PL-59 | 133 | Bicycle/Pedestrian Plan Implementation |
| | TSM-21-PL-60 | 134 | Market Street Sidepath |
| | TSM-08-PL/NH-61 | 135 | US Route 1 New Sidepath Constrction |
| | TSM-16-PL/NH-62 | 136 | US Route 1 Crosswalks and Signals |
| | TSM-21-PW-65 | 139 | Greenland Road/Middle Road Corridor Bicycle/Pedestrian Improvements |
| | TSM-15-PW-66 | 140 | Market Square Upgrade |
| | TSM-15-PW-78 | 155 | Junkins Avenue Improvements |
| Cemetery Existing Conditions Assessment and Restoration Plan (2013) | BI-05-PW-45 | 108 | Historic Cemetery Improvements |
| Citywide Bridge Evaluation 2018 | TSM-18-PW-72 | 147 | Citywide Bridge Improvements |
| | TSM-08-PW-73 | 148 | Cate Street Bridge Replacement |
| | TSM-20-PW-74 | 149 | Coakley-Borthwick Connector Roadway |
| Coastal Resilience Initiative | BI-23-PL-27 | 90 | Groundwater Study to Identify Impacts |
| Comprehensive Recreation Needs Study 2010 | BI-12-RC-31 | 94 | Existing Outdoor Recreation Field and Facility Improvements |
| | BI-12-RC-32 | 95 | Additional Outdoor Recreation Fields |
| | BI-20-RC-33 | 96 | Greenland Road Recreation Facility |
| Conscent Decree Second Modification | EF-22-SD-91 | 171 | Sewer Service Funding for Sagamore Avenue Area Sewer Extension |
| CSO Supplemental Compliance Plan 2017 | EF-16-SD-89 | 169 | Long Term Control Plan Related Projects |
| | COM-20-PW-94 | 172 | Fleet Street Utilities Upgrade and Streetscape |
| DPW Master Complex Summary July 2020 | BI-18-PW-44 | 107 | Recycling and Solid Waste Transfer Station |
| Facility Condition Assessment 2015 | BI-01-PW-48 | 112 | Citywide Facilities Capital Improvements |
| Goodman Report on the Survey of the Municipally Owned Historic Artifacts and Documents in Portsmouth, NH | BI-17-FI-19 | 82 | Permanent Records Storage Facilities |
| | BI-18-FI-20 | 83 | Permanent/Historic Document Restoration, Preservation, and Scanning |
| | BI-24-FI-21 | 84 | Disposition of Municipal Records |
| Historic District Commission Review Guidelines | BI-22-PL-26 | 89 | Historic District Guidelines Part 2 |
| HVAC Study 2019 | BI-21-PW-43 | 106 | City Hall HVAC Improvements |
| Infiltration and Inflow Study 2016 | EF-16-SD-89 | 169 | Long Term Control Plan Related Projects |
| Improving Police Department Practices, October 13, 2021 | VE-24-PD-08 | 69 | Police Body Cameras |
| Life Span Evaluation | EF-13-SD-92 | 172 | Mechanic Street Pumping Station Upgrade |
| Long Term Control Plan Update 2010 | COM-20-PW-94 | 172 | Fleet Street Utilities Upgrade and Streetscape |
| Master Plan 2005 | TSM-08-PW-64 | 138 | Wayfinding System |
| Master Plan 2025 | BI-95-PL-25 | 88 | Land Acquisition |
| | BI-22-PL-26 | 89 | Historic District Guidelines Part 2 |
| Middle Street, Summer Street, Miller Avenue - Traffic Signal Design | TSM-10-PW-68 | 143 | Citywide Traffic Signal Upgrade Program |
| Neighborhood Traffic Calming Program Page | TSM-21-PW-75 | 150 | Traffic Calming |
| NH DOT Long Range vision for the Bypass | TSM-20-PW-74 | 149 | Coakley-Borthwick Connector Roadway |
| NH Seacoast Greenway in Portsmouth | TSM-15-PL/NH-58 | 132 | Hampton Branch Rail Trail (NH Seacoast Greenway) |
| Open Space Plan | BI-95-PL-25 | 88 | Land Acquisition |
| Pavement Management Index 2020 Update | TSM-94-PW-76 | 151 | Street Paving, Management, and Rehabilitation |
| | TSM-11-PW-77 | 153 | Pease International Tradeport Roadway Rehabilitation |
| Pease Wastewater Facility NPDES Permit Renewal 2019 | EF-12-SD-87 | 167 | Pease Wastewater Treatment Facility |
| Peirce Island Master Plan | BI-25-PW-36 | 99 | Peirce Island Recreation Improvements |
| Police Department Facility Study | VE-25-PD-09 | 70 | Taser Replacement Cycle |
| | VE-25-PD-10 | 71 | In-Cruiser and Handheld Radars |
| | BI-15-PD-14 | 76 | New Police Department Facility |
| | BI-21-PD-15 | 77 | Police Deficiencies and Repair Project |
| Post Construction Monitoring Plan 2017 | EF-16-SD-89 | 169 | Long Term Control Plan Related Projects |
| Prescott Park Master Plan 2017 | BI-19-PW-41 | 104 | Prescott Park Master Plan Implementation |
| | BI-11-PW-42 | 105 | Prescott Park Facilities Capital Improvements |
| Recreation Field Report 2015 | BI-12-RC-31 | 94 | Existing Outdoor Recreation Field and Facility Improvements |
| | BI-20-RC-33 | 96 | Greenland Road Recreation Facility |
| Recycling Facility Basis of Design Report March 2020 | BI-18-PW-44 | 107 | Recycling and Solid Waste Transfer Station |
| Roof Consultant Report | BI-25-FD-13 | 75 | Fire Station 1 - Roof Replacement |
| Self-Assessment of FD Operations: April 2015 | VE-07-FD-01 | 62 | Ambulance Replacement Program |

| | | | |
|---|---|---|---|
| | VE-14-FD-02 | 63 | Vehicle Replacement - Fire Engine #4 |
| Sidewalk Condition Index 2018 | TSM-95-PW-67 | 141 | Citywide Sidewalk Reconstruction Program |
| Skatebark/ Stump Dump Site Design | BI-20-RC-33 | 96 | Greenland Road Recreation Facility |
| Stormwater Master Plan 2007 | COM-15-PW-95 | 174 | Citywide Storm Drainage Improvements |
| | COM-20-PW-97 | 178 | DPW Complex Improvements |
| | COM-22-PW-98 | 180 | The Creek Neighborhood Reconstruction |
| Stump Dump Lot Master Plan | BI-20-RC-33 | 96 | Greenland Road Recreation Facility |
| Updated Recreation Needs Study (2022) | BI-12-RC-31 | 94 | Existing Outdoor Recreation Field and Facility Improvements |
| | BI-12-RC-32 | 95 | Additional Outdoor Recreation Fields |
| | BI-20-RC-33 | 96 | Greenland Road Recreation Facility |
| US Route 1 Corridor Project | TSM-08-PL/NH-61 | 135 | US Route 1 New Sidepath Construction |
| | TSM-16-PL/NH-62 | 136 | US Route 1 Crosswalks and Signals |
| Wastewater Pump Station Master Plan 2019 | EF-17-SD-90 | 170 | Wastewater Pumping Station Improvements |
| | EF-13-SD-92 | 172 | Mechanic Street Pumping Station Upgrade |
| Water System Master Plan 2013 | EF-02-WD-81 | 160 | Annual Water Line Replacement |
| | EF-08-WD-82 | 161 | Well Stations Improvements |
| | EF-15-WD-83 | 162 | Reservoir Management |
| Wayfinding Analysis 2014 | TSM-08-PW-64 | 138 | Wayfinding System |
| | | | |
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# Appendix IV.
# Historic Document Restoration Index

| Completed Documents (Utilizing Funding from the CIP) | | | |
|---|---|---|---|
| Document Name/Type | Document Year (Start) | (End) | Year of Financing (FY) |
| Marriages 1769-1841 | 1769 | 1841 | FY17C |
| Births 1750-c 1856 and Burrials 1753-1849 | 1750 | 1849 | FY17C |
| Marriages, Births, Deaths 1850-1864 | 1850 | 1864 | FY17C |
| Marriages, Births, Deaths c 1858-1883 | 1858 | 1883 | FY17C |
| Marriages, Births, Deaths 1861-1886 | 1861 | 1886 | FY17C |
| Births 1887-1911 | 1887 | 1911 | FY17C |
| Deaths 1887-1904 (1911) | 1887 | 1911 | FY17C |
| Marriages 1887-1904 | 1887 | 1904 | FY17C |
| Births 1912-1933 | 1912 | 1933 | FY17C |
| Town Records Vol 1 1645-1713 | 1645 | 1713 | FY17C |
| Town Records Vol 2 1695-1779 | 1695 | 1779 | FY17C |
| Town Records Vol 3 1779-1807 | 1779 | 1807 | FY17C |
| Tax Book 1737-1744 | 1737 | 1744 | FY17C |
| Selectmen's Book 1728-1736 | 1728 | 1736 | FY17C |
| [Overseers of the Poor]. March 29, 1850-March 18, 1853. UV | 1850 | 1853 | FY18 |
| Board of Assessors' meeting minutes and abatements granted | 1885 | 1897 | FY18 |
| Census. Ward 1. April 1, 1878-May 8, 1878. 143pp. Index. BV | 1878 | 1878 | FY18 |
| Final Tax List 1817 | 1817 | 1817 | FY18 |
| Final tax list 1829 | 1829 | 1829 | FY18 |
| Final tax list 1830 | 1830 | 1830 | FY18 |
| Tax Collector's Record 02 | 1909 | 1909 | FY18 |
| Tax Collector's Record 03 | 1910 | 1910 | FY18 |
| Births 1934-1945 | 1934 | 1934 | FY18C |
| Births 1945-1951 | 1945 | 1945 | FY18C |
| City Records Vol. 1, 1850-1853 | 1850 | 1853 | FY18C |
| City Records vol. 2, 1854-1859 | 1854 | 1859 | FY18C |
| Deaths 1912-1933 | 1912 | 1912 | FY18C |
| Deaths 1934-1951 | 1934 | 1934 | FY18C |
| Folsom Births 1853-1890 | 1853 | 1890 | FY18C |
| Marriage Intentions 1881-1889 | 1881 | 1881 | FY18C |
| Marriages 1842-1879 | 1842 | 1879 | FY18C |
| Marriages 1904-1917 | 1904 | 1904 | FY18C |
| Marriages c. 1868-1887 | 1868 | 1868 | FY18C |
| Naturalization Papers c. 1840's - 1920's | 1840 | 1920 | FY18C |
| Town Records Vol. 4, 1807-1821 | 1807 | 1821 | FY18C |
| Town Records Vol. 4, 1807-1821 (DUP) | 1807 | 1821 | FY18C |
| Town Records Vol. 5, 1821-1833 | 1821 | 1833 | FY18C |
| Town Records Vol. 6, 1833-1844 | 1833 | 1844 | FY18C |
| Town Records Vol. 7, 1844-1849 | 1844 | 1849 | FY18C |
| [Overseers of the Poor] 1831-1838. 251pp Index UV (819 and 823 combined into 1 document) | 1831 | 1838 | FY19 |

| | | | |
|---|---|---|---|
| List of poor whose vaults and drains City cleaned and to whom City supplied wood for heat | 1875 | 1884 | FY19 |
| Meeting minutes of Board of Overseers of the Poor | 1905 | 1905 | FY19 |
| Overseers of the Poor. April 17, 1817-March 1838. 342pp. UV | 1817 | 1838 | FY19 |
| Supplies to poor by Ward | 1808 | 1808 | FY19 |
| [Overseers of the Poor]. January 1, 1835-January 21, 1841. UV | 1835 | 1841 | FY19 |
| Common Council meeting minutes, July 22, 1859-Feb. 25, 1873 | 1859 | 1873 | FY19 |
| Fire Department. 1875-1889. 216pp. UV | 1875 | 1893 | FY19 |
| Fire Department. Portsmouth, N.H. 1875-1882. UV | 1875 | 1882 | FY19 |
| Fire Department. 1883-1903. UV | 1883 | 1903 | FY19 |
| List of Engineers, Companies 1-5 | 1843 | 1843 | FY19 |
| Inquests. 1875-1876. 70pp. BV | 1875 | 1876 | FY19 |
| Abatement applications | 1872 | 1884 | FY19 |
| Record Book of Naturalized Citizens of Several Wards as Presented to the Board of Inspectors of Check Lists. City of Portsmouth, N.H. 1861-1894. 21pp. UV | 1861 | 1894 | FY19 |
| City Records. Ward 3. Portsmouth, N.H. July 14, 1859-November 16, 1868. BV | 1859 | 1868 | FY19 |
| City Records. Ward 1, Portsmouth, N.H. 1849-1865. BV | 1849 | 1865 | FY19 |
| City Records. Ward 3. Portsmouth, N.H. November 7, 1868-April 1, 1876. BV | 1868 | 1876 | FY19 |
| City Records. Ward 3. Portsmouth, N.H. October 25, 1849-June 30, 1859. BV | 1849 | 1859 | FY19 |
| Census. Ward 2. April 1, 1878-March 7, 1878. 157pp. BV | 1878 | 1878 | FY19 |
| Final tax list | 1832 | 1832 | FY19 |
| Final tax list | 1833 | 1833 | FY19 |
| Final tax list | 1835 | 1835 | FY19 |
| Final tax list | 1834 | 1834 | FY19 |
| Final tax list | 1836 | 1836 | FY19 |
| Final tax list | 1831 | 1831 | FY19 |
| Final tax list | 1800 | 1900 | FY19 |
| Cash Accounts (Receipts and Expenditures) | 1810 | 1815 | FY19 |
| [City Accounts] 1866 and 1877. 111pp. UV | 1866 | 1877 | FY19 |
| Enrollment of Persons Liable for Military Duty July 1862, Heavy Artillery N. H. Volunteers Book 1, Book 2, Book 3 | 1862 | 1865 | FY19 |
| Inventories (983 and 984 combined into 1 document) | 1875 | 1900 | FY19 |
| Vital Records: Ward 4. Births. 4pp. Undated [Probably 1879]. BV; Vital Records: Deaths. Ward 3. 1880 [Year determined by cross-referencing census data.] BV; Vital Records: Births. Ward 2. 1879. 4pp. BV; Vital Records: Births. Ward 3. 1879. 5pp. BV; Vital Records: Deaths. Ward 2. 1880-1881. 6pp. BV; Vital Records: Births in Ward Four, not dated | 1879 | 1900 | FY19 |

| | | | |
|---|---|---|---|
| Unidentified ward census, not dated; Unidentified ward census, not dated, [Animal Census]. N.D. 193pp. Alphabetical index to owner. UV | 1875 | 1900 | FY19 |
| Vital Records: Deaths Registered in Ward 2. October 8, 1882-March 31, 1883. 4pp; Vital Records: Ward Three Death Register; Vital Records: Intentions [Census] 1893. 133pp. UV | 1882 | 1893 | FY19 |
| City Records Vol 4, 1864-1866 | 1864 | 1864 | FY19C |
| City Records Vol 5, 1868-1878 | 1868 | 1868 | FY19C |
| City Records Vol 6, 1873-1878 | 1873 | 1873 | FY19C |
| City Records Vol. 3, 1856-1864 | 1856 | 1856 | FY19C |
| City Records Vol. 7 thru 15, 1878-1913 (9 vols.) | 1878 | 1878 | FY19C |
| Ordinances Vol. 1, 1850-1874 | 1850 | 1874 | FY19C |
| Ordinances Vol. 2, 1873-1886 | 1873 | 1873 | FY19C |
| Ordinances Vol. 3, 1886-1894 | 1886 | 1886 | FY19C |
| Selectmen's Records 1825-1849 | 1825 | 1849 | FY19C |
| Selectmen's Records 1848 | 1848 | 1848 | FY19C |
| Receipts and expenditures | 1838 | 1875 | FY20 |
| Final tax list | 1875 | 1900 | FY20 |
| Final tax list | 1887 | 1887 | FY20 |
| Final tax list | 1888 | 1888 | FY20 |
| Final tax list | 1847 | 1847 | FY20 |
| Final tax list | 1837 | 1837 | FY20 |
| Final tax list | 1836 | 1836 | FY20 |
| Final tax list | 1839 | 1839 | FY20 |
| Final tax list | 1841 | 1841 | FY20 |
| Final tax list | 1845 | 1845 | FY20 |
| Final tax list | 1842 | 1842 | FY20 |
| Final tax list | 1844 | 1844 | FY20 |
| Final tax list | 1838 | 1838 | FY20 |
| Final tax list | 1854 | 1854 | FY20 |
| Final tax list | 1846 | 1846 | FY20 |
| Final tax list | 1843 | 1843 | FY20 |
| Final tax list | 1847 | 1847 | FY20 |
| Final tax list | 1843 | 1843 | FY20 |
| Final tax list | 1853 | 1853 | FY20 |
| Final tax list | 1855 | 1855 | FY20 |
| Final tax list | 1852 | 1852 | FY20 |
| Final tax list | 1858 | 1858 | FY20 |
| Final tax list | 1851 | 1851 | FY20 |
| Final tax list | 1850 | 1850 | FY20 |
| Final tax list | 1868 | 1868 | FY20 |
| Final tax list | 1867 | 1867 | FY20 |
| Final tax list | 1863 | 1863 | FY20 |
| Final tax list | 1862 | 1862 | FY20 |
| Final tax list | 1866 | 1866 | FY20 |
| Final tax list | 1859 | 1859 | FY20 |
| [City Accounts] 1884-86. 216pp. UV | 1884 | 1886 | FY22 |
| Accounts | 1861 | 1861 | FY22 |
| Final tax list | 1861 | 1861 | FY22 |
| Final tax list | 1864 | 1864 | FY22 |
| Final tax list | 1865 | 1865 | FY22 |
| Final tax list | 1869 | 1869 | FY22 |
| Final tax list | 1870 | 1870 | FY22 |
| Final tax list | 1871 | 1871 | FY22 |

| | | | |
|---|---|---|---|
| Final tax list | 1873 | 1873 | FY22 |
| Final tax list | 1874 | 1874 | FY22 |
| Final tax list | 1875 | 1875 | FY22 |
| Final tax list | 1876 | 1876 | FY22 |
| Final tax list | 1877 | 1877 | FY22 |
| Final tax list | 1878 | 1878 | FY22 |
| Final tax list | 1879 | 1879 | FY22 |
| Final tax list | 1883 | 1883 | FY22 |
| Final tax list | 1890 | 1890 | FY23 |
| Final tax list | 1891 | 1891 | FY23 |
| Tax Book | 1909 | 1909 | FY23 |
| Tax Book | 1909 | 1909 | FY23 |
| Tax Book 1913 | 1913 | 1913 | FY23 |
| Tax Book 1915 | 1915 | 1915 | FY23 |
| Tax Book 1917 | 1917 | 1917 | FY23 |
| Tax Book 1917 | 1917 | 1917 | FY23 |
| Tax Book 1917 | 1917 | 1917 | FY23 |
| **Completed Documents (Utilizing CIP Funding) - Total** | | | $ 231,632 |

| **Completed Documents (Utilizing Funding from the State Moose Plate Grant)** | | | |
|---|---|---|---|
| **Document Name/Type** | **Document Year (Start)** | **(End)** | **Year of Financing (FY)** |
| Final tax list | 1825 | 1825 | MG-FY17/18 |
| Final tax list | 1826 | 1826 | MG-FY17/18 |
| Final tax list | 1827 | 1827 | MG-FY17/18 |
| Final tax list | 1828 | 1828 | MG-FY17/18 |
| Record of Proceedings of the Overseers of the Poor of the City of Portsmouth. August 7, 1877-July 16, 1888. 218pp. UV | 1877 | 1888 | MG-FY17/18 |
| Shipping Log | 1842 | 1871 | MG-FY17/18 |
| Portsmouth Almshouse. 1839-1841. UV | 1839 | 1841 | MG-FY18/19 |
| [Payments to Military Dependents]. 1861-1865. 24pp. UV. Civil War | 1861 | 1865 | MG-FY18/19 |
| Overseers of the Poor. March 26, 1856-December 17, 1860. UV and Overseers [of the Poor]. 1850-1868. UV | 1850 | 1868 | MG-FY18/19 |
| Town Ledger for the Overseers of the Poor. Ledger B. 1812-1838. 229pp. UV Pt 1 | 1812 | 1838 | MG-FY18/19 |
| Town Ledger for the Overseers of the Poor. Ledger B. 1812-1838. 229pp. UV Pt 2 | 1812 | 1838 | MG-FY18/19 |
| [Application Affidavits for Government Bounties]. UV. Civil War | 1863 | 1870 | MG-FY19/20 |
| Spanish-American and World War I veterans' service records | 1924 | 1924 | MG-FY19/20 |
| Overseers [of the Poor]. 1873-1882. UV | 1873 | 1882 | MG-FY20/21 |
| [Overseers of the Poor]. October 5, 1880-July 3, 1885. 36pp. UV | 1880 | 1885 | MG-FY20/21 |
| Overseers of the Poor. January 3, 1866-March 19, 1873. UV | 1866 | 1873 | MG-FY20/21 |

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|---|---|---|---|
| Overseers of the Poor. December 23, 1860-January 1865. UV | 1860 | 1865 | MG-FY20/21 |
| County Pauper Ledger. November 1, 1857-1868. 168pp. Index. UV | 1857 | 1868 | MG-FY20/21 |
| [Overseers of the Poor]. 1862-1864. UV | 1862 | 1864 | MG-FY20/21 |
| [Overseers of the Poor]. 1873-1878. Alphabetized. UV | 1873 | 1878 | MG-FY20/21 |
| [Overseers of the Poor]. March 25, 1853-April 9, 1856. UV | 1853 | 1856 | MG-FY20/21 |
| Applications. January 2, 1883-September 1895. UV | 1883 | 1895 | MG-FY20/21 |
| Inventories | 1880 | 1880 | MG-FY21/22 |
| Inventories | 1899 | 1899 | MG-FY21/22 |
| Final tax list | 1884 | 1884 | MG-FY22/23 |
| Final tax list | 1885 | 1885 | MG-FY22/23 |
| Final tax list | 1888 | 1888 | MG-FY22/23 |
| Inventories | 1881 | 1881 | MG-FY22/23 |
| **Completed Documents (Utilizing State Moose Plate Grant Funding) - Total** | | | $ 56,213 |

## In Process Historic Documents (Utilizing Funding from the CIP)

| Document Name/Type | Document Year (Start) | (End) | Year of Financing (FY) |
|---|---|---|---|
| Final tax list | 1890 | 1890 | FY23 |
| Final tax list | 1891 | 1891 | FY23 |
| Tax Book | 1909 | 1909 | FY23 |
| Tax Book | 1909 | 1909 | FY23 |
| Tax Book 1913 | 1913 | 1913 | FY23 |
| Tax Book 1915 | 1915 | 1915 | FY23 |
| Tax Book 1917 | 1917 | 1917 | FY23 |
| Tax Book 1917 | 1917 | 1917 | FY23 |
| Tax Book 1917 | 1917 | 1917 | FY23 |
| | | | |
| **In Process Documents (Utilizing CIP Funding) - Total** | | | |

## In Process Historic Documents (Utilizing Funding the NH State MoosePlate Grant)

| Document Name/Type | Document Year (Start) | (End) | Year of Financing (FY) |
|---|---|---|---|
| Tax Book 1910 | 1910 | 1910 | MG-FY23 |
| Tax Book 1911 | 1911 | 1911 | MG-FY23 |
| | | | |
| **In Process Documents (Utilizing State Moose Plate Grant Funding) - Total** | | | $ 9,696 |

| Documents to be Preserved | | | |
|---|---|---|---|
| **Document Name/Type** | **Document Year (Start)** | **(End)** | **Year of Financing (FY)** |
| [Preliminary Tax List]. Charles H. Shannon. Collector. 1865. BV, combined with 823) | 1865 | 1865 | FY25 |
| [Receipt Book for Monies Paid to Teachers]. July 1, 1864-December 31, 1867. UV | 1864 | 1867 | FY25 |
| [Receipt Book for Monies Paid to Teachers]. October 2, 1858-March 29, 1864. UV | 1858 | 1864 | FY25 |
| Bills Approved | 1850 | 1850 | FY25 |
| Census of unidentified ward (983 and 984 combined into 1 document) | 1884 | 1884 | FY25 |
| Enrollment Ward 4 | 1884 | 1884 | FY25 |
| Enrollment. Wards 2 and 4. 1887. 218pp. BV | 1887 | 1887 | FY25 |
| Fuel distribution | 1869 | 1871 | FY25 |
| Index of people who received public funds | 1862 | 1862 | FY25 |
| Index of Receipts and Expenditures | 1869 | 1901 | FY25 |
| Invoice | 1878 | 1878 | FY25 |
| Invoice | 1879 | 1879 | FY25 |
| Invoice | 1880 | 1880 | FY25 |
| Invoice | 1881 | 1881 | FY25 |
| Invoice | 1882 | 1882 | FY25 |
| Invoice | 1884 | 1884 | FY25 |
| Invoice | 1884 | 1884 | FY25 |
| Invoice | 1886 | 1886 | FY25 |
| Invoice | 1886 | 1886 | FY25 |
| Invoice | 1887 | 1887 | FY25 |
| Invoice | 1888 | 1888 | FY25 |
| Invoice | 1888 | 1888 | FY25 |
| Invoice | 1889 | 1889 | FY25 |
| Invoice | 1889 | 1889 | FY25 |
| Invoice | 1889 | 1889 | FY25 |
| Payroll for temporary City employees | 1868 | 1877 | FY25 |
| Tax Collector's Record 37 | 1944 | 1944 | FY25 |
| Tax Collector's Record 38 | 1945 | 1945 | FY25 |
| Tax Collector's Record 39 | 1946 | 1946 | FY25 |
| Tax Collector's Record 41 | 1948 | 1948 | FY25 |
| Tax Collector's Record 42 | 1949 | 1949 | FY25 |
| Tax Collector's Record 43 | 1950 | 1950 | FY25 |
| Tax payments | 1852 | 1861 | FY25 |
| Taxes collected | 1854 | 1855 | FY25 |
| Taxes paid | 1860 | 1862 | FY25 |
| Aid to poor | 1907 | 1907 | FY26 |
| Auditors Record 2 | 1909 | 1910 | FY26 |
| Auditors Record 3 - Cash Receipts | 1910 | 1912 | FY26 |
| Auditor's Record for Cash Disbursements 1911-1912 | 1911 | 1912 | FY26 |
| Treasurers Record 2 - Cash Disbursements | 1909 | 1910 | FY26 |
| Treasurers Record 2 - Cash Receipts | 1909 | 1910 | FY26 |
| Treasurers Record 3 - Cash Disbursements | 1910 | 1911 | FY26 |
| Treasurers Record 3 - Cash Receipts | 1911 | 1912 | FY26 |
| Treasurers Record 4 - Cash Disbursements | 1919 | 1920 | FY26 |
| Valuation of Real and Personal Property | 1938 | 1938 | FY26 |

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|---|---|---|---|
| Valuation of Real and Personal Property | 1940 | 1940 | FY26 |
| Valuation of Real and Personal Property | 1941 | 1941 | FY26 |
| Valuation of Real and Personal Property | 1944 | 1944 | FY26 |
| Valuation of Real and Personal Property | 1945 | 1945 | FY26 |
| Valuation of Real and Personal Property | 1946 | 1946 | FY26 |
| Valuation of Real and Personal Property | 1947 | 1947 | FY26 |
| Valuation of Real and Personal Property | 1948 | 1948 | FY26 |
| Valuation of Real and Personal Property | 1949 | 1949 | FY26 |
| Valuation of real and personal property | 1950 | 1950 | FY26 |
| Valuations | 1948 | 1948 | FY27 |
| Valuations | 1949 | 1949 | FY27 |
| Valuations | 1950 | 1950 | FY27 |
| Valuations | 1951 | 1951 | FY27 |
| Valuations | 1952 | 1952 | FY27 |
| Valuations | 1953 | 1953 | FY27 |
| Valuations | 1954 | 1954 | FY27 |
| Valuations | 1955 | 1955 | FY27 |
| Valuations | 1956 | 1956 | FY27 |
| Valuations | 1957 | 1957 | FY27 |
| Valuations | 1958 | 1958 | FY27 |
| Valuations | 1959 | 1959 | FY27 |
| Inventories | 1900 | 1900 | FY28 |
| Inventories | 1902 | 1902 | FY28 |
| Inventories | 1903 | 1903 | FY28 |
| Inventories | 1904 | 1904 | FY28 |
| Inventories | 1906 | 1906 | FY28 |
| Invoice | 1900 | 1900 | FY28 |
| Invoice | 1906 | 1906 | FY28 |
| Invoice | 1908 | 1908 | FY28 |
| Invoice blotter of Board of Assessors | 1902 | 1902 | FY28 |
| Payments | 1907 | 1907 | FY28 |
| Payments | 1908 | 1908 | FY28 |
| Real estate transactions | 1912 | 1913 | FY28 |
| Receipts | 1914 | 1914 | FY28 |
| Valuations | 1960 | 1960 | FY28 |
| Valuations | 1961 | 1961 | FY28 |
| Valuations | 1961 | 1961 | FY28 |
| Ward Five election data | 1907 | 1908 | FY28 |
| Ward Four election data | 1907 | 1908 | FY28 |
| Ward Four supplies to poor | 1905 | 1905 | FY28 |
| Ward One election data | 1907 | 1908 | FY28 |
| Ward Three election data | 1907 | 1908 | FY28 |
| Ward Two election data | 1907 | 1908 | FY28 |
| Voucher Register | 1907 | 1908 | FY29 |
| Voucher Register | 1923 | 1924 | FY29 |
| Voucher Register | 1923 | 1925 | FY29 |
| Voucher Register | 1923 | 1928 | FY29 |
| Voucher Register | 1925 | 1926 | FY29 |
| Voucher Register | 1925 | 1926 | FY29 |
| Voucher Register | 1926 | 1928 | FY29 |
| Voucher Register | 1927 | 1930 | FY29 |
| Voucher Register | 1928 | 1930 | FY29 |
| Voucher Register | 1930 | 1931 | FY29 |
| Voucher Register | 1930 | 1932 | FY29 |

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|---|---|---|---|
| Voucher Register | 1931 | 1932 | FY29 |
| Voucher Register | 1932 | 1933 | FY29 |
| Voucher Register | 1932 | 1933 | FY29 |
| Voucher Register | 1933 | 1935 | FY29 |
| Voucher Register | 1934 | 1935 | FY29 |
| Voucher Register | 1935 | 1936 | FY29 |
| Voucher Register | 1935 | 1936 | FY29 |
| Voucher Register | 1936 | 1937 | FY29 |
| Voucher Register | 1937 | 1938 | FY29 |
| Voucher Register | 1937 | 1939 | FY29 |
| Voucher Register | 1938 | 1939 | FY29 |
| Voucher Register | 1938 | 1939 | FY29 |
| Voucher Register | 1939 | 1941 | FY29 |
| Voucher Register | 1939 | 1941 | FY29 |
| Voucher Register | 1941 | 1942 | FY29 |
| Voucher Register | 1941 | 1943 | FY29 |
| Voucher Register | 1942 | 1944 | FY29 |
| Voucher Register | 1943 | 1945 | FY29 |
| Voucher Register | 1944 | 1946 | FY29 |
| Voucher Register | 1946 | 1947 | FY29 |
| Abatements granted | 1903 | 1904 | FY30 |
| Abatements granted | 1905 | 1907 | FY30 |
| Abatements granted | 1906 | 1906 | FY30 |
| Abatements granted | 1907 | 1907 | FY30 |
| Abatements granted | 1908 | 1912 | FY30 |
| Abatements granted | 1908 | 1908 | FY30 |
| Abatements granted | 1909 | 1909 | FY30 |
| Abatements granted | 1910 | 1910 | FY30 |
| Abatements granted | 1911 | 1911 | FY30 |
| Abatements granted | 1912 | 1912 | FY30 |
| Abatements granted | 1913 | 1913 | FY30 |
| Abatements granted | 1914 | 1914 | FY30 |
| Abatements granted | 1915 | 1915 | FY30 |
| Abatements granted | 1916 | 1920 | FY30 |
| Abatements granted | 1917 | 1917 | FY30 |
| Abatements granted | 1918 | 1918 | FY30 |
| Abatements granted | 1919 | 1920 | FY30 |
| Abatements granted | 1922 | 1922 | FY30 |
| Abatements granted | 1923 | 1923 | FY30 |
| Abatements granted | 1924 | 1924 | FY30 |
| Poll Tax | 1914 | 1914 | FY30 |
| Poll Tax | 1914 | 1914 | FY30 |
| Poll Tax | 1914 | 1914 | FY30 |
| Poll Tax | 1915 | 1915 | FY30 |
| Poll Tax | 1915 | 1915 | FY30 |
| Poll Tax | 1915 | 1915 | FY30 |
| Poll Tax | 1916 | 1916 | FY30 |
| Poll Tax | 1916 | 1916 | FY30 |
| Poll Tax | 1916 | 1916 | FY30 |
| Poll Tax | 1917 | 1917 | FY30 |
| Poll Tax | 1917 | 1917 | FY30 |
| Poll Tax | 1917 | 1917 | FY30 |
| Poll Tax | 1918 | 1918 | FY30 |
| Poll Tax | 1918 | 1918 | FY30 |
| Poll Tax | 1918 | 1918 | FY30 |

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| Poll Tax | 1919 | 1919 | FY30 |
| Poll Tax | 1919 | 1919 | FY30 |
| Poll Tax | 1919 | 1919 | FY30 |
| Poll Tax | 1920 | 1920 | FY30 |
| Poll Tax | 1920 | 1920 | FY30 |
| Poll Tax | 1921 | 1921 | FY30 |
| Poll Tax | 1921 | 1921 | FY30 |
| Voucher Register | 1946 | 1947 | FY30 |
| Voucher Register | 1948 | 1949 | FY30 |
| Voucher Register | 1949 | 1950 | FY30 |
| Voucher Register | 1952 | 1953 | FY30 |
| Voucher Register | 1953 | 1954 | FY30 |
| Voucher Register | 1954 | 1955 | FY30 |
| Voucher Register | 1955 | 1957 | FY30 |
| Voucher register | 1956 | 1956 | FY30 |
| Poll Tax | 1922 | 1922 | FY31 |
| Poll Tax | 1922 | 1922 | FY31 |
| Poll Tax | 1923 | 1923 | FY31 |
| Poll Tax | 1923 | 1923 | FY31 |
| Poll Tax | 1924 | 1924 | FY31 |
| Poll Tax | 1924 | 1924 | FY31 |
| Poll Tax | 1925 | 1925 | FY31 |
| Poll Tax | 1925 | 1925 | FY31 |
| Poll Tax | 1926 | 1926 | FY31 |
| Poll Tax | 1926 | 1926 | FY31 |
| Poll Tax | 1927 | 1927 | FY31 |
| Poll Tax | 1927 | 1927 | FY31 |
| Poll Tax | 1928 | 1928 | FY31 |
| Poll Tax | 1928 | 1928 | FY31 |
| Poll Tax | 1929 | 1929 | FY31 |
| Poll Tax | 1929 | 1929 | FY31 |
| Poll Tax | 1930 | 1930 | FY31 |
| Poll Tax | 1930 | 1930 | FY31 |
| Poll Tax | 1931 | 1931 | FY31 |
| Poll Tax | 1931 | 1931 | FY31 |
| Poll Tax | 1932 | 1932 | FY31 |
| Poll Tax | 1932 | 1932 | FY31 |
| Poll Tax | 1933 | 1933 | FY31 |
| Poll Tax | 1933 | 1933 | FY31 |
| Poll Tax | 1934 | 1934 | FY31 |
| Poll Tax | 1934 | 1934 | FY31 |
| Poll Tax | 1935 | 1935 | FY31 |
| Poll Tax | 1935 | 1935 | FY31 |
| Poll Tax | 1936 | 1936 | FY31 |
| Poll Tax | 1936 | 1936 | FY31 |
| Poll Tax | 1937 | 1937 | FY31 |
| Poll Tax | 1937 | 1937 | FY32 |
| Poll Tax | 1938 | 1938 | FY32 |
| Poll Tax | 1939 | 1939 | FY32 |
| Poll Tax | 1940 | 1940 | FY32 |
| Poll Tax | 1941 | 1941 | FY32 |
| Poll Tax | 1942 | 1942 | FY32 |
| Poll Tax | 1943 | 1943 | FY32 |
| Poll Tax | 1944 | 1944 | FY32 |
| Poll Tax | 1945 | 1945 | FY32 |

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| Poll Tax | 1945 | 1945 | FY32 |
| Poll Tax | 1946 | 1946 | FY32 |
| Poll Tax | 1946 | 1946 | FY32 |
| Poll Tax | 1947 | 1947 | FY32 |
| Poll Tax | 1947 | 1947 | FY33 |
| Poll Tax | 1948 | 1948 | FY33 |
| Poll Tax | 1948 | 1948 | FY33 |
| Poll Tax | 1949 | 1949 | FY33 |
| Poll Tax | 1949 | 1949 | FY33 |
| Poll Tax | 1950 | 1950 | FY33 |
| Poll Tax | 1950 | 1950 | FY33 |
| Poll Tax | 1951 | 1951 | FY33 |
| Poll Tax | 1951 | 1951 | FY33 |
| Poll Tax | 1952 | 1952 | FY33 |
| Poll Tax | 1953 | 1953 | FY33 |
| Poll Tax | 1954 | 1954 | FY33 |
| Poll Tax | 1955 | 1955 | FY34 |
| Poll Tax | 1956 | 1956 | FY34 |
| Poll Tax | 1957 | 1957 | FY34 |
| Poll Tax | 1958 | 1958 | FY34 |
| Poll Tax | 1959 | 1959 | FY34 |
| Poll Tax | 1960 | 1960 | FY34 |
| Poll Tax | 1961 | 1961 | FY34 |
| Poll Tax | 1962 | 1962 | FY34 |
| Poll Tax | 1963 | 1963 | FY34 |
| Poll Tax | 1964 | 1964 | FY34 |
| Poll Tax | 1965 | 1965 | FY34 |
| Poll Tax | 1966 | 1966 | FY34 |
| Poll Tax | 1967 | 1967 | FY35 |
| Poll Tax | 1968 | 1968 | FY35 |
| Poll Tax | 1969 | 1969 | FY35 |
| Poll Tax | 1970 | 1970 | FY35 |
| Poll Tax | 1970 | 1970 | FY35 |
| Poor support | 1935 | 1935 | FY35 |
| Receipt Register | 1928 | 1933 | FY35 |
| Receipts | 1923 | 1931 | FY35 |
| Receipts and Disbursements | 1923 | 1929 | FY35 |
| Receipts and Disbursements | 1929 | 1935 | FY35 |
| Receipts and Disbursements | 1933 | 1936 | FY35 |
| Receipts and Disbursements | 1934 | 1937 | FY35 |
| Receipts and expenditures | 1870 | 1870 | FY35 |
| Receipts and expenditures | 1878 | 1891 | FY35 |
| Receipts and expenditures | 1890 | 1899 | FY35 |
| Receipts and expenditures | 1895 | 1900 | FY35 |
| Receipts and expenditures | 1899 | 1900 | FY35 |
| Receipts and expenditures | 1900 | 1901 | FY35 |
| Receipts and expenditures | 1901 | 1901 | FY35 |
| Receipts and expenditures | 1901 | 1901 | FY35 |
| Receipts and expenditures | 1901 | 1901 | FY35 |
| Additional taxes | 1919 | 1919 | FY36 |
| Additional taxes & Cond Sales | 1893 | 1927 | FY36 |
| Amount of tax paid on various items | 1907 | 1907 | FY36 |
| Amount of tax paid on various items | 1908 | 1908 | FY36 |
| Board of Assessors' meeting minutes | 1905 | 1907 | FY36 |
| Receipts and expenditures | 1902 | 1902 | FY36 |

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| Receipts and expenditures | 1904 | 1904 | FY36 |
| Receipts and expenditures | 1904 | 1905 | FY36 |
| Receipts and expenditures | 1905 | 1905 | FY36 |
| Receipts and expenditures | 1906 | 1906 | FY36 |
| Receipts and expenditures | 1907 | 1908 | FY36 |
| Receipts and expenditures | 1907 | 1920 | FY36 |
| Receipts and expenditures | 1908 | 1910 | FY36 |
| Receipts and expenditures | 1908 | 1918 | FY36 |
| Receipts and expenditures | 1920 | 1929 | FY36 |
| Receipts and expenditures | 1921 | 1931 | FY36 |
| Receipts and expenditures | 1930 | 1939 | FY36 |
| Receipts and expenditures | 1930 | 1939 | FY36 |
| Street sprinkling | 1909 | 1909 | FY36 |
| Street sprinkling | 1909 | 1909 | FY36 |
| Street sprinkling | 1910 | 1910 | FY36 |
| Street sprinkling | 1911 | 1911 | FY36 |
| Street sprinkling | 1918 | 1918 | FY36 |
| Water main construction proposal | 1942 | 1942 | FY36 |
| Board of Assessors' meeting minutes | 1907 | 1922 | FY37 |
| Bond issues | 1939 | 1948 | FY37 |
| Register of City-owned property | 1895 | 1895 | FY37 |
| Register of City-owned property | 1901 | 1901 | FY37 |
| Register of City-owned property | 1907 | 1907 | FY37 |
| Register of City-owned property | 1909 | 1909 | FY37 |
| Register of City-owned property | 1920 | 1929 | FY37 |
| Register of City-owned property | 1930 | 1939 | FY37 |
| Register of City-owned property | 1938 | 1948 | FY37 |
| Supplies to poor by Ward | 1909 | 1909 | FY37 |
| Supplies to poor by Ward | 1909 | 1909 | FY37 |
| Supplies to poor by Ward | 1909 | 1909 | FY37 |
| Supplies to poor by Ward | 1909 | 1909 | FY37 |
| Supplies to poor by Ward | 1913 | 1913 | FY37 |
| Supplies to poor by Ward (receipts) | 1908 | 1908 | FY37 |
| Tax Exemptions for Manufacturing Companies | 1901 | 1917 | FY37 |
| Vital Records: Registers and memoranda concerning burials and permission to remove a body to another cemetery (36 VOLUMES) | 1930 | 1939 | FY38 |
| [Sewer Entries]. January 1, 1870-November 22, 1893. 46pp. BV | 1870 | 1893 | FY39+ |
| 1970 Budget Exhibits - City of Portsmouth, New Hamsphire | 1970 | 1970 | FY39+ |
| A Better New Hampshire | 1968 | 1968 | FY39+ |
| A Better New Hampshire | 1968 | 1968 | FY39+ |
| A Look at the Portsmouth Public Library. A Survey by the N.H. state Library. January 1967 | 1967 | 1967 | FY39+ |
| A Message from the Mayor - 1974 | 1974 | 1974 | FY39+ |
| A Report to the People - A summary of Municipal Activities for the Fiscal Year Ending December 31, 1952 | 1952 | 1952 | FY39+ |
| A Report to the People - A summary of Municipal Activities for the Fiscal Year Ending December 31, 1953 | 1953 | 1953 | FY39+ |
| A Summary of Municipal Activities for FYE 12/31/1952 | 1952 | 1952 | FY39+ |
| A Summary of Municipal Activities for the FYE 12/31/1953 | 1953 | 1953 | FY39+ |
| Abstract of the 12th Census 1900 | 1900 | 1900 | FY39+ |
| Accounts | 1910 | 1916 | FY39+ |
| Accounts | 1911 | 1918 | FY39+ |
| Accounts | 1934 | 1936 | FY39+ |
| Activities of the Assessing Department 1961 | 1961 | 1961 | FY39+ |

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|---|---|---|---|
| Activities of the Various City Departments 1962 | 1962 | 1962 | FY39+ |
| Activities of the Various City Departments 1962 | 1962 | 1962 | FY39+ |
| Amount of tax paid on various items | 1936 | 1936 | FY39+ |
| Annual Appropriations Bill of the city of Portsmouth for Fiscal Year Ending 12/31/69 | 1969 | 1969 | FY39+ |
| Annual Audit - City of Portsmouth Trust Funds - YE 12/31/1975 | 1975 | 1975 | FY39+ |
| Annual Audit by State Division of Municipal Accountants YE 12/31/1954 | 1954 | 1954 | FY39+ |
| Annual Audit by State Division of Municipal Accountants YE 12/31/1956 | 1956 | 1956 | FY39+ |
| Annual Audit by State Division of Municipal Accountants YE 12/31/1963 | 1963 | 1963 | FY39+ |
| Annual Audit by State Division of Municipal Accountants YE 12/31/1964 | 1964 | 1964 | FY39+ |
| Annual Audit by State Division of Municipal Accountants YE 12/31/1965 | 1965 | 1965 | FY39+ |
| Annual Audit by State Division of Municipal Accountants YE 12/31/1966 | 1966 | 1966 | FY39+ |
| Annual Audit FYE 6/30/1973 | 1972 | 1973 | FY39+ |
| Annual Audit YE 6/30/1974 | 1974 | 1974 | FY39+ |
| Annual Audit YE 6/30/1975 | 1974 | 1975 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1883 | 1883 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1885 | 1885 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1886 | 1886 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1887 | 1887 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1888 | 1888 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1889 | 1889 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1894 | 1894 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1895 | 1895 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1896 | 1896 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1898 | 1898 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1899 | 1899 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1900 | 1900 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1901 | 1901 | FY39+ |
| Annual City receipts and expenditures and reports of the various departments | 1903 | 1903 | FY39+ |
| Annual Report | 1909 | 1909 | FY39+ |
| Annual Report | 1910 | 1910 | FY39+ |
| Annual Report | 1911 | 1911 | FY39+ |
| Annual Report | 1912 | 1912 | FY39+ |
| Annual Report | 1913 | 1913 | FY39+ |
| Annual Report | 1914 | 1914 | FY39+ |

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|---|---|---|---|
| Annual Report | 1916 | 1916 | FY39+ |
| Annual Report | 1917 | 1917 | FY39+ |
| Annual Report | 1919 | 1919 | FY39+ |
| Annual Report | 1922 | 1922 | FY39+ |
| Annual Report | 1923 | 1923 | FY39+ |
| Annual Report | 1927 | 1927 | FY39+ |
| Annual Report | 1929 | 1929 | FY39+ |
| Annual Report | 1959 | 1959 | FY39+ |
| Annual Report | 1973 | 1973 | FY39+ |
| Annual Report | 1974 | 1974 | FY39+ |
| Annual Report | 1975 | 1976 | FY39+ |
| Annual Report | 1976 | 1977 | FY39+ |
| Annual Report | 1977 | 1977 | FY39+ |
| Annual Report | 1908 | 1908 | FY39+ |
| Annual Report - "Your City Government 1945-1946-1947" | 1945 | 1947 | FY39+ |
| Annual Report 1955 | 1955 | 1955 | FY39+ |
| Annual Report 1955 - Portsmouth, NH | 1955 | 1955 | FY39+ |
| Annual Report 1956 | 1956 | 1956 | FY39+ |
| Annual Report 1956 - Portsmouth, NH | 1956 | 1956 | FY39+ |
| Annual Report 1957 | 1957 | 1957 | FY39+ |
| Annual Report 1957 - Portsmouth, NH | 1957 | 1957 | FY39+ |
| Annual Report 1958 | 1958 | 1958 | FY39+ |
| Annual Report 1958 - Portsmouth, NH | 1958 | 1958 | FY39+ |
| Annual Report 1959 | 1959 | 1959 | FY39+ |
| Annual Report 1959 - Portsmouth, NH | 1959 | 1959 | FY39+ |
| Annual Report 1960 | 1960 | 1960 | FY39+ |
| Annual Report 1961 | 1961 | 1961 | FY39+ |
| Annual Report 1961 - Portsmouth, NH | 1961 | 1961 | FY39+ |
| Annual Report 1962 - Portsmouth, NH | 1962 | 1962 | FY39+ |
| Annual Report 1963 | 1963 | 1963 | FY39+ |
| Annual Report 1963 - Portmsouth, NH | 1963 | 1963 | FY39+ |
| Annual Report 1964 | 1964 | 1964 | FY39+ |
| Annual Report 1964 - Portsmouth, NH | 1964 | 1964 | FY39+ |
| Annual Report 1965 | 1965 | 1965 | FY39+ |
| Annual Report 1965 - Portsmouth, NH | 1965 | 1965 | FY39+ |
| Annual Report 1966 | 1966 | 1966 | FY39+ |
| Annual Report 1966 - Portsmouth, NH | 1966 | 1966 | FY39+ |
| Annual Report 1967 | 1967 | 1967 | FY39+ |
| Annual Report 1967 - Portsmouth, NH | 1967 | 1967 | FY39+ |
| Annual Report 1968 | 1968 | 1968 | FY39+ |
| Annual Report 1968 - Portsmouth, NH | 1968 | 1968 | FY39+ |
| Annual Report 1969 | 1969 | 1969 | FY39+ |
| Annual Report 1969 - Portsmouth, NH | 1960 | 1960 | FY39+ |
| Annual Report 1969 - Portsmouth, NH | 1969 | 1969 | FY39+ |
| Annual Report 1970 | 1970 | 1970 | FY39+ |
| Annual Report 1970 | 1970 | 1970 | FY39+ |
| Annual Report 1970 - Portsmouth, NH | 1970 | 1970 | FY39+ |
| Annual Report 1971-1972 | 1971 | 1972 | FY39+ |
| Annual Report 1971-1972 | 1971 | 1972 | FY39+ |
| Annual Report 1971-1972n - Portsmouth, NH | 1971 | 1972 | FY39+ |
| Annual Report 1973 | 1973 | 1973 | FY39+ |
| Annual Report 1973 - Portsmouth, NH | 1973 | 1973 | FY39+ |
| Annual Report 1974 | 1974 | 1974 | FY39+ |
| Annual Report 1974 - Portsmouth, NH | 1974 | 1974 | FY39+ |

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| Annual Report 1975 | 1975 | 1975 | FY39+ |
| Annual Report 1975-1976 - Portsmouth, NH | 1975 | 1976 | FY39+ |
| Annual Report 1976-1977 | 1977 | 1977 | FY39+ |
| Annual Report 1976-1977 - Portsmouth, NH | 1976 | 1977 | FY39+ |
| Annual Report 1980-1981 - Portsmouth, NH | 1980 | 1981 | FY39+ |
| Annual Report 1981 | 1981 | 1981 | FY39+ |
| Annual Report 1981-1982 - Portsmouth, NH | 1981 | 1982 | FY39+ |
| Annual Report 1982 | 1982 | 1982 | FY39+ |
| Annual Report 1982 | 1982 | 1982 | FY39+ |
| Annual Report 1982-1983 | 1983 | 1983 | FY39+ |
| Annual Report 1982-1983 - Portsmouth, NH | 1982 | 1983 | FY39+ |
| Annual Report 1983-1984/1984-1985 | 1983 | 1985 | FY39+ |
| Annual Report 1983-1984/1984-1985 | 1983 | 1985 | FY39+ |
| Annual Report 1983-1984/1984-1985- Portmsouth, NH | 1983 | 1985 | FY39+ |
| Annual Report for the State of New Hampshire 1899 | 1899 | 1899 | FY39+ |
| Annual Report for the State of New Hampshire 1911 | 1911 | 1911 | FY39+ |
| Annual Report for the State of New Hampshire 1913 | 1913 | 1913 | FY39+ |
| Annual Report for the State of New Hampshire 1914 | 1914 | 1914 | FY39+ |
| Annual Report for the State of New Hampshire 1915 | 1915 | 1915 | FY39+ |
| Annual Report of the Board of Instruction and High School Committee of the City of Portsmouth | 1892 | 1892 | FY39+ |
| Annual Report of the Board of Instruction and High School Committee of the City of Portsmouth | 1897 | 1897 | FY39+ |
| Annual Report of the City Auditor | 1936 | 1936 | FY39+ |
| Annual Report of the City Auditor | 1943 | 1943 | FY39+ |
| Annual Report of the City Auditor for year ending 12/31/1934 | 1934 | 1934 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1908 | 1908 | 1908 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1909 | 1909 | 1909 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1916 | 1916 | 1916 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1919 | 1919 | 1919 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1922 | 1922 | 1922 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1923 | 1923 | 1923 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1925 | 1925 | 1925 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1926 | 1926 | 1926 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1927 | 1927 | 1927 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1933 | 1933 | 1933 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1938 | 1938 | 1938 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1938 | 1938 | 1938 | FY39+ |
| Annual Report of the City Auditor YE 12/31/1942 | 1942 | 1942 | FY39+ |
| Annual report of the schools | 1919 | 1919 | FY39+ |
| Annual Report of your Department of Assessment for 1962 | 1962 | 1962 | FY39+ |
| Appraisal of 1 Junkins Ave (at time Portsmouth Hospital) - September 1st, 1987 with original pictures | 1987 | 1987 | FY39+ |
| Appropriations | 1930 | 1939 | FY39+ |
| Appropriations | 1935 | 1936 | FY39+ |
| Appropriations | 1940 | 1949 | FY39+ |
| Approved bills | 1925 | 1928 | FY39+ |
| Assessment Digest Sinapore/Australia - International Assessment - March/April 1984 | 1984 | 1984 | FY39+ |
| Assessment of the Portsmouth Hospital (now City Hall) 9/1/1987 | 1987 | 1987 | FY39+ |
| Assessor's Offce 11-21-84 | 1984 | 1984 | FY39+ |
| Assessor's Office 7/1/1985 | 1985 | 1985 | FY39+ |

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|---|---|---|---|
| Audit - City of Portsmouth Trust Funds - YE 12/31/1974 | 1974 | 1974 | FY39+ |
| Audit Report 1969 | 1969 | 1969 | FY39+ |
| Audit Report for YE 6/30/1973 | 1973 | 1973 | FY39+ |
| Audit Report of Comments and Recommendations for Year Ending 6/30/1977 | 1977 | 1977 | FY39+ |
| Auditor's Report 1907 | 1907 | 1907 | FY39+ |
| Auidotrs Report of Comments and Reccomendations for FYE 6/30/1976 | 1975 | 1976 | FY39+ |
| Automobile permit receipts | 1926 | 1928 | FY39+ |
| Automobile permit receipts | 1929 | 1931 | FY39+ |
| Automobile permit receipts | 1936 | 1939 | FY39+ |
| Automobile permit receipts | 1936 | 1939 | FY39+ |
| Automobile permit receipts | 1942 | 1943 | FY39+ |
| Automobile permit receipts | 1946 | 1946 | FY39+ |
| Bankbook | 1920 | 1920 | FY39+ |
| Bankbook | 1923 | 1923 | FY39+ |
| Bankbook | 1935 | 1935 | FY39+ |
| Bankbook | 1935 | 1935 | FY39+ |
| Bankbook | 1957 | 1957 | FY39+ |
| Bills Approved | 1862 | 1873 | FY39+ |
| Bills paid | 1926 | 1926 | FY39+ |
| Birth register, Ward 1 | 1883 | 1883 | FY39+ |
| Birth register, Ward 4 | 1883 | 1883 | FY39+ |
| Births 1912-1933 | 1912 | 1933 | FY39+ |
| Blank book of forms for applicants for aid | 1908 | 1908 | FY39+ |
| Blank checkbook | 1875 | 1900 | FY39+ |
| Blank checks and filled-in check stubs | 1875 | 1900 | FY39+ |
| Blank printed forms for real estate tax sales | 1900 | 1900 | FY39+ |
| Blank Tax Collector inventory forms | 1875 | 1900 | FY39+ |
| Board of Assessors' minutes of meetings | 1904 | 1904 | FY39+ |
| Board of Instructors Report | 1884 | 1884 | FY39+ |
| Board of Registrars time and wage book | 1956 | 1956 | FY39+ |
| Board of Registrars time and wage book | 1956 | 1957 | FY39+ |
| Board of Registrars time and wage book | 1957 | 1958 | FY39+ |
| Board of Registrars time and wage book | 1958 | 1958 | FY39+ |
| Board of Registrars time and wage book | 1960 | 1960 | FY39+ |
| Board of Registrars time and wage book | 1962 | 1962 | FY39+ |
| Board of Registrars time and wage book | 1962 | 1963 | FY39+ |
| Board of Registrars time and wage book | 1964 | 1964 | FY39+ |
| Board of Registrars time and wage book | 1964 | 1964 | FY39+ |
| Board of Registrars time and wage book | 1966 | 1967 | FY39+ |
| Board of Registrars time and wage book | | | FY39+ |
| Boarded children, Works Projects Administration | 1938 | 1938 | FY39+ |
| Bond issue disbursements | 1934 | 1934 | FY39+ |
| Bond issue disbursements | 1939 | 1939 | FY39+ |
| Box filled with Various Fire Dept Items (not yet reviewed) | unknown | unknown | FY39+ |
| Box filled with Various Fire Dept Items (not yet reviewed) | unknown | unknown | FY39+ |
| Box of Fire Department Artifacts, Photos, Delicate Documents (initial review complete) | unknown | unknown | FY39+ |
| Box of Fire Department Documents (initial review complete) | unknown | unknown | FY39+ |
| Box of Fire Department Documents (initial review complete) | unknown | unknown | FY39+ |
| Box of Fire Dept Books (not yet reviewed) | unknown | unknown | FY39+ |
| Budget 1974-1975 | 1974 | 1975 | FY39+ |
| Capital Budget and Improvement Program 1978-1983 | 1978 | 1983 | FY39+ |

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|---|---|---|---|
| Capital Improvement Plan (CIP) 1977-1982 | 1977 | 1982 | FY39+ |
| Capital Improvement Plan (CIP) 1978-1983 | 1978 | 1983 | FY39+ |
| Capital Improvements Program August, 1969 | 1969 | 1974 | FY39+ |
| Cash receipts | 1912 | 1923 | FY39+ |
| Cash receipts | 1925 | 1926 | FY39+ |
| Cash receipts | 1927 | 1935 | FY39+ |
| Cash receipts | 1937 | 1937 | FY39+ |
| Cash receipts | 1938 | 1938 | FY39+ |
| Cemetery improvement payroll, Works Projects Administration | 1935 | 1936 | FY39+ |
| Cemetery registrar's memoranda | 1895 | 1897 | FY39+ |
| Certificate of purchase at tax sale | 1955 | 1959 | FY39+ |
| Charter and assessing laws | 1907 | 1907 | FY39+ |
| Charter and assessing laws | 1907 | 1907 | FY39+ |
| Charter and Assessing Laws, City of Portsmouth | 1907 | | FY39+ |
| Charter Commission Report August 1977 | 1977 | 1977 | FY39+ |
| Charter Commission Reports | 1969 | 1969 | FY39+ |
| Charter Commission Reports | 1977 | 1977 | FY39+ |
| Charter Commission Reports (dated 10/27/1969) | 1969 | 1969 | FY39+ |
| Charter Commission Reports (dated 10/29/1969) | 1969 | 1969 | FY39+ |
| Charter Commission Reports (dated August 1977) | 1977 | 1977 | FY39+ |
| Charter Commission Reports (dated August 1977) | 1977 | 1977 | FY39+ |
| Charter Commission Reports (dated August 1977) | 1977 | 1977 | FY39+ |
| Charter Commission Reports (dated August 1977) | 1977 | 1977 | FY39+ |
| Check carbons | 1923 | 1937 | FY39+ |
| Check carbons (9) | 1931 | 1931 | FY39+ |
| Checkbook stubs and blank checks | 1911 | 1911 | FY39+ |
| Checkbook stubs and blank checks | 1911 | 1911 | FY39+ |
| Checkbook stubs and blank checks | 1911 | 1911 | FY39+ |
| Checkbook stubs and blank checks | 1922 | 1922 | FY39+ |
| Checkbook stubs and blank checks | 1934 | 1934 | FY39+ |
| Checkbook stubs and blank checks | 1934 | 1934 | FY39+ |
| Checkbook with cancelled checks | 1902 | 1902 | FY39+ |
| Checks, check stubs, blank checkbook | 1879 | 1879 | FY39+ |
| City Manager's Budget Message 1970 | 1970 | 1970 | FY39+ |
| City of Portsmouth Summary of Municipal Activity FY Ending 12/31/1953 | 1953 | 1953 | FY39+ |
| City of Portsmouth, New Hampshire - A Message from the Mayor - Reprinted for the 1974 Portsmouth City Directory | 1974 | 1974 | FY39+ |
| City of Portsmouth, New Hamsphire 1970 Budget Exhibits | 1970 | 1970 | FY39+ |
| City of Portsmouth, NH 1979-1980 Municipal Budget | 1979 | 1980 | FY39+ |
| City of Portsmouth, NH Municipal Budget Fiscal Year 1978-1979 | 1978 | 1979 | FY39+ |
| City of Portsmouth, NH Report on Examination of Financial Satements and Supplimental Data for YE 6/30/1977 | 1976 | 1977 | FY39+ |
| City Reports | 1951 | 1951 | FY39+ |
| City-owned shares in railroads and banks | 1933 | 1933 | FY39+ |
| Claremont Tax Issue 1 of 10 | | | FY39+ |
| Claremont Tax Issue 2 of 10 | | | FY39+ |
| Claremont Tax Issue 3 of 10 | | | FY39+ |
| Comprehensive Transport Plan Portsmouth, New Hampshire December 1964 | 1964 | 1964 | FY39+ |
| Comrehensive Transportation Plan - Portsmouth, NH | 1962 | 1962 | FY39+ |
| Conditional sales | 1912 | 1920 | FY39+ |
| Conditional sales | 1920 | 1923 | FY39+ |
| Conditional sales | 1923 | 1924 | FY39+ |
| Conditional sales | 1924 | 1925 | FY39+ |

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| Conditional sales | 1925 | 1926 | FY39+ |
| Conditional sales | 1926 | 1926 | FY39+ |
| Conditional sales | 1926 | 1927 | FY39+ |
| Conditional sales | 1949 | 1950 | FY39+ |
| Conditional sales | 1950 | 1950 | FY39+ |
| Conditional Sales | 1950 | 1950 | FY39+ |
| Conditional sales | 1951 | 1951 | FY39+ |
| Conditional sales | 1951 | 1951 | FY39+ |
| Conditional sales | 1951 | 1952 | FY39+ |
| Conditional sales | 1952 | 1952 | FY39+ |
| Conditional sales | 1952 | 1952 | FY39+ |
| Conditional sales | 1952 | 1953 | FY39+ |
| Conditional sales | 1953 | 1953 | FY39+ |
| Conditional sales | 1953 | 1953 | FY39+ |
| Conditional sales | 1953 | 1954 | FY39+ |
| Conditional sales | 1954 | 1954 | FY39+ |
| Conditional sales | 1954 | 1954 | FY39+ |
| Conditional sales | 1954 | 1955 | FY39+ |
| Conditional sales | 1955 | 1955 | FY39+ |
| Conditional sales | 1955 | 1955 | FY39+ |
| Conditional sales | 1955 | 1956 | FY39+ |
| Conditional sales | 1955 | 1955 | FY39+ |
| Conditional sales | 1956 | 1956 | FY39+ |
| Conditional sales | 1956 | 1956 | FY39+ |
| Conditional sales | 1956 | 1956 | FY39+ |
| Conditional sales | 1956 | 1956 | FY39+ |
| Conditional sales | 1956 | 1956 | FY39+ |
| Conditional sales | 1957 | 1957 | FY39+ |
| Conditional sales | 1957 | 1957 | FY39+ |
| Conditional sales | 1957 | 1957 | FY39+ |
| Conditional sales | 1957 | 1957 | FY39+ |
| Conditional sales | 1957 | 1958 | FY39+ |
| Conditional sales | 1958 | 1958 | FY39+ |
| Conditional sales | 1958 | 1958 | FY39+ |
| Conditional sales | 1958 | 1958 | FY39+ |
| Conditional sales | 1959 | 1959 | FY39+ |
| Conditional sales | 1959 | 1959 | FY39+ |
| Conditional sales | 1959 | 1960 | FY39+ |
| Conditional sales | 1960 | 1960 | FY39+ |
| Conditional sales | 1960 | 1960 | FY39+ |
| Conditional Sales | 1961 | 1961 | FY39+ |
| Conditional sales | | | FY39+ |
| Conditional sales | | | FY39+ |
| Contract for bitulithic pavement on drawbridge | 1914 | 1914 | FY39+ |
| Contract proposals, mains and ground supply | 1942 | 1942 | FY39+ |
| Contract proposals, sewer construction | 1943 | 1943 | FY39+ |
| Contract proposals, waterworks improvements: mains to Odiorne Point | 1942 | 1942 | FY39+ |
| Contract proposals, well construction | 1942 | 1942 | FY39+ |
| Contract proposals: sewer construction | 1942 | 1942 | FY39+ |
| Copies of letters | 1865 | 1866 | FY39+ |
| Correspondence concerning water works projects for defense | 1942 | 1942 | FY39+ |
| Daily cash slips | 1945 | 1945 | FY39+ |
| Department Head Memo | 1983 | 1985 | FY39+ |
| Deposit slips | 1926 | 1926 | FY39+ |

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|---|---|---|---|
| Disbursements | 1923 | 1927 | FY39+ |
| Dog Licenses. May 4, 1891-May 22, 1893. UV | 1891 | 1893 | FY39+ |
| Duplicate check deposit slips for various City accounts | 1937 | 1945 | FY39+ |
| Duplicate deposit slips | 1942 | 1944 | FY39+ |
| Duplicate letters | 1879 | 1882 | FY39+ |
| Duplicating Deposit Slips - 1924 | 1924 | 1924 | FY39+ |
| Duplicating Deposit Slips - 1952 | 1952 | 1952 | FY39+ |
| Duplicating Despoit Slip - Water | Undated | undated | FY39+ |
| Duplicting Deposit Slips - 1925 | 1925 | 1925 | FY39+ |
| Evaluation of the Effectiveness of Congregate Housing for the Elderly (from HUD) | 1976 | 1976 | FY39+ |
| Evaluation of the Effectiveness of Congregate Housing for the Elderly (from HUD) | Undated | undated | FY39+ |
| Expenditures | 1925 | 1926 | FY39+ |
| Final tax list | | | FY39+ |
| Fire Deartment Items - Not yet reviewed (in brown large box) | unknown | unknown | FY39+ |
| Fire Record (Book) | uknown | unknown | FY39+ |
| General Plan - City of Portsmouth | 1969 | 1969 | FY39+ |
| General Plan - City of Portsmouth | 1973 | 1973 | FY39+ |
| General Plan 1969 - Planning Board | 1969 | 1969 | FY39+ |
| General Plan 1973 - Planning Board | 1973 | 1973 | FY39+ |
| Historic District Visual Guidelines 1977 | 1977 | 1977 | FY39+ |
| Index to unidentifed ledger | | | FY39+ |
| Index to unidentified ledger | | | FY39+ |
| Inventories | 1881 | | FY39+ |
| Inventories | 1896 | 1896 | FY39+ |
| Inventories | 1897 | 1897 | FY39+ |
| Inventories | 1898 | 1898 | FY39+ |
| Inventories | 1901 | 1901 | FY39+ |
| Inventory | 1893 | 1893 | FY39+ |
| Inventory recapitulation | 1894 | 1894 | FY39+ |
| Invoice | 1876 | 1876 | FY39+ |
| Invoice | 1877 | 1877 | FY39+ |
| Invoice | 1882 | 1882 | FY39+ |
| Invoice | 1883 | 1883 | FY39+ |
| Invoice | 1890 | 1890 | FY39+ |
| Invoice | 1891 | 1891 | FY39+ |
| Invoice | 1891 | 1891 | FY39+ |
| Invoice | 1892 | 1892 | FY39+ |
| Invoice | 1892 | 1892 | FY39+ |
| Invoice | 1893 | 1893 | FY39+ |
| Invoice | 1894 | 1894 | FY39+ |
| Invoice | 1896 | 1896 | FY39+ |
| Invoice | 1897 | 1897 | FY39+ |
| Invoice | 1897 | 1897 | FY39+ |
| Invoice | 1898 | 1898 | FY39+ |
| Invoice | 1899 | 1899 | FY39+ |
| Invoice | 1899 | 1899 | FY39+ |
| Itemized Summary of Assessed Valuations 11-21-84 | 1984 | 1984 | FY39+ |
| Junk licenses | 1901 | 1907 | FY39+ |
| Kearsarge S.F.E. Company No. 3 Poster | Undated | Undated | FY39+ |
| Large Antique Hose in Wooden Box | unknown | unknown | FY39+ |
| Late and abated taxpayers | 1939 | 1939 | FY39+ |
| Lawsuit: Calvin Page vs. City | 1934 | 1934 | FY39+ |
| Licenses | 1908 | 1910 | FY39+ |

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| Location and Economic Study - Interstate Route 95 (Portsmouth, NH and Kittery, ME) - November 1962 | 1962 | 1962 | FY39+ |
| Location and Economic Study - Interstate Route 95 (Portsmouth, NH and Kittery, ME) - November 1962 | 1962 | 1962 | FY39+ |
| Maine/New Hampshire a Joint Proposal - Recommended Sites for East Coast Laboratory, Institute for Oceanography Ship Operating Base, Coast and Geodetic Survey | 1966 | 1966 | FY39+ |
| Meeting minutes of the Board of Sinking Funds | 1902 | 1925 | FY39+ |
| Memo Regarding 1983/1984 Annual Report from Regina Lammes | 1984 | 1984 | FY39+ |
| Memo to R.C. Violette - City Manager - presenting Annual Report 1962 | 1962 | 1962 | FY39+ |
| Merit System (1948) | 1948 | 1948 | FY39+ |
| Merit System (1973) | 1973 | 1973 | FY39+ |
| Merit System City of Portsmouth, NH | 1961 | 1961 | FY39+ |
| Merit System City of Portsmouth, NH | 1973 | 1973 | FY39+ |
| Meter readings | 1934 | 1935 | FY39+ |
| Meter readings by street | 1934 | 1936 | FY39+ |
| Miscellaneous loose papers | Undated | Undated | FY39+ |
| Mortgages (conditional sales) | 1956 | 1956 | FY39+ |
| Mortgages (conditional sales) | 1956 | 1956 | FY39+ |
| Mortgages (conditional sales) | 1956 | 1956 | FY39+ |
| Mortgages (conditional sales) | 1956 | 1956 | FY39+ |
| Mortgages (conditional sales) | 1956 | 1956 | FY39+ |
| Mortgages (conditional sales) | 1956 | 1957 | FY39+ |
| Mortgages (conditional sales) | 1957 | 1957 | FY39+ |
| Mortgages (conditional sales) | 1957 | 1957 | FY39+ |
| Mortgages (conditional sales) | 1957 | 1957 | FY39+ |
| Mortgages (conditional sales) | 1957 | 1957 | FY39+ |
| Motor vehicle registration, various years | 1930 | 1939 | FY39+ |
| Municipal Ordinances - City of Portsmouth | 1956 | 1956 | FY39+ |
| Municipal Ordinances - City of Portsmouth | Undated | undated | FY39+ |
| Navy Yard employment, Works Projects Administration | 1936 | 1936 | FY39+ |
| New Hamsphire State Port Authority - New marine Terminal Portsmouth, New Hamphsire (August, 1962) | 1962 | 1962 | FY39+ |
| New Hamsphire Town and City - April 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - April 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - April 1984 | 1984 | 1984 | FY39+ |
| New Hamsphire Town and City - August 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - August 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - December 1978 | 1978 | 1978 | FY39+ |
| New Hamsphire Town and City - December 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - February 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - February 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - January 1978 | 1978 | 1978 | FY39+ |
| New Hamsphire Town and City - January 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - January 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - July 1978 | 1978 | 1978 | FY39+ |
| New Hamsphire Town and City - July 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - June 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - June 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - March 1978 | 1978 | 1978 | FY39+ |
| New Hamsphire Town and City - March 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - March 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - May 1978 | 1978 | 1978 | FY39+ |

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| New Hamsphire Town and City - May 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - May 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - November 1980 | 1980 | 1980 | FY39+ |
| New Hamsphire Town and City - October 1978 | 1978 | 1978 | FY39+ |
| New Hamsphire Town and City - October 1979 | 1979 | 1979 | FY39+ |
| New Hamsphire Town and City - September 1978 | 1978 | 1978 | FY39+ |
| New Hamsphire Town and City - September 1980 | 1980 | 1980 | FY39+ |
| New Marine Terminal - Portsmouth, NH - August 1962 from New Hampshire State Port Authority | 1962 | 1962 | FY39+ |
| Old age assistance cases, Works Projects Administration | 1935 | 1936 | FY39+ |
| Ordinances of the City of Portsmouth Revised July 1, 1977 | 1977 | 1977 | FY39+ |
| Overseers. 1865-1868. Alphabetized. UV | 1865 | 1868 | FY39+ |
| Payments | 1904 | 1904 | FY39+ |
| Payroll and other expenditures | 1906 | 1906 | FY39+ |
| Payroll and temporary loan | 1902 | 1903 | FY39+ |
| Payroll cards | 1926 | 1926 | FY39+ |
| Pease Air Force Base 1956-1981 - 25th Anniversary Open House (7/12/1981) | 1956 | 1981 | FY39+ |
| Pease Air Forse Base 1956-1981 | 1956 | 1981 | FY39+ |
| Peirce Island Sewage Treatment Plant 1965 | 1965 | 1965 | FY39+ |
| Peirce Island Seweage Treatment Plant | 1965 | 1965 | FY39+ |
| Police Records. [Docket of Police Court]. September 1, 1864-November 15, 1873. UV | 1864 | 1873 | FY39+ |
| Poll tax receipts | 1929 | 1929 | FY39+ |
| Portrsmouth at the Crossroads - A Report on Changes and Choices in a New England Community - 1978? | 1978 | 1978 | FY39+ |
| Portsmouth 350 Commemorative Book 1623-1973 | 1973 | 1973 | FY39+ |
| Portsmouth 350 Commemorative Book 1623-1973 | 1973 | 1973 | FY39+ |
| Portsmouth at the Crossroads - A Report on Changes and Choices in a New England Community | 1977 | 1977 | FY39+ |
| Portsmouth Path to Progress - PHA | 1961 | 1961 | FY39+ |
| Portsmouth Path to Progress - PHA | 1963 | 1963 | FY39+ |
| Portsmouth Path to Progress - PHA | 1963 | 1963 | FY39+ |
| Portsmouth Public Library - Survey by the NH State Library - January 1967 | 1967 | 1967 | FY39+ |
| Portsmouth public school teachers subject to poll tax | 1940 | 1941 | FY39+ |
| Portsmouth Water Works' Cash Book. February 1, 1899-November 14, 1910. 134pp. PCY | 1899 | 1910 | FY39+ |
| Portsmouth, New Hampshire Newest World Port | Undated | Undated | FY39+ |
| Portsmouth, New Hamsphire - Chamber of Commerce 1969 | 1969 | 1969 | FY39+ |
| Portsmouth, NH - Newest World Port | Undated | undated | FY39+ |
| Portsmouth, NH (from the Chamber of Commerce) | 1969 | 1969 | FY39+ |
| Portsmouth's Path to Progress - PHA | Undated | undated | FY39+ |
| Proeprty Tax Warrant A-E 1984 | 1984 | 1984 | FY39+ |
| Property owner list | 1918 | 1918 | FY39+ |
| Property Tax Warrant 1978 A - L | 1978 | 1978 | FY39+ |
| Property Tax Warrant 1978 M - Z | 1978 | 1978 | FY39+ |
| Property Tax Warrant A-C 1986 | 1986 | 1986 | FY39+ |
| Property Tax Warrant a-D 1985 | 1985 | 1985 | FY39+ |
| Property Tax Warrant A-E 1987 | 1987 | 1987 | FY39+ |
| Property Tax Warrant A-E 1988 | 1988 | 1988 | FY39+ |
| Property Tax Warrant A-E 1990 | 1990 | 1990 | FY39+ |
| Property Tax Warrant A-E 1991 | 1991 | 1991 | FY39+ |
| Property Tax Warrant A-F 1989 | 1989 | 1989 | FY39+ |
| Property Tax Warrant A-G 1981 | 1981 | 1981 | FY39+ |

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| Property Tax Warrant A-G 1983 | 1983 | 1983 | FY39+ |
| Property Tax Warrant D-Z 1986 | 1986 | 1986 | FY39+ |
| Property Tax Warrant E-Z 1985 | 1985 | 1985 | FY39+ |
| Property Tax Warrant F-Z 1984 | 1984 | 1984 | FY39+ |
| Property Tax Warrant F-Z 1987 | 1987 | 1987 | FY39+ |
| Property Tax Warrant F-Z 1988 | 1988 | 1988 | FY39+ |
| Property Tax Warrant F-Z 1990 | 1990 | 1990 | FY39+ |
| Property Tax Warrant F-Z 1991 | 1991 | 1991 | FY39+ |
| Property Tax Warrant G-Z 1989 | 1989 | 1989 | FY39+ |
| Property Tax Warrant H-Z 1980 | 1980 | 1980 | FY39+ |
| Property Tax Warrant H-Z 1981 | 1981 | 1981 | FY39+ |
| Property Tax Warrant H-Z 1983 | 1983 | 1983 | FY39+ |
| PTA Records | 1950 | 1950 | FY39+ |
| Purchasing Manual 1969 | 1969 | 1969 | FY39+ |
| Real estate sold to pay 1853 taxes (1 page) | 1854 | 1854 | FY39+ |
| Real estate tax exemptions for veterans | 1924 | 1924 | FY39+ |
| Real estate tax exemptions for veterans | 1927 | 1927 | FY39+ |
| Receipt book | 1941 | 1941 | FY39+ |
| Receipt book | 1941 | 1941 | FY39+ |
| Receipt book | 1941 | 1941 | FY39+ |
| Receipt book | 1942 | 1942 | FY39+ |
| Receipt book | 1942 | 1942 | FY39+ |
| Receipt Register | 1962 | 1964 | FY39+ |
| Receipts | 1931 | 1934 | FY39+ |
| Receipts and expenditures | 1856 | 1878 | FY39+ |
| Receipts and expenditures | 1880 | 1889 | FY39+ |
| Receipts and expenditures | 1880 | 1889 | FY39+ |
| Receipts and expenditures | 1895 | 1906 | FY39+ |
| Receipts and expenditures | 1900 | 1903 | FY39+ |
| Receipts and expenditures | 1902 | 1902 | FY39+ |
| Receipts and expenditures | 1904 | 1905 | FY39+ |
| Receipts and expenditures | 1904 | 1904 | FY39+ |
| Receipts and expenditures | 1904 | 1906 | FY39+ |
| Receipts and expenditures | 1905 | 1905 | FY39+ |
| Receipts and expenditures | 1907 | 1907 | FY39+ |
| Receipts and expenditures | 1910 | 1910 | FY39+ |
| Receipts and expenditures | 1917 | 1922 | FY39+ |
| Receipts and expenditures | 1920 | 1929 | FY39+ |
| Receipts and expenditures | 1922 | 1922 | FY39+ |
| Receipts and expenditures | 1922 | 1922 | FY39+ |
| Receipts and expenditures | 1924 | 1933 | FY39+ |
| Receipts and expenditures | 1928 | 1933 | FY39+ |
| Receipts and expenditures | 1935 | 1942 | FY39+ |
| Receipts and expenditures | 1942 | 1944 | FY39+ |
| Receipts and expenditures | 1942 | 1948 | FY39+ |
| Receipts and expenditures | 1950 | 1959 | FY39+ |
| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1890 | 1890 | 1890 | FY39+ |
| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1890 | 1890 | 1890 | FY39+ |
| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1902 | 1902 | 1902 | FY39+ |
| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1925 | 1925 | 1925 | FY39+ |

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| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1926 | 1926 | 1926 | FY39+ |
| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1927 | 1927 | 1927 | FY39+ |
| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1928 | 1928 | 1928 | FY39+ |
| Receipts and Expenditures and Reports of the City Officers, Board of Instructors, Etc YE 12/31/1930 | 1930 | 1930 | FY39+ |
| Record of dog licenses | 1900 | 1900 | FY39+ |
| Record of dog licenses | 1907 | 1908 | FY39+ |
| Record of dog licenses | 1907 | 1907 | FY39+ |
| Record of dog licenses | 1907 | 1907 | FY39+ |
| Record of dog licenses | 1908 | 1908 | FY39+ |
| Record of dog licenses | 1908 | 1908 | FY39+ |
| Record of dog licenses | 1909 | 1909 | FY39+ |
| Record of dog licenses | 1909 | 1910 | FY39+ |
| Record of dog licenses | 1909 | 1909 | FY39+ |
| Record of dog licenses | 1910 | 1910 | FY39+ |
| Record of dog licenses | 1910 | 1911 | FY39+ |
| Record of dog licenses | 1910 | 1910 | FY39+ |
| Record of dog licenses | 1910 | 1910 | FY39+ |
| Record of dog licenses | 1911 | 1911 | FY39+ |
| Record of dog licenses | 1911 | 1911 | FY39+ |
| Record of dog licenses | 1911 | 1912 | FY39+ |
| Record of Dog Licenses. Portsmouth, N.H. April 6, 1899-September 7, 1901. 52pp. Indexed to owner. UV | 1899 | 1901 | FY39+ |
| Record of Josiah Webster's Estate | 1835 | 1839 | FY39+ |
| Records. Liber 10. Mortgages of Personal Property. C. 1891-1912. Vol. 10. Index. 630pp. UV | 1891 | 1912 | FY39+ |
| Redemption certificate for property sold for delinquent taxes | 1949 | 1962 | FY39+ |
| Regarding numbers used to set the tax rate 1985 | 1985 | 1985 | FY39+ |
| Rent collection | 1934 | 1934 | FY39+ |
| Reply to Request from Robert Violette - City Manager | 1961 | 1961 | FY39+ |
| Report of an examination and Audit of J. Warren Somerby - Tax Collector of Portsmouth Jan 1 - February 28, 1957 by the Division of Municipal Affairs 5/15/57 | 1957 | 1957 | FY39+ |
| Report of an Examination of the Accounts of the City of Portsmouth for the Fiscal Year ended December 31, 1964 made by the Division of Municipal of Accounting State Tax Commission May 13-June 6, 1965 | 1964 | 1964 | FY39+ |
| Report of an Examination of the Accounts of the City of Portsmouth for the Fiscal Year ended December 31, 1965 made by the Division of Municipal of Accounting State Tax Commission May 13-June 6, 1966 | 1965 | 1965 | FY39+ |
| Report of an Examination of the Accounts of the City of Portsmouth for the Fiscal Year ended December 31, 1968 made by the Division of Municipal of Accounting State Tax Commission May 13-June 6, 1969 | 1968 | 1969 | FY39+ |
| Report of Assessor's Department 1957 | 1957 | 1957 | FY39+ |
| Report of Assessor's Department 1957 | 1957 | 1957 | FY39+ |
| Report of the Citizens Task Force (State of NH) 1970 | 1970 | 1970 | FY39+ |
| Report of the Citizens Task Force (State of NH) 1970 | 1970 | 1970 | FY39+ |
| Report on Reconciliation of City Treasurer Fund Balance as of 3/26/1956 and Statement of Parking Meter Collections as Indicated by Records of the City Treasurer | 1956 | 1956 | FY39+ |

| | | | |
|---|---|---|---|
| Resident tax - Tax Collector | 1971 | 1971 | FY39+ |
| Resident Tax - Tax Collector | 1972 | 1972 | FY39+ |
| Resident tax - Tax Collector | 1973 | 1973 | FY39+ |
| Resident tax - Tax Collector | 1974 | 1974 | FY39+ |
| Resident tax - Tax Collector | 1975 | 1975 | FY39+ |
| Resident tax - Tax Collector | 1976 | 1976 | FY39+ |
| Resident tax - Tax Collector | 1977 | 1977 | FY39+ |
| Resident tax - Tax Collector | 1978 | 1978 | FY39+ |
| Resident tax - Tax Collector | 1979 | 1979 | FY39+ |
| Resident tax - Tax Collector | 1980 | 1980 | FY39+ |
| Resident tax - Tax Collector 1981 A- G | 1981 | 1981 | FY39+ |
| Resident tax - Tax Collector 1981 H-Z | 1981 | 1981 | FY39+ |
| Resident tax - Tax Collector 1982 A-G | 1982 | 1982 | FY39+ |
| Resident tax - Tax Collector 1983 A - G | 1983 | 1983 | FY39+ |
| Resident Tax - Tax Collector 1984 G-Z | 1984 | 1984 | FY39+ |
| Resident tax - Tax Collector 1985 A-F | 1985 | 1985 | FY39+ |
| Resident tax - Tax Collector 1985 G - Z | 1985 | 1985 | FY39+ |
| Resident Tax - Tax Collector 1986 A - E | 1986 | 1986 | FY39+ |
| Resident Tax - Tax Collector 1986 F - Z | 1986 | 1986 | FY39+ |
| Resident tax - Tax collector H-Z | 1982 | 1982 | FY39+ |
| Resident Tax 1983 - Assessors Office | 1983 | 1983 | FY39+ |
| Resident tax 1984 - Assessors Office | 1984 | 1984 | FY39+ |
| Resident Tax 1985 - Assessors Office | 1985 | 1985 | FY39+ |
| Resident Tax 1986 - Assessors Office | 1986 | 1986 | FY39+ |
| Returned letters requesting poll tax payments | 1912 | 1975 | FY39+ |
| Sales | 1937 | 1937 | FY39+ |
| Sales | 1940 | 1940 | FY39+ |
| Sales | 1944 | 1944 | FY39+ |
| Sales | 1945 | 1946 | FY39+ |
| Sales journal | 1939 | 1939 | FY39+ |
| School Dept PTA Minutes 1968 | 1968 | 1968 | FY39+ |
| School Meeting Minutes (PTA?) | 1917 | 1917 | FY39+ |
| School PTA Minutes 1929 | 1929 | 1929 | FY39+ |
| School Report | 1897 | 1897 | FY39+ |
| Sewing payroll, Works Projects Administration | 1939 | 1939 | FY39+ |
| Soils and Their Interpretations for Various Land Uses - City of Portsmouth - S Dept of Agriculture Soil Conservation Service and Rockingham County Conservation District - February 1968 | 1968 | 1968 | FY39+ |
| Soils and Their Interpretations for Various Land Uses - City of Portsmouth - S Dept of Agriculture Soil Conservation Service and Rockingham County Conservation District - February 1968 | 1968 | 1968 | FY39+ |
| Street lamps | 1853 | 1918 | FY39+ |
| Street projects and payroll, Works Projects Administration | 1935 | 1936 | FY39+ |
| Street sprinkling | 1910 | 1910 | FY39+ |
| Street sprinkling | 1911 | 1911 | FY39+ |
| Street sprinkling | 1912 | 1912 | FY39+ |
| Street sprinkling | 1912 | 1912 | FY39+ |
| Street sprinkling | 1913 | 1913 | FY39+ |
| Street sprinkling | 1913 | 1913 | FY39+ |
| Street sprinkling | 1914 | 1914 | FY39+ |
| Street sprinkling | 1915 | 1915 | FY39+ |
| Street sprinkling | 1916 | 1917 | FY39+ |
| Submarines Portsmouth Naval Shipyard | 1967 | 1967 | FY39+ |
| Submarines Portsmouth Naval Shipyard | 1967 | 1967 | FY39+ |
| Submarines Portsmouth Naval Shipyard | 1967 | 1967 | FY39+ |

| | | | |
|---|---|---|---|
| Supplies to poor by Ward | 1908 | 1908 | FY39+ |
| Supplies to poor by Ward | 1913 | 1913 | FY39+ |
| Supplies to poor by Ward | 1913 | 1913 | FY39+ |
| Supplies to poor by Ward | 1913 | 1913 | FY39+ |
| Tax Anticipation Notes (July 1987) $7,000,000 | 1987 | 1987 | FY39+ |
| Tax Anticipation Notes (July 1987) $7,000,000 | 1987 | 1987 | FY39+ |
| Tax Book 1911 | 1911 | 1911 | FY39+ |
| Tax Book 1911 | 1911 | 1911 | FY39+ |
| Tax Book 1912 | 1912 | 1912 | FY39+ |
| Tax Book 1912 | 1912 | 1912 | FY39+ |
| Tax Book 1912 | 1912 | 1912 | FY39+ |
| Tax Book 1913 | 1913 | 1913 | FY39+ |
| Tax Book 1913 | 1913 | 1913 | FY39+ |
| Tax Book 1914 | 1914 | 1914 | FY39+ |
| Tax Book 1915 | 1915 | 1915 | FY39+ |
| Tax Book 1916 | 1916 | 1916 | FY39+ |
| Tax Book 1916 | 1916 | 1916 | FY39+ |
| Tax Book 1918 | 1918 | 1918 | FY39+ |
| Tax Book 1918 | 1918 | 1918 | FY39+ |
| Tax Book 1918 | 1918 | 1918 | FY39+ |
| Tax Book 1919 | 1919 | 1919 | FY39+ |
| Tax Book 1921 | 1921 | 1921 | FY39+ |
| Tax Book 1921 | 1921 | 1921 | FY39+ |
| Tax Book 1922 | 1922 | 1922 | FY39+ |
| Tax Book 1922 | 1922 | 1922 | FY39+ |
| Tax Book 1923 | 1923 | 1923 | FY39+ |
| Tax Book 1923 | 1923 | 1923 | FY39+ |
| Tax Book 1924 | 1924 | 1924 | FY39+ |
| Tax Book 1924 | 1924 | 1924 | FY39+ |
| Tax Book 1924 | 1924 | 1924 | FY39+ |
| Tax Book 1925 | 1925 | 1925 | FY39+ |
| Tax Book 1925 | 1925 | 1925 | FY39+ |
| Tax Book 1925 | 1925 | 1925 | FY39+ |
| Tax Book 1926 | 1926 | 1926 | FY39+ |
| Tax Book 1926 | 1926 | 1926 | FY39+ |
| Tax Book 1926 | 1926 | 1926 | FY39+ |
| Tax Book 1927 | 1927 | 1927 | FY39+ |
| Tax Book 1927 | 1927 | 1927 | FY39+ |
| Tax Book 1927 | 1927 | 1927 | FY39+ |
| Tax Book 1928 | 1928 | 1928 | FY39+ |
| Tax Book 1928 | 1928 | 1928 | FY39+ |
| Tax Book 1928 | 1928 | 1928 | FY39+ |
| Tax Book 1929 | 1929 | 1929 | FY39+ |
| Tax Book 1929 | 1929 | 1929 | FY39+ |
| Tax Book 1929 | 1929 | 1929 | FY39+ |
| Tax Book 1930 | 1930 | 1930 | FY39+ |
| Tax Book 1930 | 1930 | 1930 | FY39+ |
| Tax Book 1931 | 1931 | 1931 | FY39+ |
| Tax Book 1931 | 1931 | 1931 | FY39+ |
| Tax Book 1931 | 1931 | 1931 | FY39+ |
| Tax Book 1932 | 1932 | 1932 | FY39+ |
| Tax Book 1932 | 1932 | 1932 | FY39+ |
| Tax Book 1932 | 1932 | 1932 | FY39+ |
| Tax Book 1933 | 1933 | 1933 | FY39+ |
| Tax Book 1933 | 1933 | 1933 | FY39+ |

| | | | |
|---|---|---|---|
| Tax Book 1934 | 1934 | 1934 | FY39+ |
| Tax Book 1934 | 1934 | 1934 | FY39+ |
| Tax Book 1934 | 1934 | 1934 | FY39+ |
| Tax Book 1935 | 1935 | 1935 | FY39+ |
| Tax Book 1935 | 1935 | 1935 | FY39+ |
| Tax Book 1936 | 1936 | 1936 | FY39+ |
| Tax Book 1936 | 1936 | 1936 | FY39+ |
| Tax Book 1937 | 1937 | 1937 | FY39+ |
| Tax Book 1937 | 1937 | 1937 | FY39+ |
| Tax Collector record | 1966 | 1966 | FY39+ |
| Tax Collectors Record 16 | 1923 | 1923 | FY39+ |
| Tax Collectors Record 17 | 1924 | 1924 | FY39+ |
| Tax Collectors Record 18 | 1925 | 1925 | FY39+ |
| Tax Collectors Record 19 | 1926 | 1926 | FY39+ |
| Tax Collector's Record 26 | 1933 | 1933 | FY39+ |
| Tax Collector's Record 28 | 1935 | 1935 | FY39+ |
| Tax Collector's Record 29 | 1936 | 1936 | FY39+ |
| Tax Collector's Record 30 | 1937 | 1937 | FY39+ |
| Tax Collector's Record 32 | 1939 | 1939 | FY39+ |
| Tax Collector's Record 34 | 1941 | 1941 | FY39+ |
| Tax receipts | 1931 | 1931 | FY39+ |
| Tax sale redemptions | 1930 | 1939 | FY39+ |
| Tax sales | 1929 | 1929 | FY39+ |
| Tax Sales | 1861 | 1865 | FY39+ |
| Taxes Collected | 1851 | 1860 | FY39+ |
| Taxes Collected | 1851 | 1855 | FY39+ |
| Taxes collected | 1868 | 1869 | FY39+ |
| Taxes determined | 1853 | 1854 | FY39+ |
| Teachers' payroll | 1946 | 1946 | FY39+ |
| Temporary loans | 1900 | 1900 | FY39+ |
| The Norfolk Story | 1964 | 1964 | FY39+ |
| The Norfolk Story | 1964 | 1964 | FY39+ |
| The Norfolk Story | 1966 | 1966 | FY39+ |
| The Norfolk Story | 1966 | 1966 | FY39+ |
| The Norfolk Story | 1967 | 1967 | FY39+ |
| The Norfolk Story | 1967 | 1967 | FY39+ |
| The Role of the States in Strengthening the Property Tax Vol. 1 | 1963 | 1963 | FY39+ |
| The Role of the States in Strengthening the Property Tax Vol. 1 | 1963 | 1963 | FY39+ |
| Unpaid tax demands | 1940 | 1940 | FY39+ |
| Urban Renewal in Portsmouth NH January 1964 | 1964 | 1964 | FY39+ |
| Urban Renewal in Portsmouth, NH (January 1964) - PHA | 1964 | 1964 | FY39+ |
| Urban Renewal in Portsmouth, NH (March 30, 1961) - PHA | 1961 | 1961 | FY39+ |
| Urban Renewal in Portsmouth, NH March 1961 | 1961 | 1961 | FY39+ |
| Valuation - Assessor | 1969 | 1969 | FY39+ |
| Valuation - Tax Collector | 1965 | 1965 | FY39+ |
| Valuation - Tax Collector | 1966 | 1966 | FY39+ |
| Valuation - Tax Collector | 1968 | 1968 | FY39+ |
| Valuation - Tax Collector | 1969 | 1969 | FY39+ |
| Valuation - Tax Collector A-G 1979 | 1979 | 1979 | FY39+ |
| Valuation 1970 - Assessors Office | 1970 | 1970 | FY39+ |
| Valuation 1970 - Tax Collector | 1970 | 1970 | FY39+ |
| Valuation 1972 - Tax Collector | 1972 | 1972 | FY39+ |
| Valuation 1973 - Tax Collector | 1973 | 1973 | FY39+ |
| Valuation 1974 - Tax Collector | 1974 | 1974 | FY39+ |
| Valuation 1975 - Tax Collector | 1975 | 1975 | FY39+ |

| | | | |
|---|---|---|---|
| Valuation 1977 - Tax Collector | 1977 | 1977 | FY39+ |
| Valuation 1977 - Tax Collector | 1977 | 1977 | FY39+ |
| Valuation 1978 - Assessors Office | 1978 | 1978 | FY39+ |
| Valuation 1978 - Tax Collector | 1978 | 1978 | FY39+ |
| Valuation 1979 - Assessor's Office | 1979 | 1979 | FY39+ |
| Valuation 1980 - Assessor's Office | 1980 | 1980 | FY39+ |
| Valuation 1981 - Assessors Office | 1981 | 1981 | FY39+ |
| Valuation 1982 - Assessors Office | 1982 | 1982 | FY39+ |
| Valuation 1983 - Assessors Office | 1983 | 1983 | FY39+ |
| Valuation 1984 - Assessors Office | 1984 | 1984 | FY39+ |
| Valuation 1985 - Assessors Office | 1985 | 1985 | FY39+ |
| Valuation 1986 - Assessors Office | 1986 | 1986 | FY39+ |
| Valuations - Tax Collector 1964 | 1964 | 1964 | FY39+ |
| Valutaion 1971 - Tax Collector | 1971 | 1971 | FY39+ |
| Various City Manager Documents | uknown | uknown | FY39+ |
| Various FD Photos/Docs | unknown | unknown | FY39+ |
| Various FD Photos/Docs | unknown | unknown | FY39+ |
| Various Fire Department Buttons/Sheilds | unknown | unknown | FY39+ |
| Various Fire Dept Items (not yet reviewed) | unknown | unknown | FY39+ |
| Voluntary statements of personal and real property | 1929 | 1929 | FY39+ |
| Voucher register | 1953 | 1956 | FY39+ |
| Voucher Register | 1956 | 1956 | FY39+ |
| Voucher register | 1957 | 1958 | FY39+ |
| Voucher register | 1958 | 1959 | FY39+ |
| Voucher Register | 1974 | 1975 | FY39+ |
| Voucher stubs | 1906 | 1906 | FY39+ |
| Voucher stubs | 1906 | 1906 | FY39+ |
| Vouchers and cancelled checks | 1918 | 1939 | FY39+ |
| Water Bond Account, check stubs | 1942 | 1942 | FY39+ |
| Water Bond Account, No. 2, cancelled checkbook | 1942 | 1942 | FY39+ |
| Zoning Ordinance - City of Portsmouth (1/4/1965) | 1965 | 1965 | FY39+ |
| Zoning Ordinance - City of Portsmouth (3/21/1966) | 1966 | 1966 | FY39+ |
| Zoning Ordinance City of Portsmouth Adopted January 4, 1965 | 1965 | 1965 | FY39+ |
| Zoning Ordinance of the City of Portsmouth New Hampshire Adopted March 21,1966 | 1966 | 1966 | FY39+ |
| | | | |
| | | | |
| Current Total of Remaining Documents Needing Preservation | | | |

| | Qty | Cost |
|---|---|---|
| Completed - Funded by General Fund (CIP) | 131 | $ 231,632 |
| Completed - Funded by Moose Plate Grants | 25 | $ 56,213 |
| In Process - Funded by General Fund (CIP) | 9 | $ 23,468 |
| In Process - Funded by Moose Plate Grants | 3 | $ 9,696 |
| Future Funding Needed (Quoting Completed) | 331 | $ 1,024,237 |
| Future Funding Needed (Pricing needed, estimated to $2,500 each) | 1,015 | $ 2,537,500 |
| **Project Totals** | **1,514** | **$ 3,882,744** |

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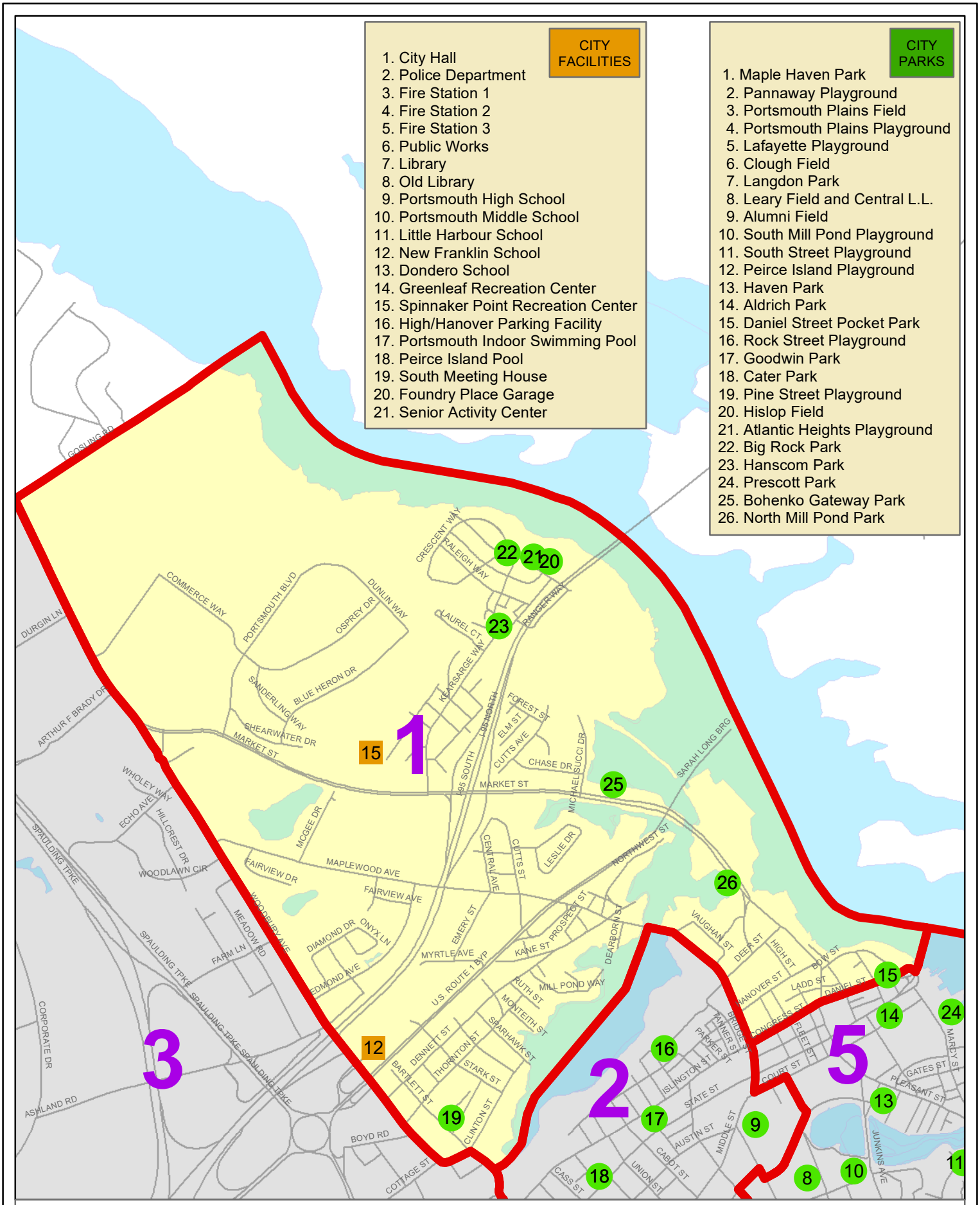
# Appendix V.
# Maps by City Ward

# Appendix V: Ward Maps

# Ward 1

✓ Parks and Facilities Map
✓ Water and Sewer Facilities Map

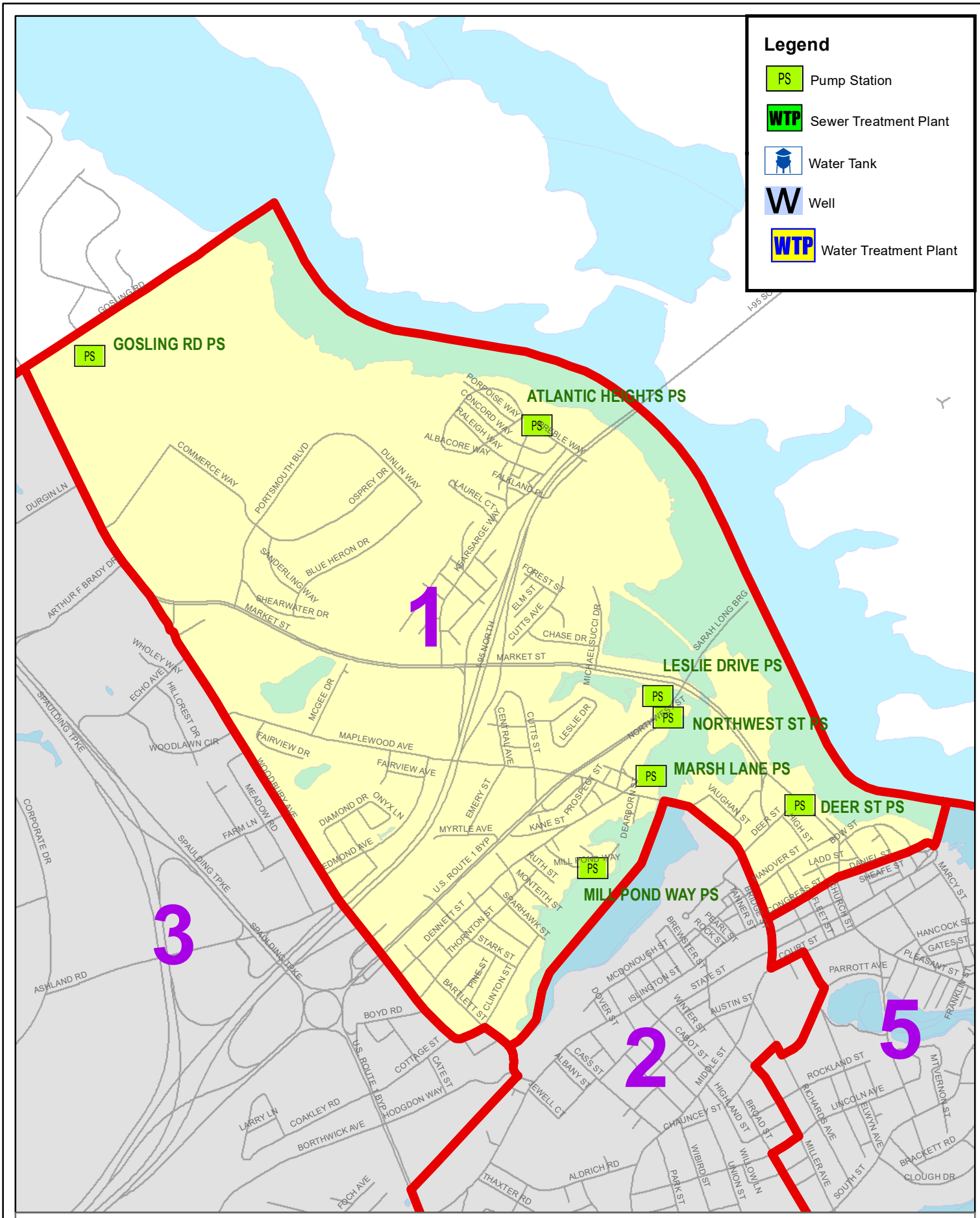



The City of Portsmouth provides these Geographic Information System maps and data as a public information service. Every reasonable effort has been made to assure the accuracy of these maps and associated data. The maps and data being provided herein are intended for informational purposes only. No guarantee is made as to the accuracy of the maps and data and they should not be relied upon for any purpose other than general information.

# Ward 1

## Facilities and Parks Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

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0 0.25 Miles

1 inch = 1,509 feet

# Ward 1

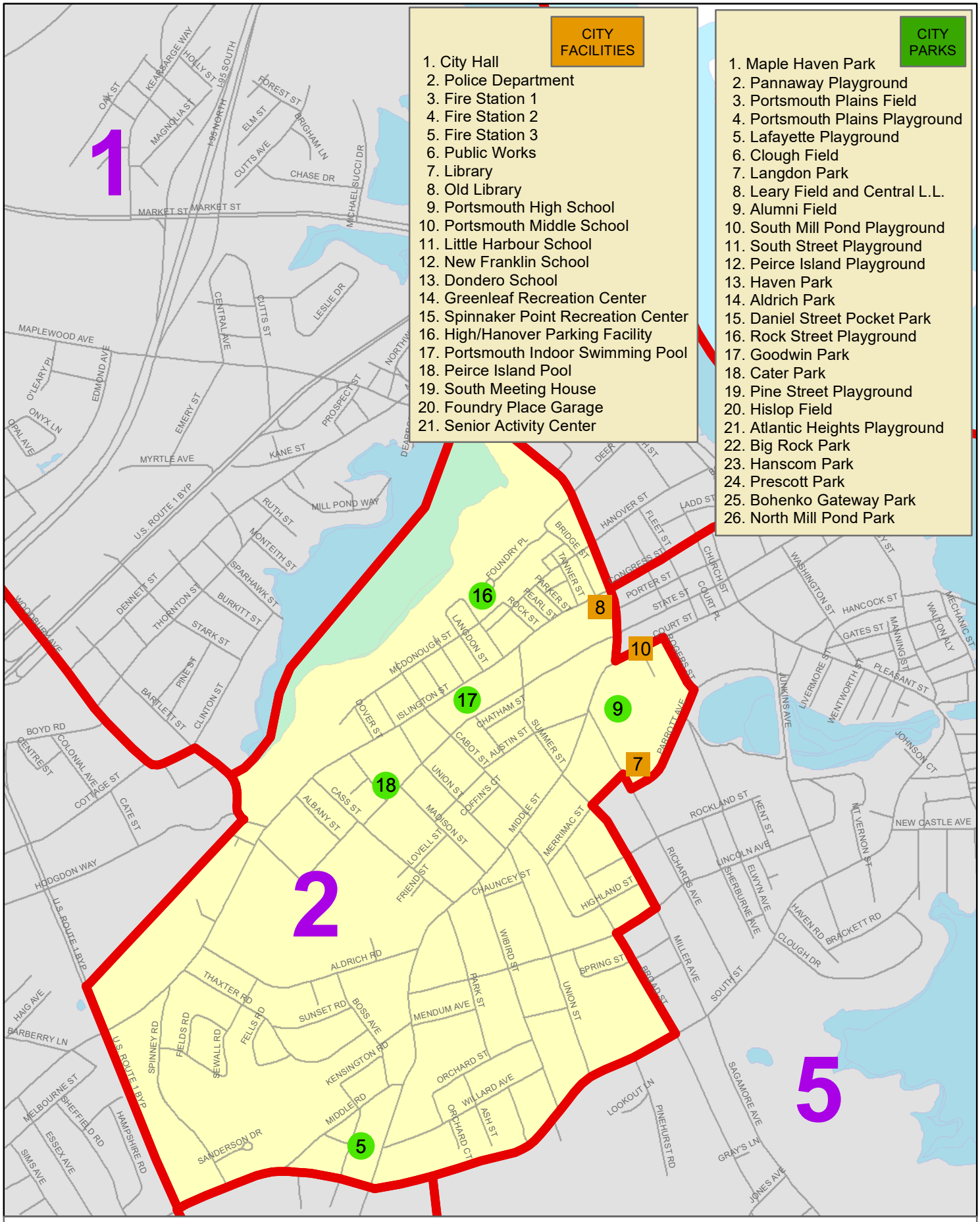
## Sewer and Water Facilities Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

# Appendix V: Ward Maps

# Ward 2

✓ Parks and Facilities Map
✓ Water and Sewer Facilities Map

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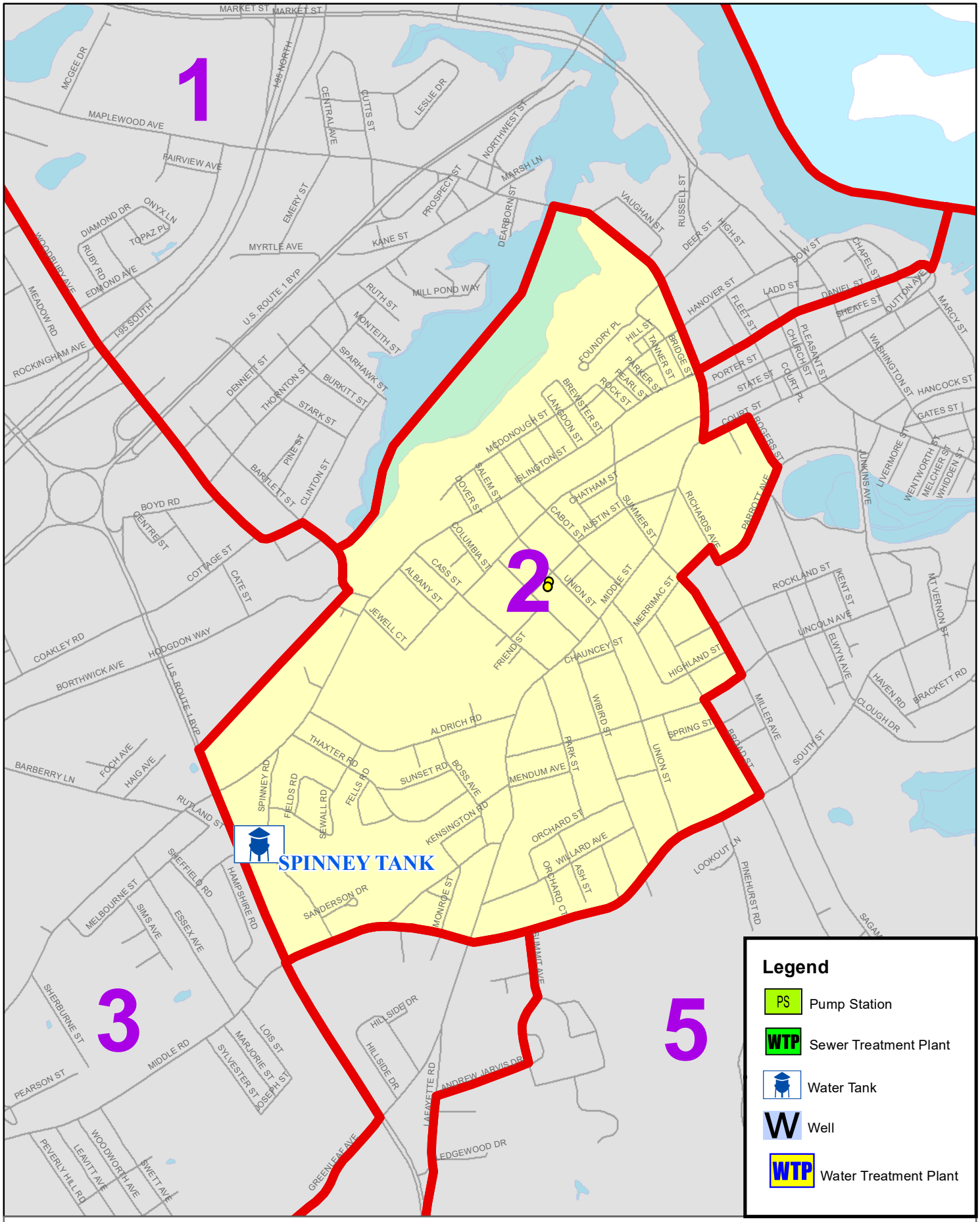
0 0.25 Miles

1 inch = 1,042 feet

# Ward 2

## Facilities and Parks Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

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0 0.25 Miles

1 inch = 1,093 feet

# Ward 2

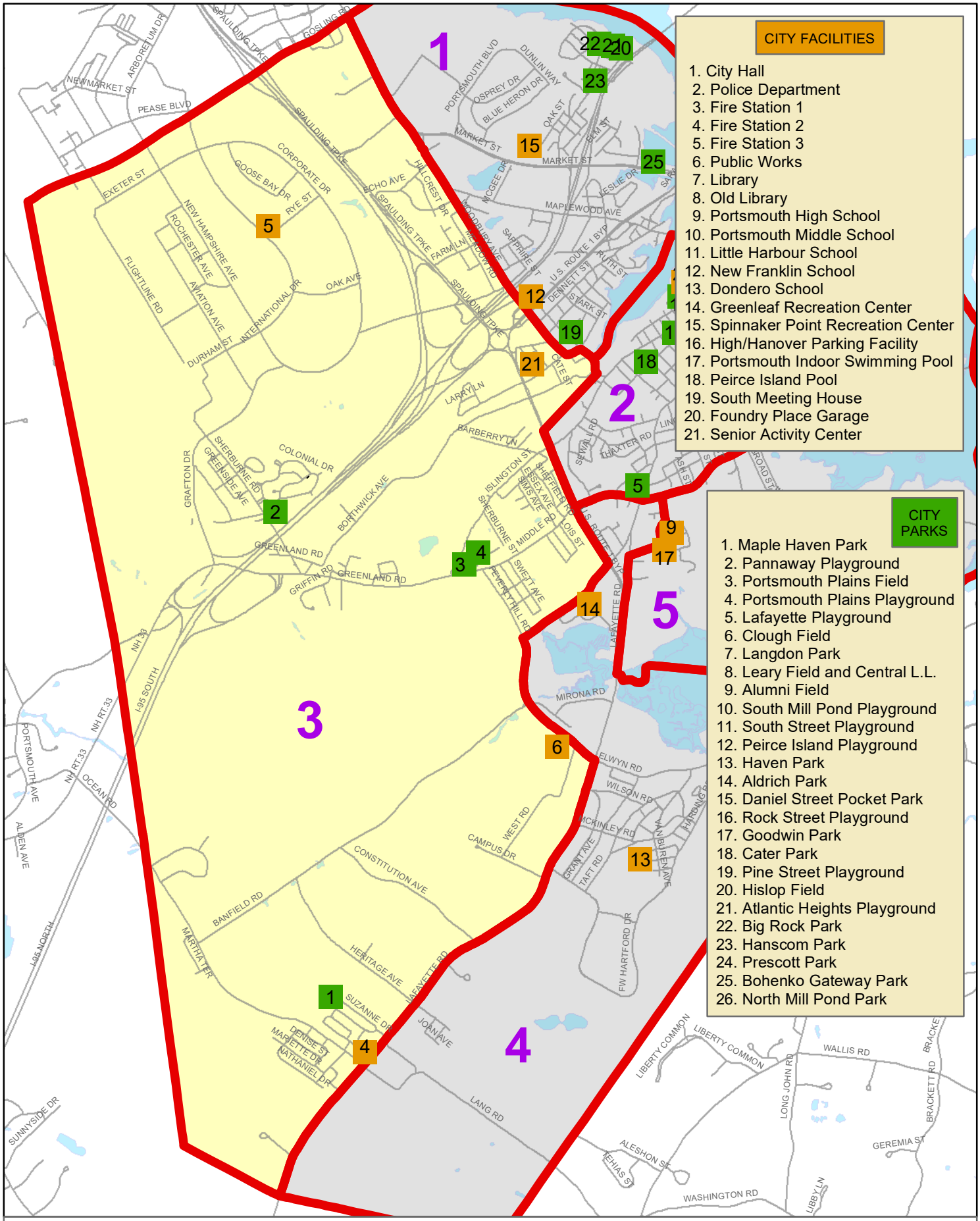
## Sewer and Water Facilities Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

# Appendix V: Ward Maps

# Ward 3

✓ Parks and Facilities Map
✓ Water and Sewer Facilities Map

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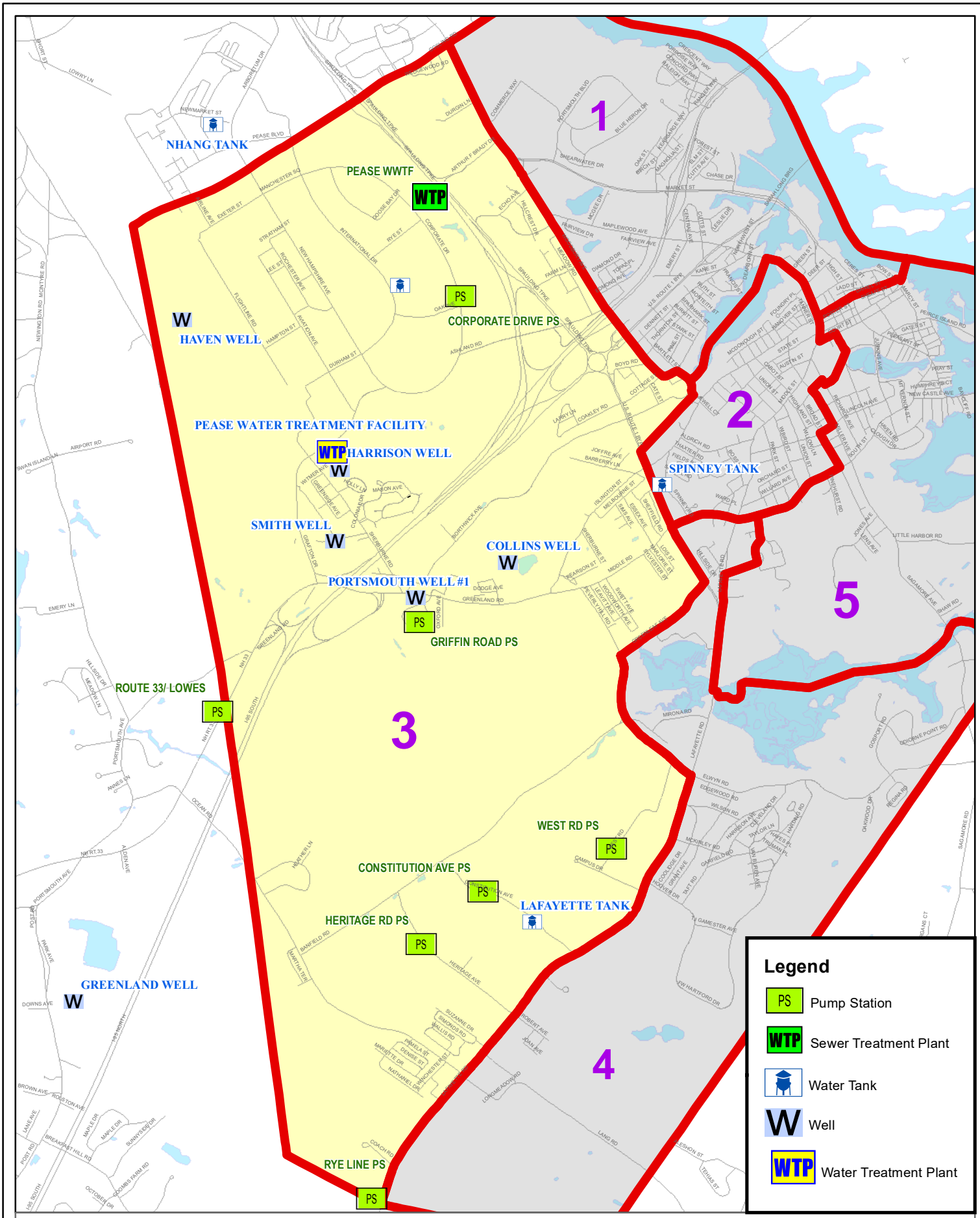
0 0.25 Miles

1 inch = 3,030 feet

# Ward 3

## Facilities and Parks Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

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0 0.25 Miles

1 inch = 3,037 feet

# Ward 3

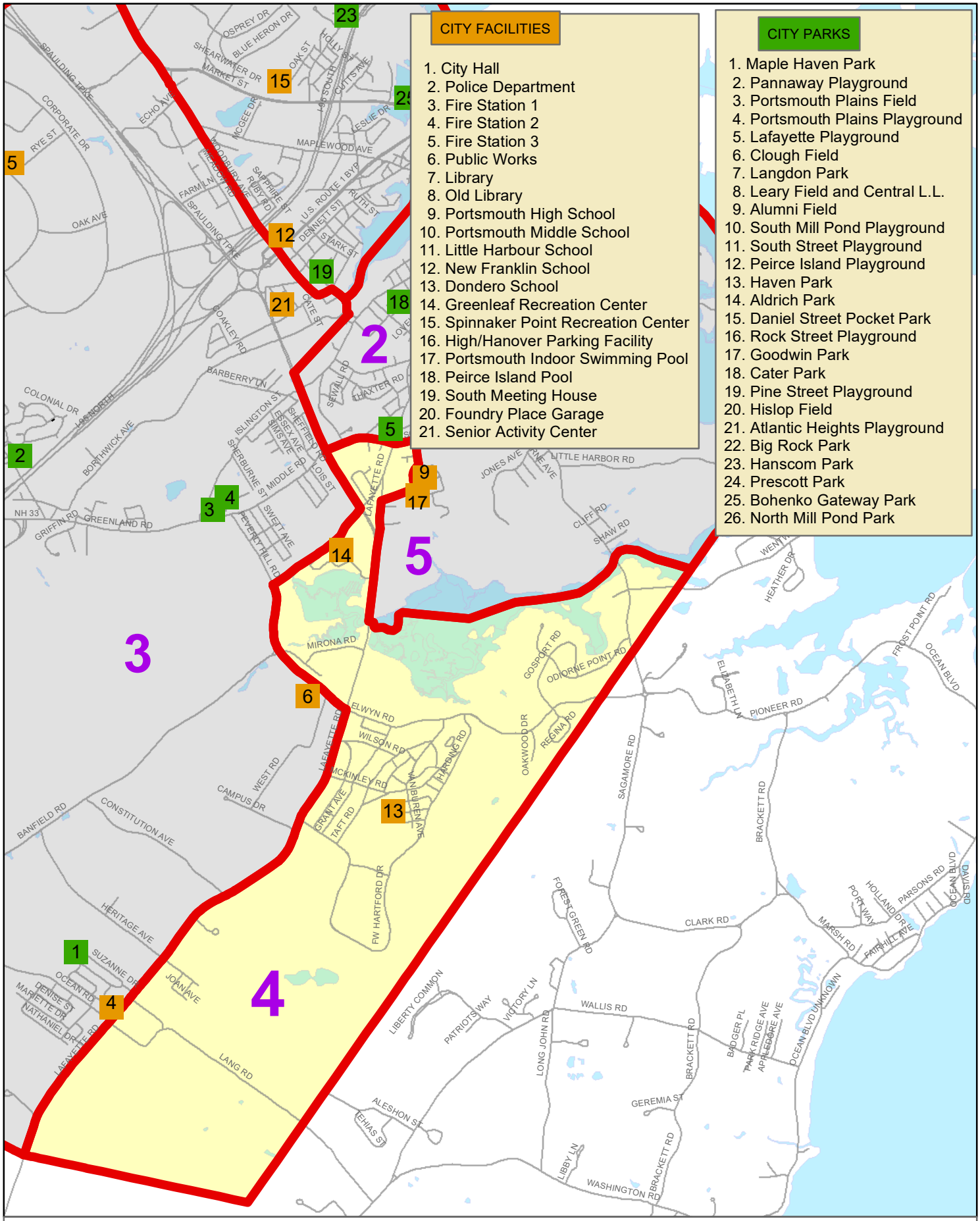
## Sewer and Water Facilities Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

# Appendix V: Ward Maps

# Ward 4

✓ Parks and Facilities Map
✓ Water and Sewer Facilities Map

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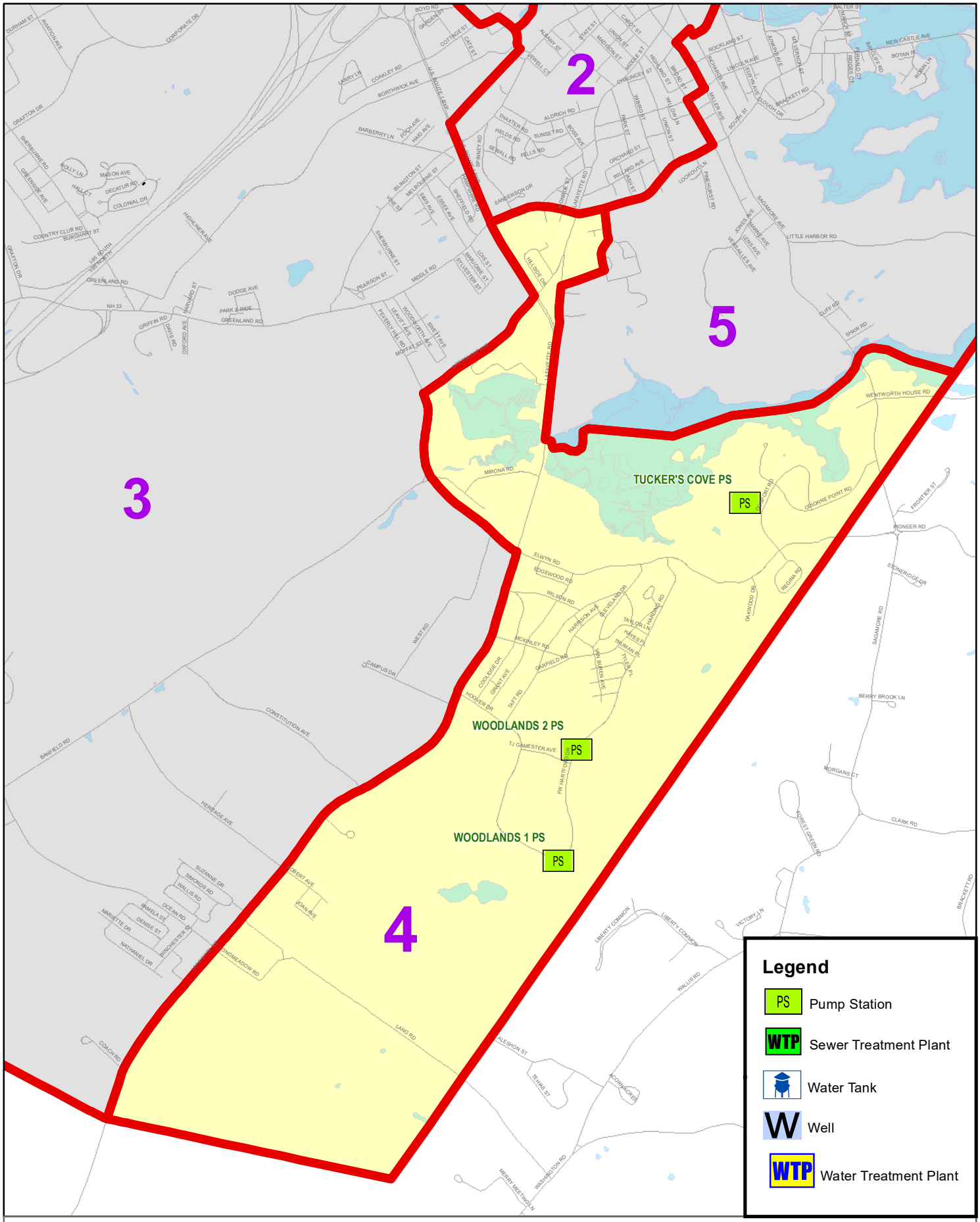
0 0.25 Miles

1 inch = 2,964 feet

# Ward 4

## Facilities and Parks Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

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0 0.25 Miles

1 inch = 2,329 feet

# Ward 4

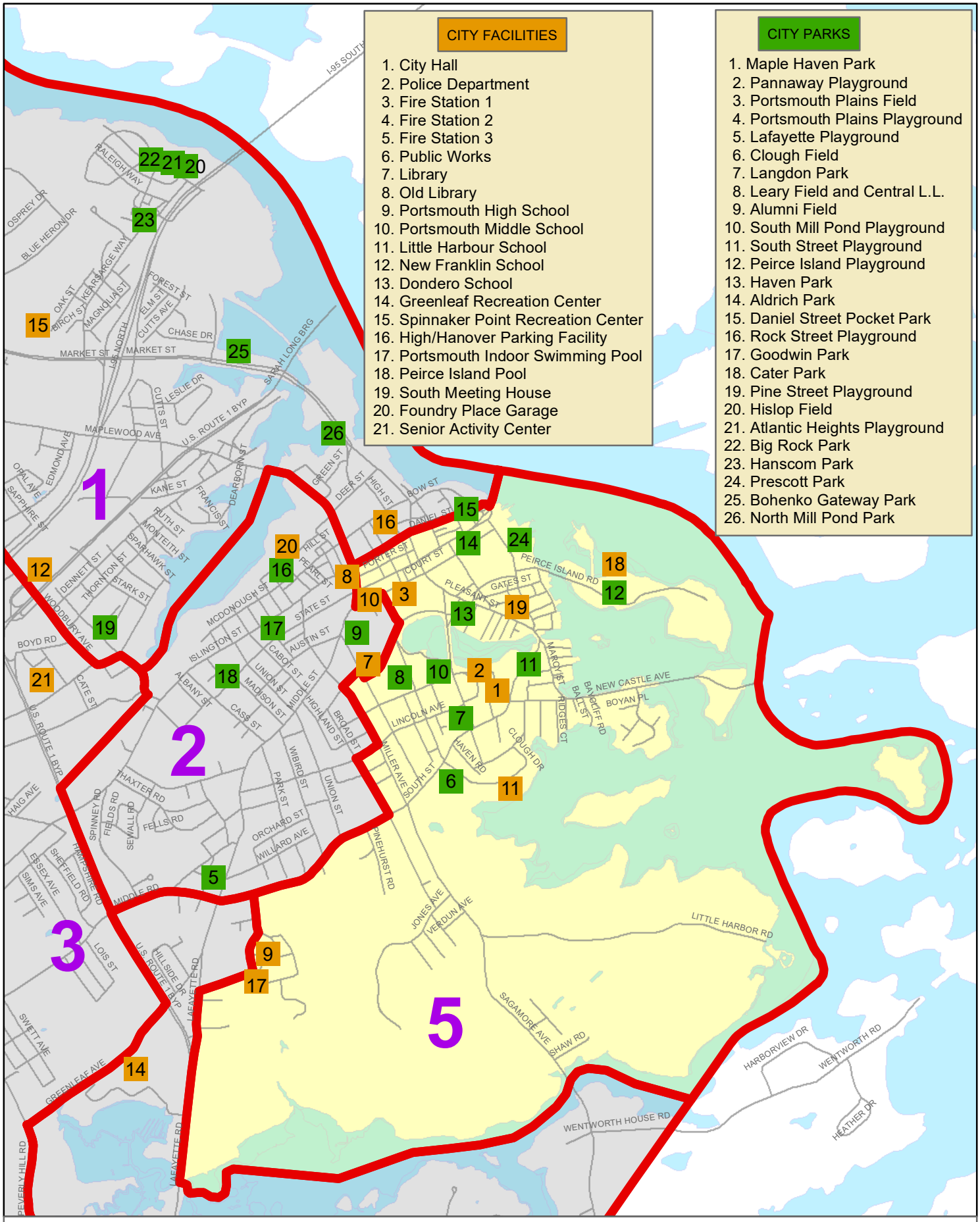
## Sewer and Water Facilities Map

Map prepared by Portsmouth Department of Public Works 12/04/2023

# Appendix V: Ward Maps

# Ward 5

✓ Parks and Facilities Map
✓ Water and Sewer Facilities Map

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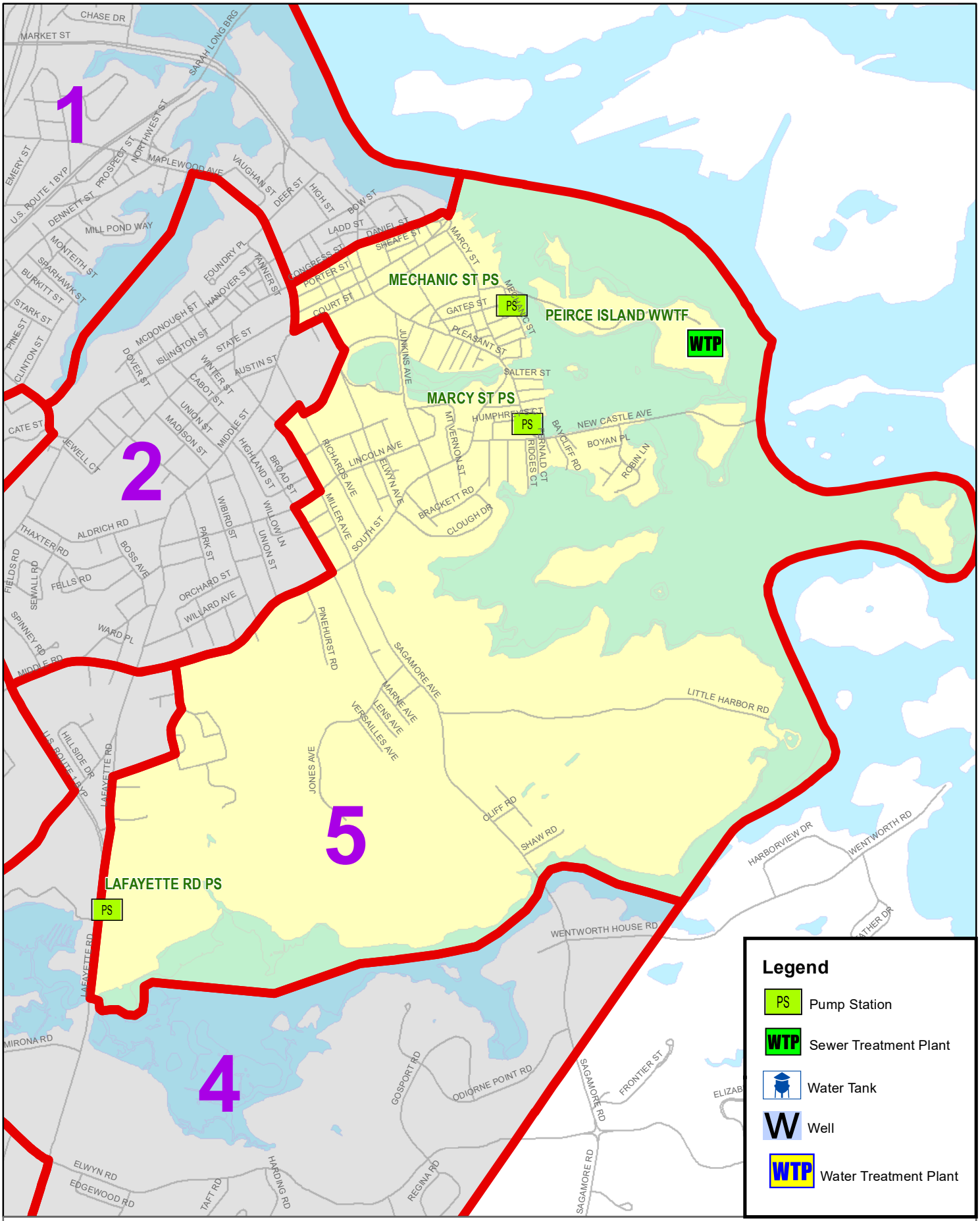
0 0.25 Miles

1 inch = 1,866 feet

# Ward 5

## Facilities and Parks Map

Map prepared by Portsmouth Department of Public Works 12/04/2023




# Ward 5

## Sewer and Water Facilities Map

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0 0.25 Miles

1 inch = 1,615 feet

Map prepared by Portsmouth Department of Public Works 12/04/2023

**PLANNING BOARD**
**PORTSMOUTH, NEW HAMPSHIRE**

**EILEEN DONDERO FOLEY COUNCIL CHAMBERS**
**CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE**

**7:00 PM** **November 16, 2023**

**MINUTES**

**MEMBERS PRESENT:** Rick Chellman, Chair; Corey Clark, Vice-Chair; Karen Conard, City Manager; Joseph Almeida, Facilities Manager; Beth Moreau, City Councilor; Members Peter Harris, Greg Mahanna, James Hewitt; Alternates Andrew Samonas and William Bowen

**ALSO PRESENT:** Peter Stith, Principal Planner

**MEMBERS ABSENT:** Jayne Begala

Chair Chellman called the meeting to order at 7:00 p.m. Alternate Mr. Samonas took a voting seat for absent member Jayne Begala.

## I. APPROVAL OF MINUTES

**A.** Approval of the September 28, 2023 Work Session minutes.
**B.** Approval of the October 19, 2023 meeting minutes.
**C.** Approval of the October 26, 2023 meeting minutes.

*The three sets of minutes were unanimously **approved** as submitted.*

## II. PUBLIC HEARINGS -- OLD BUSINESS

**A.** The request of **Lonza Biologics (Owner)**, for property located at **101 International Drive** requesting Amended Site Plan approval for Phase 2 which includes fit-up of Building #1 and the utility building, construction of a temporary surface parking lot and gravel area for construction trailers, parking and laydown area in the location of Proposed Building #2. Said property is located on Assessor Map 305 Lot 6 and lies within the Airport Business Commercial (ABC) District. (LU-23-108)

### SPEAKING TO THE APPLICATION

[Timestamp 5:55] Neil Hansen of Tighe & Bond was present on behalf of Lonza Biologics to review the petition. He reviewed the Phase 2 amendments to the original 2019 approval.

Mr. Hewitt verified that the site plan was approved in January 2019 with a few administrative approvals that followed. Mr. Hansen said the administrative approvals were changes to the phasing and buildings that were included in the first phase and now consisted of Building #1 and a utility building. He said the focus was narrowed and refined now that there was a specific user. Mr. Hewitt asked if it was the first time Mr. Hansen was back before the Board since 2019, and Mr. Hansen agreed. Relating to the traffic study, Mr. Hewitt said he noticed significant impacts to the Regional Transportation Network, NH Route 33, and the Spaulding Turnpike, and he asked if the applicant or Pease Development Authority (PDA) felt any responsibility to mitigate those traffic impacts. Mr. Hansen said it was reviewed by a third party and everyone was comfortable with the findings of the study. Mr. Hewitt asked if all the conditions from the 2019 approval letter were met. Mr. Hansen a letter was included in the submission package that outlined what had been addressed and what would be addressed. He said the only item that needed to be completed was updating Lonza's water service permit with the City. Mr. Hewitt asked how much water would be used by the new facility and if it would be similar to the other facility that used 360,000 gallons a day. Mr. Hansen said the other facility was an 800,000-sf building and the proposed building was 136,000 square feet, so it would seem unlikely. Mr. Mahanna asked the traffic study's date, and Mr. Hansen said it was July 17, 2023. Mr. Samonas said the two new parking lots were a lot of asphalt and asked if a solar canopy or component was added in. Mr. Hansen said Lonza's corporate strategy emphasized sustainability and that they were looking into rooftops and parking canopies.

Vice-Chair Clark asked how the capped soils area was currently regulated and how it would be regulated in the future. Mr. Hansen said the contaminates on site were chlorinated contamination, which was common at Pease as an old insecticide sprayed on foundation, and that it was found in isolated pockets in the site. He said chlorination didn't leach and was harmless as long as it was contained. Relating to the cap itself, he said they took all the soils on site that had chlorinated exceedances of State regulations, put it in a pile, put a layer of fabric as a delineator, and then placed three feet of clean material on top of it. Vice-Chair Clark asked if it was being regulated by the New Hampshire Department of Environmental Services (NHDES). Mr. Hansen said they had a stormwater management plan. He said he didn't think there was a formal submission process to the DES but knew there was a plan associated with where it was located and how it would be moved and stockpiled. He said a closure letter was prepared and submitted to the PDA but he didn't know of any direct involvement with the DES. Vice-Chair Clark asked if they were involved with the soil management plan. Mr. Hansen said the plan went to the DES but there wasn't a formal submission or approval process. He said they had a groundwater discharge permit, however. Vice-Chair Clark asked about the stream restoration. Mr. Hansen said 2023 was the first full growing season and that it had held up very well. He noted that there was a five-year monitoring requirement through the wetland permit, so the stream would be monitored through the end of 2026 with the final report due in 2027. He said it would be monitored annually and that they would do a mitigation plan depending on what was found.

Chair Chellman asked was the term "previously deconstructed soil" meant. Mr. Hansen said it was the topsoil stripped off the site that was stockpiled and tested as part of the soil management plan done in 2022 and said that pile was deconstructed. Chair Chellman said the traffic study seemed to address everything the peer review did except for the three intersections. Mr. Hansen said he believed that PDA spoke to that because the intersections were in their jurisdiction and

they would monitor them. Chair Chellman surmised that the PDA felt that the time wasn't right to do post-Covid traffic counts, and Mr. Hansen agreed. Michael Mates, Director of Engineering at PDA, was also present and said they had a robust traffic engineering monitoring program at Pease and that a few updates were done to the master plan. He said additional traffic counts were also done by Lonza and other tenants. Relating to the 14 Manchester Square/International Marketplace intersection, he said the peak hour volumes had not come back to 2016 pre-Covid numbers, so they were not prepared to do a study on it but would continue to monitor it. He said they received grants for the other two intersections and were working on those as well.

Vice-Chair Clark asked if there was any signage for the capped areas. Mr. Hansen said there was an as-built survey of it that the PDA had on file.

Chair Chellman opened the public hearing.

**SPEAKING TO, FOR, OR AGAINST THE PETITION**

No one spoke, and Chair Chellman closed the public hearing.

**DISCUSSION AND DECISION OF THE BOARD**

There was discussion about having the Rockingham Regional Planning Commission review the project because of its regional impact for traffic and water use. Mr. Hewitt moved to add the condition and Mr. Mahanna seconded the amendment, which ended in a 7-2 vote, with Councilor Moreau and Ms. Conard voting against. The final motion was as follows:

*Vice-Chair Clark moved to find that the Board recommend Amended Site Plan Approval to the PDA Board with the following condition:*

*1.1) A recommendation for the PDA to request a review of the project by the Rockingham Regional Planning Commission for a project of regional impact for traffic and water use.*

*Councilor Moreau seconded. The motion passed with all in favor.*

## III. PUBLIC HEARINGS – NEW BUSINESS

**A.** The request of **Springbrook Condominium Association (Owner)**, for property located at **0 Springbrook Circle** requesting a Wetland Conditional Use Permit from Section 10.1017.40 for the installation of a concrete sidewalk within the City's 100-ft wetland buffer. The 5' wide by 174' long sidewalk will add an additional 870 s.f. of impervious surface to the buffer. New buffer plantings are proposed to offset the impacts of the new impervious surface and a culvert is proposed where the sidewalk will cross over an existing drainage ditch. Said property is located on Assessor Map 272 Lot 6 and lies within the Gateway Corridor (G1), Single Residence A (SRA), and Rural (R) Districts. (LU-23-157)

**SPEAKING TO THE APPLICATION**

[Timestamp 44:50] Vice-President of the Springbrook Condominium Association Dean Savramis and President of the Springbrook Condominium Association David Wajda were present to speak to the petition. Mr. Savramis reviewed the existing conditions of the area in which they wanted to install a walkway. He noted that 32 of the 84 acres were dedicated conservation land and that there was a large pond toward the back of the property, so a new walkway was a better option than a new parking lot. He said they met with the Conservation Commission in October 2023 and were given seven required stipulations and one recommended stipulation. Mr. Savramis reviewed the seven required stipulations in full. He said the eighth recommended stipulation was to use a snow removal contractor that was Green SnoPro certified. He said they awarded the contract to a Green SnoPro certified contractor for the coming season. He said they wanted to add two 4-inch PVC culverts to create a pathway for stormwater to drain that was not on the original plan submitted to the City.

Mr. Mahanna clarified that the purpose of the walkway was to allow residents access to the two parking spaces that each unit was entitled to. Mr. Savramis agreed and said it would give the residents another option to park their vehicles and relieve congestion from the lot they were connected to. Mr. Harris asked if the existing parking lots would be expanded, and Mr. Savramis said they would not be expanded but would just connect. Vice-Chair Clark asked if there would be underground conduits to the sidewalk from the lights on the storage sheds. Mr. Savramis said there would be no underground conduits, and he explained how the power would come out of the sheds with the power supply. Vice-Chair Clark asked if there could be motion detectors. Mr. Savramis said he didn't think that was an ADA requirement and that the current lighting as on a photo cell from dusk to dawn. He said if the Board requested minimizing the amount of hours that the light was on during the evenings, a photo cell could be installed at both ends of the walkway but would require some ground-disturbing activity. Vice-Chair Clark asked what the current lighting along the existing path was. Mr. Savramis said there was a light in the foyer and two poles in the parking lots that provided sufficient lighting along the walkways.

Chair Chellman aside if the lighting would be adequate if the lighting for the walkway was only on one shed extension instead of both. Mr. Wajda said they were more concerned about the winter and thought a motion light that stayed dim and came on bright only when it picked up motion would be sufficient. He said they might have to do two of them. Chair Chellman said the motion detectors would be okay if they were limited to only when people were walking on the walkway. He asked if a planting restoration plan would be submitted. Mr. Savramis said they intended to work with the City staff and the Planning Department as well as a landscaper in the future to develop a restoration plan and then submit it within the year.

Chair Chellman opened the public hearing.

**SPEAKING TO, FOR, OR AGAINST THE PETITION**

No one spoke, and Chair Chellman closed the public hearing.

**DECISION OF THE BOARD**

*Vice-Chair Clark moved to find that the Board vote to grant the Conditional Use Permit application meets the criteria set forth in Section 10.1017.60 and to adopt the findings of fact as presented. Mr. Almeida seconded. The motion passed with all in favor.*

*Vice-Chair Clark moved to find that the Board vote to grant the Wetland Conditional Use permit with the following **conditions**:*

*2.1) In accordance with Section 10.1018.40 of the Zoning Ordinance, applicant shall install permanent wetland boundary markers during project construction. These can be purchased through the City of Portsmouth Planning and Sustainability Department. They should be installed every 50 ft along the existing vegetative buffer approximately 25' back from the edge of the pond of the northern side of the pond.*

*2.2) **A**pplicant shall install signage indicating no salt is to be used on the new sidewalk within the wetland buffer.*

*2.3) The new sidewalk shall be properly lighted with dark sky compliant and/or motion detected lights.*

*2.4) A restoration plan will be submitted for restoration of the vegetation within the buffer directly abutting the development as shown on Sheet C-2 within one year to the Conservation Commission.*

*2.5) It is recommended that all future winter landscaping contracts include Green SnowPro certification as a requirement. See NHDES webpage for more details: https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification*

*Mr. Almeida seconded. The motion passed with all in favor.*

**B.** The request of **2422 Lafayette Road Association (Owner)**, for property located at **2454 Lafayette Road** requesting Amended Site Plan Review Approval and Amended Conditional Use Permit from Section 10.1112.14 for a new motor vehicle sales office. Said property is located on Assessor Map 273 Lot 3 and lies within the Gateway Corridor (G1) District. (LU-23-160)

**SPEAKING TO THE APPLICATION**

[Timestamp 1:20:55] Attorney Austin Mikolaities was present on behalf of the applicant, along with Kelly Burke of the Wilder Company, Mike Seiger, General Manager of Tesla Motors, and Attorney John Bosen (via Zoom). Attorney Mikolaities said the applicant wanted to lease a unit for a retail space for Tesla Motors to use as a sales gallery for electric vehicles and related products. He said the space would house two vehicles inside and two in the parking lot, along with two dedicated EV chargers. He noted that two parking spots would be removed. He said the curb cut that was outlined in the original site plan would no longer take place because the tenant

envisioned the vehicles being moved every 3-4 months, and there were no other site plan improvements other than the two EV spots.

Councilor Moreau asked if there was existing power in the spot for the two EV chargers. Attorney Mikolaities said there was currently no power and that it would have to be retrofitted to those spots and would be only for Tesla vehicles.

Chair Chellman opened the public hearing.

**SPEAKING TO, FOR, OR AGAINST THE PETITION**

No one spoke, and Chair Chellman closed the public hearing

**DECISION OF THE BOARD**

*Vice-Chair Clark moved that the Board vote to find that the Amended Site Plan Application meets the requirements set forth in the Site Plan Regulations Section 2.9 Evaluation Criteria and adopt the findings of fact as presented. Councilor Moreau seconded. The motion passed with all in favor.*

*Councilor Moreau moved that the Board vote to grant Amended Site Plan Approval, seconded by Vice-Chair Clark. The motion passed with all in favor.*

*Vice-Chair Clark moved that the Board vote to find that the Conditional Use Permit application meets the criteria set forth in Section 10.1112.14 and to adopt the findings of fact as presented. Ms. Conard seconded. The motion passed with all in favor.*

*Councilor Moreau moved that the Board vote to find that the number of off-street parking spaces are adequate for the property and to **grant** the amended Parking Conditional Use Permit approval as presented. Ms. Conard seconded. The motion passed with all in favor.*

## IV. CITY COUNCIL REFERRALS

### A. EV Charging Station Zoning Amendments

The Board took no action on this item. There was some discussion. Chair Chellman said the charging stations were a great idea but didn't think it was ready for a public hearing because the Board would have to see whether it would be allowed by conditional use and if the character would fit in certain zones. A workshop was proposed for January.

## V. OTHER BUSINESS

**A.** The request of **One Market Square LLC (Owner)**, for property located at **1 Congress Street** requesting a 1-Year Extension to the Site Plan approval, originally granted on February 16, 2023.

After some discussion about whether it was a 12-month or 15-month extension and how far in advance the applicant could ask for an extension, a motion was reached.

*Councilor Moreau moved that the Board vote to grant a one-year extension to the site plan approval granted on February 16, 2023. Mr. Almeida seconded. The motion passed with all in favor.*

### B. Chairman Updates and Discussion Items

This was combined with Section C below.

### C. Planning Board Rules and Procedures

Chair Chellman said he and the Legal Department finished the rules and procedures the day before and would notice it for December as a general revision to the rules and regulations. He said it could be discussed and voted on at that time.

### D. Board discussion of Regulatory Amendments, Master Plan Scope, and Other Matters

Chair Chellman announced that Mr. Harris was moving to Maine and that it would be his last meeting. Everyone wished Mr. Harris well.

## VI. ADJOURNMENT

The meeting adjourned at 8:40 p.m.

Respectfully submitted,

Joann Breault
Secretary for the Planning Board

November 22, 2023

Portsmouth Planning Board
Attn: Rick Chellman
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

**RE: Planning Board Review - ATDG, LLC**

Dear Mr. Rick Chellman:

On behalf of the Applicant, ATDG, LLC, Apex Design Build respectfully submits an application for Planning Board Review for the construction of a new Medical Office Building at 360 Corporate Drive, Portsmouth, NH 03801. The Applicant is proposing a new state-of-the-art 52,401 GSF facility which features (3) floors of dedicated Healthcare Space for up to ten (10) Healthcare Tenants which includes an Ambulatory Surgery Center, Imaging Center, and Plastic Surgery Center. Access to this site will be administered via new entrances constructed at both Corporate Drive and International Drive, and features substantial enhancement to the surrounding landscape at the respective roadways and within the site.

This building features a modern aesthetic with neutral color palette which has been carefully designed to incorporate colors from surrounding developments within the Pease Development District. Through coordination with the Pease Development Authority, and the Portsmouth Technical Review Board, we have been able to carefully design a site which provides no impacts to surrounding wetlands and their respective buffers. This development brings enhanced public accessibility via new sidewalks along all public rights-of-way and an enlarged bus stop. Lastly, all contingencies cited in the TAC Public Hearing on 11/7/2023 have been satisfied with this application.

Should there be any questions or concerns about the aforementioned application, please feel free to contact me directly.

Sincerely,

Jeff Kilburg

Project Director

Encl: Application Materia

400 Harvey Road, Manchester, NH 03103 | T (603) 627-5500 | F (603) 627-5501
allenmajor.com

ALLEN & MAJOR ASSOCIATES, INC.

November 21, 2023

**To:** Stefanie Casella
Planner
Portsmouth Planning Department
1 Junkins Avenue
Portsmouth, NH 03801

**Copy:** Michael Mates, PE, PDA
Jeff Kilburg, Apex Design Build
Dr. Alex Slocum, MD

**A&M Project #:** 3250-01

**Re:** ASC / Medical Office
360 Corporate Drive
Portsmouth, NH
TAC Response Letter

Dear Ms. Casella

Allen & Major Associates, Inc. is in receipt of the Technical Advisory Committee (TAC) comments listed in the letter of decision. Please find A&M's responses to these comments below. The initial comments are provided along with A&M's responses in **bold**.

1. The sidewalk on International Drive be extended to the neighbor's driveway as previously requested.

   **A&M Response: Revised as requested.**

2. Tactile pads be installed at all driveways.

   **A&M Response: Revised as requested.**

3. Work with City staff to coordinate the installation of signage along the wetland buffer edge that indicates the area as a 'low' or 'no-mow' area.

   **A&M Response: Signs will be installed post construction along the wetland buffer which indicate that no mowing is allowed within the 25' wetland buffer. See Sheet L-101.**

4. Add a note to landscape plan indicating buffer and wetland area "to remain natural and undisturbed".

   **A&M Response: Revised as requested. See Sheet L-101, Note #5.**

Very Truly Yours,

**ALLEN & MAJOR ASSOCIATES, INC.**

Brian D. Jones, P.E.
Senior Project Manager

Attachments:
1. ASC / Medical Office Site Development Plans, Revision 4, dated November 10, 2023



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# ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801

**PROPERTY OWNER & APPLICANT INFO**

**APPLICANT/ LESSEE:**
DR. ALEXANDER SLOCUM - ATDG, LLC
1 MERRILL CROSSING, BOW, NH 03304
603-777-6506

**LESSOR:**
**PEASE DEVELOPMENT AUTHORITY**
55 INTERNATIONAL DR,
PORTSMOUTH, NH 03801
603-433-6088

**INFO OF PROFESSIONALS INVOLVED IN THE SITE PLAN DESIGN**

**DESIGN, ARCHITECTURE, AND CONSTRUCTION FIRM:**
JEFF KILBURG, PROJECT DIRECTOR
**APEX DESIGN BUILD**
9550 W HIGGINS RD STE 170,
ROSEMONT, IL 60018
847-288-0100

**CIVIL ENGINEER:**
BRIAN JONES, SENIOR PROJECT MANAGER, PE
**ALLEN & MAJOR ASSOCIATES, INC**
400 HARVEY ROAD
MANCHESTER, NH 03103
603-627-5500

**SURVEYOR:**
JACK KAISER
**DOUCET SURVEY LLC**
102 KENT PLACE
NEWMARKET, NH 03857
603-659-6560

**UTILITY PROVIDERS**

**WATER SERVICE:**
**CITY OF PORTSMOUTH**
680 PEVERLY HILL RD, PORTSMOUTH, NH 03801

**SEWER SERVICE:**
**CITY OF PORTSMOUTH**
680 PEVERLY HILL RD, PORTSMOUTH, NH 03801

**GAS SERVICES:**
**UNITIL**
325 WEST RD, PORTSMOUTH, NH 03801
888-301-7700

**ELECTRIC SERVICES:**
**EVERSOURCE**
800-662-7764
PO BOX 330, MANCHESTER, NH 03105-0330

## FLOOR ARE OF PROJECT

**PROPOSED GROSS FLOOR AREA**

- **OVERALL GROSS AREA: 52,401 SF**

**- FIRST FLOOR**
IMAGING SUITE AREA: 2,437 SF
TENANT SUITE 1 AREA: 2,754 SF
TENANT SUITE 2 AREA: 4,577 SF
TENANT SUITE 3 AREA: 2,661 SF
PUBLIC AREA: 4,294SF
**OVERALL FIRST FLOOR GROSS AREA: 16,723 SF**

**- SECOND FLOOR**
TENANT SUITE 4 AREA: 2,385 SF
TENANT SUITE 5 AREA: 2,660 SF
ASC AREA: 9,566 SF
PUBLIC AREA: 3,228 SF
**OVERALL SECOND FLOOR GROSS AREA: 17,839 SF**

**-THIRD FLOOR:**
TENANT SUITE 6 AREA: 4,163 SF
TENANT SUITE 7 AREA: 3,668 SF
MEDICAL CLINIC & MED SPA: 7,112 SF
PUBLIC AREA: 2,896 SF
**OVERALL THIRD FLOOR GROSS AREA: 17,839 SF**

## SCOPE OF WORK

1. ARCHITECTURAL SCOPE - 3-STORY TYPE II-B SLAB ON GRADE MEDICAL OFFICE BUILDING WITH NEW SITE WORK AND LANDSCAPING TO ACCOMMODATE NEW BUILDING LAYOUT.

## ACCESSIBILITY NOTES

1. ALL FIXTURES AND ACCESSORIES SHALL BE MOUNTED IN ACCORDANCE WITH ALL CITY / VILLAGE ADOPTED ACCESSIBILITY REGULATIONS.
2. ALL THRESHOLDS MUST COMPLY WITH CITY/VILLAGE ADOPTED ACCESSIBILITY REGULATIONS.

## APPLICABLE BUILDING CODES

APPLICABLE BUILDING CODES

2018 NFPA 1, FIRE CODE AS AMENDED BY SAF-FMO 300

2018 NFPA 101, LIFE SAFETY CODE AS AMENDED BY SAF-FMO 300

2016 NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS

2017 NFPA 25, STANDARD FOR THE INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS

2020 NFPA 70, NATIONAL ELECTRICAL CODE (NEC) WITH NH AMENDMENTS

2016 NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE

2015 NFPA 720, STANDARD FOR THE INSTALLATION OF CARBON MONOXIDE (CO) DETECTION AND WARNING EQUIPMENT

2018 INTERNATIONAL BUILDING CODE (IBC) WITH NH AMENDMENTS

2018 INTERNATIONAL RESIDENTIAL BUILDING CODE (IRC) WITH NH AMENDMENTS

2018 INTERNATIONAL ENERGY CONSERVATION CODE (IEC) WITH NH AMENDMENTS

2018 INTERNATIONAL MECHANICAL CODE (IMC) WITH NH AMENDMENTS

2018 INTERNATIONAL PLUMBING CODE (IPC) WITH NH AMENDMENTS

2009 ICCA117.1 AND FHA/UFAS AS APPLICABLE

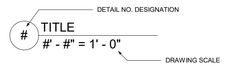
1. FIRE PROTECTION SYSTEM
CONTRACTOR SHALL PROVIDE A COMPLETE FIRE SUPPRESSION SYSTEM FROM THE 8" MAIN TO BE THROUGHOUT THE TENANT SPACE. ALL SPRINKLER LINES TO BE IN COMPLIANCE WITH NFPA LOAD FIRE CODES. ALL SPRINKLERS TO HAVE CONCEALED COVER PLATE HEADS FLUSH WITH CEILING TILE. SPRINKLER CONTRACTOR TO SUBMIT COMPLETE SHOP DRAWINGS UNDER SEPARATE SUBMITTAL TO BUILDING AND FIRE DEPT. FOR APPROVAL BY FIRE SUPPRESSION CONTRACTOR. PRIORITY-LTS, DIFFUSERS, RETURNS, EXH., THEN SPRINKLER HEADS, FOR POSITION IN CEILING.
2. FIRE ALARM SYSTEM
AN AUTOMATIC AND MANUAL FIRE ALARM SYSTEM IS NEW WITHIN THE BUILDING AND SEPARATE PLANS AND SPECIFICATIONS WILL BE PROVIDED FOR PERMITTING OUTSIDE OF THESE DRAWINGS. AN AUTOMATIC SYSTEM SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE INTERNATIONAL BUILDING CODE AND NFPA 72 IN ALL BUILDINGS OF GROUPS A, B, E, F, H, I, M, R, S AND U. (AMENDS SEC. 907.2, INTERNATIONAL BUILDING CODE). A MANUAL FIRE ALARM SYSTEM WILL BE INSTALLED AND MAINTAINED IN THE FOLLOWING OCCUPANCIES REGARDLESS OF THE OCCUPANT LOAD: A, B, E, F, H, I-1, I-2, I-3, M, R-1, R-2, AND S. (AMENDS SECTION 907, INTERNATIONAL FIRE CODE). FA SUB WILL ALSO PROVIDE ALL REQUIRED SMOKE AND CARBON MONOXIDE DETECTOR LOCATIONS.

## DRAWING INDEX

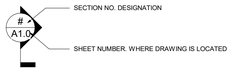
| SHEET NO. | DRAWING NAME |
|---|---|
| G0-0 | COVER PAGE |
| GA0-1.0 | EXTERIOR RENDERINGS |
| GA0-1.1 | EXTERIOR RENDERINGS |
| - | SITE DEVELOPMENT PLANS FOR ASC / MEDICAL OFFICE |
| 1 OF 1 | EXISTING CONDITIONS PLAN |
| C-100 | SITE SPECIFIC SOIL MAPPING |
| C-101 | SITE PREPARATION PLAN |
| C-102 | LAYOUT & MATERIALS PLAN |
| C-103 | GRADING & DRAINAGE PLAN |
| C-104 | UTILITIES PLAN & SEWER PROFILE |
| C-105 | TRUCK TURNING PLAN |
| C-501 | DETAILS |
| C-502 | DETAILS |
| C-503 | DETAILS |
| C-504 | DETAILS |
| C-505 | DETAILS |
| C-506 | DETAILS |
| C-508 | DETAILS |
| L-101 | LANDSCAPE PLAN |
| L-401 | LANDSCAPE NOTES |
| L-501 | LANDSCAPE DETAILS |
| L-502 | RIGHT-OF-WAY LANDSCAPE NOTES & DETAILS |
| -- | PHOTOMETRICS |
| A1-2 | EXTERIOR SCHEDULES |
| A1-2.1 | EXTERIOR SCHEDULES |
| A1-3 | EXTERIOR VIEWS KEY |
| A1-4.1 | OVERALL EXTERIOR ELEVATIONS |
| A1-4.2 | OVERALL EXTERIOR ELEVATIONS |
| A1-4.3 | EXTERIOR ELEVATIONS |
| A1-4.4 | EXTERIOR ELEVATIONS |
| A1-4.5 | EXTERIOR ELEVATIONS |
| A1-4.6 | EXTERIOR ELEVATIONS |
| A1-4.7 | EXTERIOR ELEVATIONS |
| A1-4.8 | EXTERIOR ELEVATIONS |
| A1-4.9 | EXTERIOR ELEVATIONS |
| A1-4.10 | FENCE ELEVATIONS |
| A1-5 | ROOF PLAN |
| A2-3.1 | FLOOR PLAN - 1ST FLOOR OVERALL |
| A2-3.2 | FLOOR PLAN - 2ND FLOOR OVERALL |
| A2-3.3 | FLOOR PLAN - 3RD FLOOR OVERALL |

## DRAFTING SYMBOLS

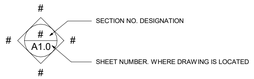
DETAIL TITLE DESIGNATION



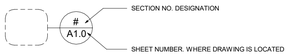

SECTION CUT DETAIL DESIGNATION




ELEVATION DETAIL DESIGNATION

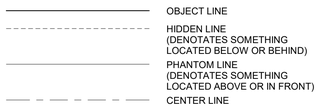



CALLOUT DETAIL DESIGNATION



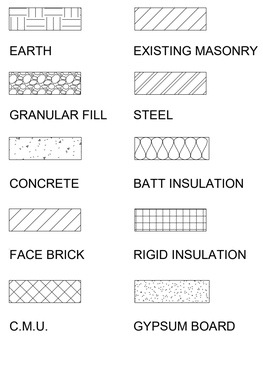

SPOT ELEVATION MARK

LINE TYPES

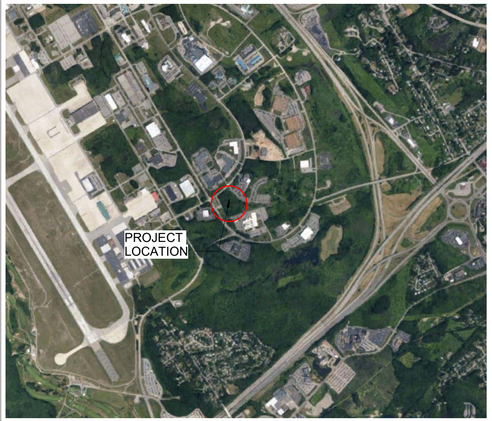



NORTH ARROW

MATERIAL DESIGNATIONS




## LOCATION MAP




## PROJECT RENDERING

apex DESIGN › BUILD
9550 W.Higgins Rd. 170
Rosemont, IL 60018


ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801


**ARCHITECT OF RECORD**
SUSAN L. SKIBELL, ARCHITECT 1360 N. SANDBURG TERRACE #1902 CHICAGO, IL. 60610
312.350.7161


SEAL: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| No. | Description | Date |
|---|---|---|
| 1 | TAC WORKSHOP REVIEW | 07/25/2023 |
| 2 | TAC PUBLIC HEARING | 08/21/2023 |

COVER PAGE

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |
| G0-0 | |
| Scale | 12" = 1'-0" |

10/18/2023 12:24:43 PM


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9550 W.Higgins Rd. 170
Rosemont, IL 60018

ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801

**ARCHITECT OF RECORD**
SUSAN L. SKIBELL, ARCHITECT 1360 N. SANDBURG TERRACE #1902 CHICAGO, IL. 60610
312.350.7161


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| No. | Description | Date |
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| 1 | TAC WORKSHOP REVIEW | 07/25/2023 |
| 2 | TAC PUBLIC HEARING | 08/21/2023 |
| 4 | TAC PUBLIC HEARING #2 | 10/20/2023 |

# EXTERIOR RENDERINGS

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |

GA0-1.0

Scale

10/18/2023 12:08:56 PM


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Rosemont, IL 60018

ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801

**ARCHITECT OF RECORD**
SUSAN L. SKIBELL, ARCHITECT 1360 N. SANDBURG TERRACE #1902 CHICAGO, IL. 60610
312.350.7161

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| No. | Description | Date |
|---|---|---|
| 1 | TAC WORKSHOP REVIEW | 07/25/2023 |
| 2 | TAC PUBLIC HEARING | 08/21/2023 |

EXTERIOR RENDERINGS

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | Author |
| Checked by | Checker |

GA0-1.1

Scale

10/18/2023 12:08:57 PM

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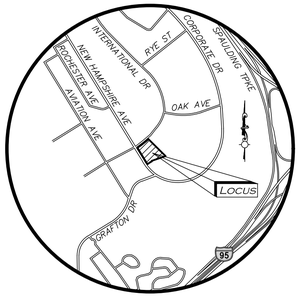
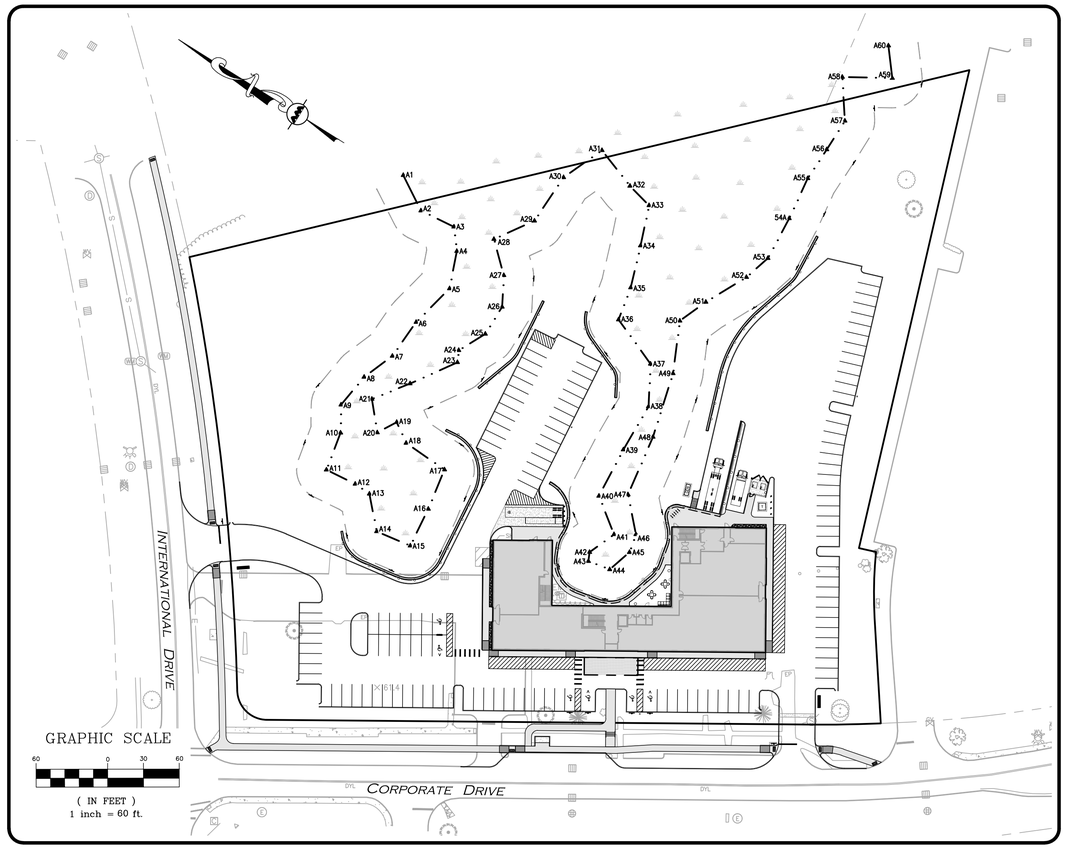
# SITE DEVELOPMENT PLANS FOR
# ASC / MEDICAL OFFICE
## 360 CORPORATE DRIVE
## TAX MAP 315, LOT 5
## PORTSMOUTH, NH 03801




LOCUS MAP
SCALE: 1" = 2,000'




| LIST OF DRAWINGS | | | | | | |
|---|---|---|---|---|---|---|
| DRAWING TITLE | SHEET NO. | ISSUED | REV 1 | REV 2 | REV 3 | REV 4 |
| EXISTING CONDITIONS PLAN | 1 OF 1 | 08-14-23 | 08-17-23 | - | - | - |
| SITE SPECIFIC SOIL MAPPING | C-100 | 08-14-23 | 08-17-23 | - | - | - |
| SITE PREPARATION PLAN | C-101 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| LAYOUT & MATERIALS PLAN | C-102 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| GRADING & DRAINAGE PLAN | C-103 | 08-14-23 | 08-17-23 | 08-28-23 | 10-20-23 | 11-10-23 |
| UTILITIES PLAN & SEWER PROFILE | C-104 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| TRUCK TURNING PLAN | C-105 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| FIRE TRUCK TURNING PLAN | C-106 | 10-20-23 | - | - | - | - |
| AMBULANCE TURNING PLAN | C-107 | 10-20-23 | - | - | - | - |
| DETAILS | C-501 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| DETAILS | C-502 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| DETAILS | C-503 | 08-14-23 | 08-17-23 | 08-28-23 | 10-20-23 | - |
| DETAILS | C-504 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| DETAILS | C-505 | 08-14-23 | 08-17-23 | 10-20-23 | 11-10-23 | - |
| DETAILS | C-506 | 08-14-23 | 08-17-23 | 08-28-23 | 10-20-23 | 11-10-23 |
| DETAILS | C-507 | 08-14-23 | 08-17-23 | - | - | - |
| DETAILS | C-508 | 08-14-23 | 08-17-23 | - | - | - |
| LANDSCAPE PLAN | L-101 | 08-14-23 | 08-17-23 | 10-20-23 | 11-10-23 | - |
| LANDSCAPE NOTES | L-401 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| LANDSCAPE DETAILS | L-501 | 08-14-23 | 08-17-23 | 10-20-23 | - | - |
| RIGHT-OF-WAY LANDSCAPE NOTES & DETAILS | L-502 | 10-20-23 | - | - | - | - |


APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

LESSOR:
PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801

ARCHITECT:
APEX DESIGN BUILD
9550 W. HIGGINS ROAD. SUITE 170
ROSEMONT, IL 60018

CIVIL ENGINEER / LANDSCAPE ARCHITECT
ALLEN & MAJOR ASSOCIATES, INC.
400 HARVEY ROAD
MANCHESTER, NH 03103
(603) 627-5500

SURVEYOR:
DOUCET SURVEY LLC
102 KENT PLACE
NEWMARKET, NH 03857


UTILITY PROVIDERS:
NATURAL GAS: UNITIL CORP.
ELECTRIC: EVERSOURCE
TELEPHONE: CONSOLIDATED COMMUNICATIONS

**WILDLIFE PROTECTION NOTES:**

1. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV. EMAIL SUBJECT LINE: NHB23-1980, ASC/MEDICAL OFFICE, WILDLIFE SPECIES OBSERVATION.
2. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
3. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04
4. THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER
11-20-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

FOR MORE INFORMATION ABOUT THIS PLAN SET, CONTACT:
BRIAN D. JONES AT ALLEN & MAJOR ASSC., INC. 603-627-5500

. REPARED BY:


ALLEN & MAJOR ASSOCIATES, INC.
civil & structural engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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ISSUED FOR SITE PLAN REVIEW: AUGUST 14, 2023
REVISED PER PDA COMMENTS: AUGUST 17, 2023
ISSUED FOR ALTERATION OF TERRAIN PERMIT: AUGUST 28, 2023
REVISED PER TAC COMMENTS: OCTOBER 20, 2023
REVISED PER AOT & TAC COMMENTS: NOVEMBER 10, 2023

| CURVE TABLE | | | | | |
|---|---|---|---|---|---|
| CURVE | ARC LENGTH | RADIUS | DELTA ANGLE | CHORD BEARING | CHORD LENGTH |
| C1 | 366.29' | 2155.00' | 9°44'19" | N51°42'46"E | 365.85' |
| C2 | 38.44' | 25.00' | 88°05'22" | S12°32'15"W | 34.76' |
| C3 | 55.78' | 1030.00' | 3°06'09" | N33°03'31"W | 55.77' |
| C4 | 55.43' | 350.00' | 9°04'25" | S59°13'06"W | 55.37' |

REFERENCE PLAN:

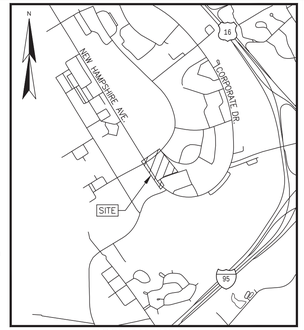
1. "LOT LINE REVISION PLAN FOR PEASE DEVELOPMENT AUTHORITY AND NEW HAMPSHIRE DEPT. OF REGIONAL COMMUNITY–TECHNICAL COLLEGES (TAC MAP 315, LOTS 4 & 5) CORPORATE & INTERNATIONAL DRIVE PORTSMOUTH, NEW HAMPSHIRE" DATED APRIL 9, 2009 BY DOUCET SURVEY INC. R.C.R.D. PLAN D–36858.

NOTES:

1. REFERENCE: TAX MAP 315, LOT 5
2. TOTAL PARCEL AREA: 266,033 SQ. FT. OR 6.11 AC.
3. OWNER OF RECORD: PEASE DEVELOPMENT AUTHORITY R.C.R.D. BOOK 4227, PAGE 001
4. ZONE: AIRPORT BUSINESS AND COMMERCIAL ZONE
   DIMENSIONAL REQUIREMENTS:

| | |
|---|---|
| MIN. LOT AREA | 5 AC. |
| MIN. FRONTAGE | 200 ft. |
| MIN. FRONT SETBACK | 70 ft. |
| MIN. SIDE SETBACK | 30 ft. |
| MIN. REAR SETBACK | 50 ft. |
| WETLAND BUFFER | 25 ft. |

   ZONING INFORMATION LISTED HEREON IS BASED ON THE PDA LAND USE CONTROLS REVISED TO JUNE 16, 2022 AS AVAILABLE ON THE PEASE DEVELOPMENT WEBSITE ON 4/5/2023. ADDITIONAL REGULATIONS APPLY, AND REFERENCE IS HEREBY MADE TO THE EFFECTIVE ZONING ORDINANCE. THE LAND OWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, STATE AND FEDERAL REGULATIONS.
5. FIELD SURVEY PERFORMED BY J.H.H. & H.J.R. DURING MARCH 2023 USING A TOTAL STATION AND A SURVEY GRADE GPS.
6. HORIZONTAL DATUM BASED ON NAD83(2011) NEW HAMPSHIRE STATE PLANE COORDINATE ZONE (2800) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
7. VERTICAL DATUM NAVD88 BASED ON NHDOT DISK 379–0740 HAVING A PUBLISHED ELEVATION OF 38.17'.
8. JURISDICTIONAL WETLANDS DELINEATED BY DAMON BURT, C.W.S. OF FRAGGLE ROCK ENVIRONMENTAL ON MARCH 23, 2023.
9. FLOOD HAZARD ZONE: X, PER FIRM MAP #33015C0260F, DATED 1/29/2021.
10. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 1' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION.
11. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVED PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON–SITE.
12. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.
13. ALL UNDERGROUND UTILITIES (ELECTRIC, GAS, TEL. WATER, SEWER DRAIN SERVICES) ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG–SAFE AT 1–888–DIG–SAFE.



LOCATION MAP (n.t.s.)

LEGEND

| | |
|---|---|
| EXISTING LOT LINE | WATER GATE VALVE |
| APPROXIMATE ABUTTERS LINE | WATER METER |
| 100 MAJOR CONTOUR LINE | GAS GATE VALVE |
| 99 MINOR CONTOUR LINE | ELECTRIC MANHOLE |
| STONE WALL | PAD MOUNTED TRANSFORMER |
| OHW OVERHEAD WIRE | EM ELECTRIC METER |
| D DRAIN LINE | T TELEPHONE MANHOLE |
| S SEWER LINE | TB TELEPHONE BOX |
| W WATER LINE (PER SITE MARKINGS) | CB CABLE BOX |
| W–QLD WATER LINE (PER CITY GIS) | SIGN |
| G GAS LINE | SIGN (TWO POSTS) |
| E ELECTRIC LINE | ROCK/BOULDER |
| C CABLE/INTERNET LINE | CONIFEROUS TREE |
| U UNIDENTIFIED UNDERGROUND UTILITY | DECIDUOUS TREE |
| TREE LINE | |
| SHRUB LINE | BUSH |
| EDGE OF DELINEATED WETLAND | JERSEY BARRIER |
| WETLAND AREA | CONC. CONCRETE |
| CONCRETE | COND. CONDUIT |
| RIP RAP | D.H. DRILL HOLE |
| PILE | DIP. DUCTILE IRON PIPE |
| × 100.0 SPOT GRADE | DYL. DOUBLE YELLOW LINE |
| BOUND FOUND (BND. FND.) | DWD DETECTABLE WARNING DEVICE |
| PIPE/ROD FOUND | EP EDGE OF PAVEMENT |
| 5/8" REBAR W/LLS 937 CAP TO BE SET | GRAN. GRANITE |
| UTILITY POLE | HDPE HIGH DENSITY POLYETHYLENE PIPE |
| UTILITY POLE & GUY WIRE | OFL OUTFALL |
| UTILITY POLE W/LIGHT | PVC POLYVINYL CHLORIDE PIPE |
| LIGHT POLE W/ARM | RCP REINFORCED CONCRETE PIPE |
| LIGHT POST | SWL SINGLE WHITE LINE |
| GROUND LIGHT | SYL SINGLE YELLOW LINE |
| DRAIN MANHOLE | TYP. TYPICAL |
| CATCH BASIN | UNK UNKNOWN |
| SEWER MANHOLE | VCC VERTICAL CONCRETE CURB |
| FIRE HYDRANT | VCP VITREOUS CLAY PIPE |
| | VGC VERTICAL GRANITE CURB |
| | (X) INVERT I.D. CONNECTION UNKNOWN |

40 0 40 80
SCALE: 1 INCH = 40 FT.

# EXISTING CONDITIONS PLAN
FOR
ATDG, LLC
OWNED BY: PEASE DEVELOPMENT AUTHORITY
TAX MAP 315, LOT 5
360 CORPORATE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

| NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| 2 | 08/18/23 | ADD GIS WATER LINE | J.R.P. |
| 1 | 07/27/23 | ADD LOCATED UTILITY MARKINGS | J.R.P. |

| | | | |
|---|---|---|---|
| DRAWN BY: | J.R.P. | DATE: | APRIL 5, 2023 |
| CHECKED BY: | J.F.K. | DRAWING NO. | 8011A |
| JOB NO. | 8011 | SHEET | 1 OF 1 |

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

John Kaiser L.L.S. #937
8/18/23 DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

STATE OF NEW HAMPSHIRE DAMON E. BURT No. 163 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE No. 937 JOHN F. KAISER LICENSED LAND SURVEYOR John Kaiser SIGNATURE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Offices in Bedford & Keene, NH and Kennebunk, ME
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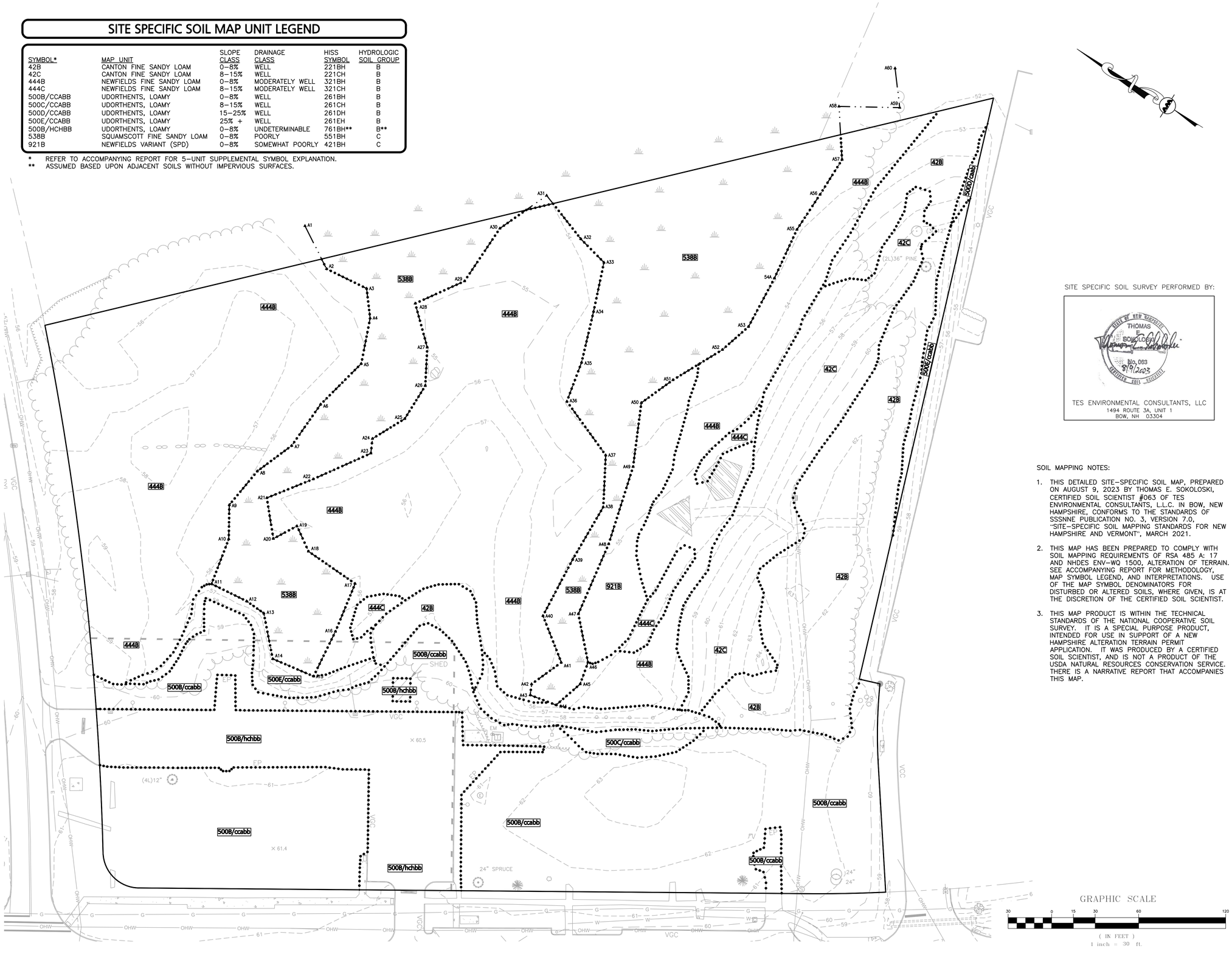
PLT NAME: N:\PROJECTS\2021\8011\DWG\8011A.dwg LAYOUT NAME: 24X36 EE EXAM (1) XCRTSTD: Friday, August 18, 2023 - 12:46pm

# SITE SPECIFIC SOIL MAP UNIT LEGEND

| SYMBOL* | MAP UNIT | SLOPE CLASS | DRAINAGE CLASS | HISS SYMBOL | HYDROLOGIC SOIL GROUP |
|---|---|---|---|---|---|
| 42B | CANTON FINE SANDY LOAM | 0–8% | WELL | 221BH | B |
| 42C | CANTON FINE SANDY LOAM | 8–15% | WELL | 221CH | B |
| 444B | NEWFIELDS FINE SANDY LOAM | 0–8% | MODERATELY WELL | 321BH | B |
| 444C | NEWFIELDS FINE SANDY LOAM | 8–15% | MODERATELY WELL | 321CH | B |
| 500B/CCABB | UDORTHENTS, LOAMY | 0–8% | WELL | 261BH | B |
| 500C/CCABB | UDORTHENTS, LOAMY | 8–15% | WELL | 261CH | B |
| 500D/CCABB | UDORTHENTS, LOAMY | 15–25% | WELL | 261DH | B |
| 500E/CCABB | UDORTHENTS, LOAMY | 25% + | WELL | 261EH | B |
| 500B/HCHBB | UDORTHENTS, LOAMY | 0–8% | UNDETERMINABLE | 761BH** | B** |
| 538B | SQUAMSCOTT FINE SANDY LOAM | 0–8% | POORLY | 551BH | C |
| 921B | NEWFIELDS VARIANT (SPD) | 0–8% | SOMEWHAT POORLY | 421BH | C |

* REFER TO ACCOMPANYING REPORT FOR 5–UNIT SUPPLEMENTAL SYMBOL EXPLANATION.
** ASSUMED BASED UPON ADJACENT SOILS WITHOUT IMPERVIOUS SURFACES.




GRAPHIC SCALE
30 0 15 30 60 120
( IN FEET )
1 inch = 30 ft.

SITE SPECIFIC SOIL SURVEY PERFORMED BY:

STATE OF NEW HAMPSHIRE – THOMAS E. SOKOLOSKI – No. 063 – 8/1/2023 – CERTIFIED SOIL SCIENTIST

TES ENVIRONMENTAL CONSULTANTS, LLC
1494 ROUTE 3A, UNIT 1
BOW, NH 03304

SOIL MAPPING NOTES:

1. THIS DETAILED SITE–SPECIFIC SOIL MAP, PREPARED ON AUGUST 9, 2023 BY THOMAS E. SOKOLOSKI, CERTIFIED SOIL SCIENTIST #063 OF TES ENVIRONMENTAL CONSULTANTS, L.L.C. IN BOW, NEW HAMPSHIRE, CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, VERSION 7.0, "SITE–SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT", MARCH 2021.
2. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A: 17 AND NHDES ENV–WQ 1500, ALTERATION OF TERRAIN. SEE ACCOMPANYING REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS. USE OF THE MAP SYMBOL DENOMINATORS FOR DISTURBED OR ALTERED SOILS, WHERE GIVEN, IS AT THE DISCRETION OF THE CERTIFIED SOIL SCIENTIST.
3. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SUPPORT OF A NEW HAMPSHIRE ALTERATION TERRAIN PERMIT APPLICATION. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP.

STATE OF NEW HAMPSHIRE – BRIAN D. JONES No. 13809 – LICENSED PROFESSIONAL ENGINEER – 08-17-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
# ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:


ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
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DRAWING TITLE:
SITE SPECIFIC SOIL MAPPING PLAN

SHEET No.
C-100


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R:\PROJECTS\3250-01\CIVIL\DRAWINGS\CURRENT\C-3250-01_SOIL MAPPING.DWG

## ALTERATION OF TERRAIN NOTES:

1. ARTIFICIAL DETENTION IN WETLANDS IS NOT ALLOWED.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
3. PERIMETER CONTROLS MUST BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
4. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
5. PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE.
6. RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPS ARE STABILIZED.
7. BASINS, DITCHES AND SWALES MUST BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. ROADWAYS AND PARKING AREAS MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
9. CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
10. EROSION CONTROL PRACTICES MUST BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY RAIN EVENT OF 0.25 INCH OR MORE.
11. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION AND SHALL NOT EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. IF THE PROJECT RESULTS IN A DISTURBANCE OF GREATER THAN 5 ACRES AT ANY ONE TIME, THE FOLLOWING IS REQUIRED BEFOREHAND TO COMPLY WITH ENV WQ 1505.02(B):
   - A. CONSTRUCTION SEQUENCE PLAN DEVELOPED BY A QUALIFIED ENGINEER OR CERTIFIED PROFESSIONAL EROSION AND SEDIMENT CONTROL SPECIALIST (CPESC SPECIALIST)
   - B. EMPLOY AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION TO PERFORM DUTIES IN ACCORDANCE WITH ENV WQ 1505.02(C) OR THE NOTES HEREON, WHICHEVER IS MORE STRINGENT.
12. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    - A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
    - B. A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED.
    - C. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED. OR,
    - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
13. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
14. IN AREAS THAT WILL NOT BE PAVED, "STABLE" MEANS THAT:
    - A. A MINIMUM OF 85% VEGETATIVE COVER HAS BEEN ESTABLISHED;
    - B. A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
    - C. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.03.

## COLD WEATHER SITE STABILIZATION NOTES:

A. TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE ADDITIONAL STABILIZATION TECHNIQUES SPECIFIED IN THIS SECTION SHALL BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15 THROUGH MAY 1.

B. SUBJECT TO (C), BELOW, THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE:

1. LIMITED TO ONE ACRE; AND
2. PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT.

C. THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF A WINTER CONSTRUCTION PLAN IS DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST AND SUBMITTED TO THE DEPARTMENT FOR APPROVAL AS A REQUEST TO WAIVE THE ONE-ACRE LIMIT.

D. SUBJECT TO (F) AND (G), BELOW, ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR THAT ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING OR TACKIFIER OR WITH AT LEAST 2 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(B).

E. SUBJECT TO (F) AND (G), BELOW, ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF 15% OR GREATER THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR THAT ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH AT LEAST 4 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(B).

F. ANCHORED HAY MULCH OR EROSION CONTROL MIX THAT MEETS THE CRITERIA OF ENV-WQ 1506.05(B) SHALL NOT BE INSTALLED OVER SNOW GREATER THAN ONE INCH IN DEPTH.

G. EROSION CONTROL BLANKETS SHALL NOT BE INSTALLED OVER SNOW GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.

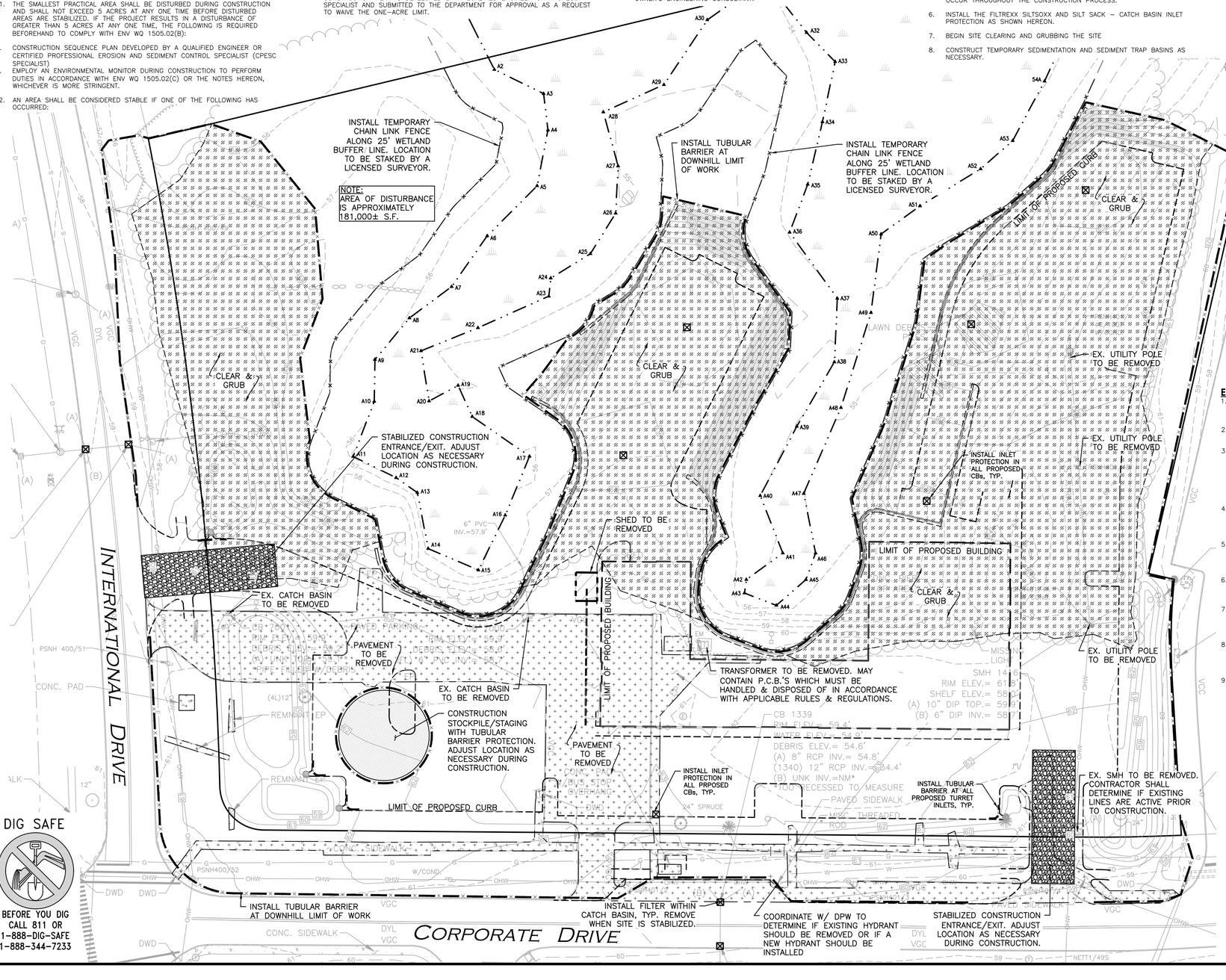
H. ALL PROPOSED STABILIZATION IN ACCORDANCE WITH (D) OR (E), ABOVE, SHALL BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.

I. ALL DITCHES OR SWALES THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR THAT ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS, AS DETERMINED BY THE OWNER'S ENGINEERING CONSULTANT.

J. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 3-INCH LAYER OF BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2016, TABLE 304-1, ITEM NO. 304.1, 304.2, OR 304.3, AVAILABLE AS NOTED IN APPENDIX B.

## GENERAL SEQUENCE OF CONSTRUCTION:

1. CONTACT THE CITY OF PORTSMOUTH, PEASE DEVELOPMENT AUTHORITY (PDA), AND NHDES AOT BUREAU AT LEAST TWO (2) WEEKS PRIOR TO START OF CONSTRUCTION. A COPY OF THE NHDES NOTIFICATION FORM IS INCLUDED IN THE OPERATION AND MAINTENANCE SECTION OF THE PROJECT DRAINAGE REPORT.
2. THE CONTRACTOR SHALL ACQUIRE A PDA DIG PERMIT BEFORE ANY DISTURBANCE CAN TAKE PLACE. ALLOW 7 CALENDAR DAYS FOR PROCESSING.
3. CONTRACTOR TO OBTAIN A NPDES CONSTRUCTION GENERAL PERMIT PRIOR TO CONSTRUCTION. PDA SHALL BE PROVIDED WITH A COPY OF THE SWPPP AND NOI.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES. SITE ACCESS SHALL BE ACHIEVED ONLY FROM THE DESIGNATED CONSTRUCTION ENTRANCE.
5. PREPARE TEMPORARY PARKING AND STORAGE AREA. UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: TRAILER, PARKING, LAY DOWN, WHEEL WASH, CONCRETE WASHOUT, MASONS AREA, FUEL AND MATERIAL STORAGE CONTAINERS, SOLID WASTE CONTAINERS, ETC., DENOTE THEM ON THE SITE MAPS IMMEDIATELY AND NOTE ANY CHANGES IN THE LOCATIONS AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS.
6. INSTALL THE FILTREXX SILTSOXX AND SILT SACK – CATCH BASIN INLET PROTECTION AS SHOWN HEREON.
7. BEGIN SITE CLEARING AND GRUBBING THE SITE
8. CONSTRUCT TEMPORARY SEDIMENTATION AND SEDIMENT TRAP BASINS AS NECESSARY.
9. BEGIN GRADING THE SITE.
10. CONSTRUCT STORMWATER MEASURES. SITE SHALL BE STABILIZED PRIOR TO STORMWATER MEASURES RECEIVING RUNOFF.
11. START CONSTRUCTION OF BUILDING PAD AND STRUCTURES. TEMPORARILY SEED DENUDED AREAS. ALL CUT AND FILL SLOPES SHALL BE SEEDED / LOAMED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE, EXCEPT WHERE RIP RAP IS APPLIED.
12. INSTALL BUILDING, UTILITIES, STORM SEWERS, CURBS AND GUTTERS.
13. INSTALL INLET PROTECTION DEVICES AROUND ALL STORM DRAIN STRUCTURES.
14. INSTALL RIP RAP AROUND OUTLET STRUCTURES.
15. FINALIZE GRADING, AND PREPARE SITE FOR PAVING. NOTE, ALL PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
16. PAVE SITE. COMPLETE FINISH GRADING AND INSTALL PERMANENT SEEDING AND PLANTING.
17. ONCE SITE IS STABILIZED, REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES.
18. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER ALL RAINFALL EVENTS GREATER THAN 0.25", AND SHALL BE MAINTAINED, REPAIRED OR REPLACED AS REQUIRED OR AT THE DIRECTION OF THE OWNER'S ENGINEER, OR THE TOWN ENGINEER.
19. SEDIMENT ACCUMULATION UP-GRADIENT OF THE TUBULAR BARRIERS GREATER THAN 6" IN DEPTH SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
20. SILT SACKS SHALL BE INSTALLED IN ALL CATCH BASINS ADJACENT TO THE SITE. SEDIMENT ACCUMULATION ON ALL ADJACENT CATCH BASIN INLETS SHALL BE REMOVED AND THE SILT SACK REPLACED IF TORN OR DAMAGED.
21. THE CONTRACTOR SHALL COMPLY WITH THE GENERAL AND EROSION NOTES AS SHOWN ON THE SITE DEVELOPMENT PLANS.




## LEGEND

- LIMIT OF 'CLEAR AND GRUB'
- BUILDING TO BE REMOVED
- PAVEMENT TO BE REMOVED
- UTILITY CUT AND CAP
- TEMPORARY FENCE
- TUBULAR BARRIER
- EROSION CONTROL FABRIC
- CATCH BASIN FILTER
- STABILIZED ENTRANCE
- STOCKPILE/STAGING AREA

## EROSION CONTROL AND SEDIMENT CONTROL NOTES:

1. AREAS WITH OVER 3:1 SLOPES SHALL BE PROTECTED WITH AN EROSION CONTROL BLANKET OR JUTE MESH. SEE THE GRADING & DRAINAGE PLAN, SHEET C-103 FOR SPECIFIC LOCATIONS.
2. SILT CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND SHALL BE ADEQUATE TO MAINTAIN SEDIMENT ON SITE.
3. THE CONTRACTOR SHALL USE EXTREME CAUTION TO AVOID ALLOWING SEDIMENTS TO ENTER THE STORM DRAIN SYSTEM DURING CONSTRUCTION. CATCH BASIN INLETS SHALL ALSO BE PROTECTED DURING CONSTRUCTION BY THE USE OF SILT SACKS; SILT SACKS SHOULD BE INSTALLED IN ALL EXISTING CATCH BASINS WITHIN THE PROJECT AREA. INLET PROTECTION MAY BE REMOVED ONLY AFTER FINISHED AREAS ARE PAVED AND THE VEGETATED SLOPES ARE ESTABLISHED WITH AT LEAST 85-90% OF VIGOROUS PERENNIAL GROWTH.
4. AT THE OWNER'S DISCRETION ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED TO MAINTAIN STABILITY OF EARTHWORKS AND FINISHED GRADED AREAS. THE CONTRACTOR, AT HIS EXPENSE, WILL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ANY ADDITIONAL MEASURES AS SPECIFIED BY THE OWNER.
5. THE AREA OR AREAS OF ENTRANCE AND EXIT TO AND FROM THE SITE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED THE RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
6. STOCKPILES SHALL BE SURROUNDED ON THEIR PERIMETERS WITH STAKED TUBULAR BARRIERS AND/OR SILTATION FENCES TO PREVENT AND/OR CONTROL SILTATION AND EROSION.
7. ALL EXISTING & PROPOSED CATCH BASINS SUBJECT TO STORMWATER RUNOFF DURING CONSTRUCTION SHALL HAVE SILT SACKS INSTALLED AS DIRECTED BY THE OWNER/ENGINEER. NO SEDIMENTATION SHALL ENTER THE ON-SITE OR OFF-SITE DRAINAGE SYSTEMS AT ANY TIME.
8. BEFORE ANY DEWATERING IS PERFORMED, THE CONTRACTOR SHALL FILE AND OBTAIN A TEMPORARY GROUNDWATER DISCHARGE PERMIT FROM NHDES. COORDINATION BETWEEN THE APPLICANT, PDA, NHDES AND THE AIR FORCE IS NECESSARY PRIOR TO FILING THIS APPLICATION.
9. WETLANDS AND BUFFERS ARE PRESENT ON SITE. THERE ARE NO WETLAND OR WETLAND BUFFER DISTURBANCES ASSOCIATED WITH THIS PROJECT. TAKE EXTREME CARE NOT TO IMPACT THESE RESOURCE AREAS.

## SEEDINGS FOR TEMPORARY COVER

| SPECIES | SEEDING RATE (LB/UNIT AREA) 1,000 S.F. | SEEDING RATE (LB/UNIT AREA) ACRE | RECOMMENDED SEEDING DATES |
|---|---|---|---|
| ANNUAL RYEGRASS | 1 | 40 | APRIL 1 – JUNE 1<br>AUG. 15 – SEPT. 15 |
| FOXTAIL MILLET | 0.7 | 30 | MAY 1 – JUNE 30 |
| OATS | 2 | 80 | APRIL 1 – JULY 1<br>AUG. 15 – SEPT. 15 |
| WINTER RYE | 3 | 120 | AUG. 15 – OCT. 15 |

"HYDRO-SEEDING" APPLICATIONS WITH APPROPRIATE SEED-MULCH-FERTILIZER MIXTURES MAY ALSO BE USED.

GRAPHIC SCALE

30 0 15 30 60 120

( IN FEET )
1 inch = 30 ft.

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER

1-20-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
# ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:


ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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DRAWING TITLE:
SITE PREPARATION PLAN

SHEET No.
C-101


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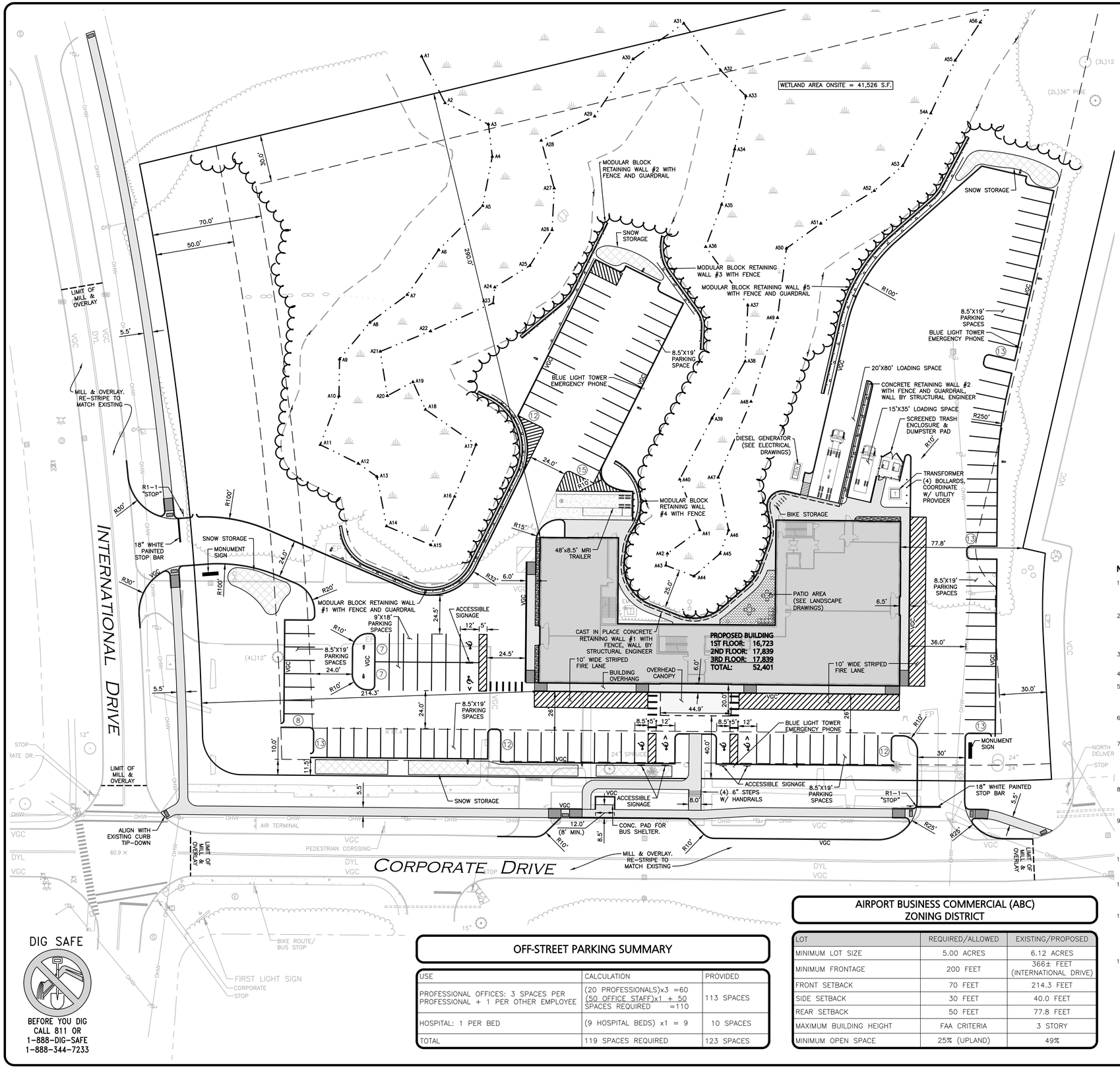


## LEGEND

| | |
|---|---|
| PROPERTY LINE | |
| SIGN | |
| BOLLARD | |
| BUILDING | |
| BUILDING ABOVE | |
| BUILDING ARCHITECTURE | |
| CURB | |
| RETAINING WALL | |
| PARKING STRIPING | |
| TRAFFIC ARROWS | |
| HEAVY DUTY CONCRETE | |
| SIDEWALK | |
| ADA DET. WARNING SURFACE | |
| BRICK PATIO | |
| ADA ACCESSIBLE RAMP | |
| SNOW STORAGE | |
| SETBACK LINE | |
| SAW-CUT LINE | |
| PARKING COUNT | (10) |
| STEEL GUARDRAIL | |
| DECORATIVE FENCE | |
| SITE LIGHT | |
| TREE LINE | |
| VERTICAL GRANITE CURB | VGC |

## NOTES:

1. THE EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED TO ALLEN & MAJOR ASSOCIATES, INC. (A&M) BY THE APPLICANT AND ARE TAKEN FROM A DRAWING ENTITLED "EXISTING CONDITIONS PLAN FOR ATDG, LLC", PREPARED BY DOUCET SURVEY LLC, DATED APRIL 5, 2023.
2. WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS OR CONDITIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.
3. ALL DIMENSIONS AND RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
4. CURB RADII SHALL BE 3' UNLESS OTHERWISE SHOWN.
5. SIDEWALK CROSS SLOPE TO BE 1.5% MAX. LONGITUDINAL RUNNING SLOPE TO BE 4.5% MAX., ANY SIDEWALK WITH A RUNNING SLOPE BETWEEN 5% AND 8.3% REQUIRES HAND RAILS ON BOTH SIDES IN ACCORDANCE WITH ADA REQUIREMENTS, EXCEPT CURB TRANSITIONS.
6. SIDEWALK AND HARDSCAPE AREAS AT ACCESSIBLE ENTRY DOORS SHALL HAVE A MAXIMUM OF 1.5% SLOPE/CROSS SLOPE IN ALL DIRECTIONS AT THE DOOR MANEUVERING CLEARANCE.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ANY STRUCTURAL RETAINING WALLS (WALLS WITH AN EXPOSED FACE OF GREATER THAN 4'). DESIGN SHALL BE BY A REGISTERED STRUCTURAL ENGINEER AND SHALL BE STAMPED ACCORDINGLY. STRUCTURAL RETAINING WALL DESIGNS SHALL BE SUBMITTED TO PEASE DEVELOPMENT AUTHORITY FOR REVIEW. A BUILDING PERMIT IS REQUIRED FOR ANY WALLS OVER 4' IN HEIGHT.
8. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.
9. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO THE ISSUANCE OF CERTIFICATE OF OCCUPANCY OR RELEASE OF BOND, THE APPLICANT SHALL SUBMIT A LETTER TO THE PEASE DEVELOPMENT AUTHORITY, SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER, STATING CONSTRUCTION HAS BEEN COMPLETED IN CONFORMANCE WITH THE APPROVED PLANS.
10. SUBMISSION OF MULTIPLE 7460-1'S TO THE FAA WILL BE REQUIRED FOR THE CONSTRUCTION OF THE BUILDING AND TEMPORARY USE OF A CRANE. ALLOW A MINIMUM OF 45 DAYS FOR PROCESSING.
11. THE APPLICANT SHALL COORDINATE WITH THE CITY OF PORTSMOUTH TO CONFIRM ADEQUACY OF RADIO SIGNAL STRENGTH FOR EMERGENCY SERVICES. AMPLIFIERS MAY BE REQUIRED TO BOOST SIGNAL STRENGTH, WHICH, IF NECESSARY, SHALL BE PROVIDED AND INSTALLED BY THE APPLICANT.
12. THE APPLICANT SHALL SUBMIT AS-BUILT PLANS ON REPRODUCIBLE MYLAR AND IN DIGITAL FORMAT (AUTOCAD .DWG FORMAT) ON CD TO PDA UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A REGISTERED NEW HAMPSHIRE LAND SURVEYOR OR PROFESSIONAL ENGINEER. AN ELECTRONIC FILE OF THE SITE LAYOUT SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH'S GIS DEPARTMENT.
13. SNOW SHALL BE TAKEN OFFSITE ONCE SNOW STORAGE AREAS ONSITE BECOME INADEQUATE, AND BEGINS TO BLOCK ACCESS TO AND FROM THE SITE OR BLOCKS THE USE OF ONSITE PARKING. ANY EXCESS WILL BE BE TRUCKED OFFSITE & DISPOSED OF IN ACCORDANCE WITH LOCAL AND NHDES GUIDELINES.

GRAPHIC SCALE

30 0 15 30 60 120

( IN FEET )
1 inch = 30 ft.

## OFF-STREET PARKING SUMMARY

| USE | CALCULATION | PROVIDED |
|---|---|---|
| PROFESSIONAL OFFICES: 3 SPACES PER PROFESSIONAL + 1 PER OTHER EMPLOYEE | (20 PROFESSIONALS)x3 =60<br>(50 OFFICE STAFF)x1 + 50<br>SPACES REQUIRED =110 | 113 SPACES |
| HOSPITAL: 1 PER BED | (9 HOSPITAL BEDS) x1 = 9 | 10 SPACES |
| TOTAL | 119 SPACES REQUIRED | 123 SPACES |

## AIRPORT BUSINESS COMMERCIAL (ABC) ZONING DISTRICT

| LOT | REQUIRED/ALLOWED | EXISTING/PROPOSED |
|---|---|---|
| MINIMUM LOT SIZE | 5.00 ACRES | 6.12 ACRES |
| MINIMUM FRONTAGE | 200 FEET | 366± FEET (INTERNATIONAL DRIVE) |
| FRONT SETBACK | 70 FEET | 214.3 FEET |
| SIDE SETBACK | 30 FEET | 40.0 FEET |
| REAR SETBACK | 50 FEET | 77.8 FEET |
| MAXIMUM BUILDING HEIGHT | FAA CRITERIA | 3 STORY |
| MINIMUM OPEN SPACE | 25% (UPLAND) | 49% |

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STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER
1-20-23

PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
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APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

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| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE: LAYOUT & MATERIALS PLAN

SHEET No. C-102

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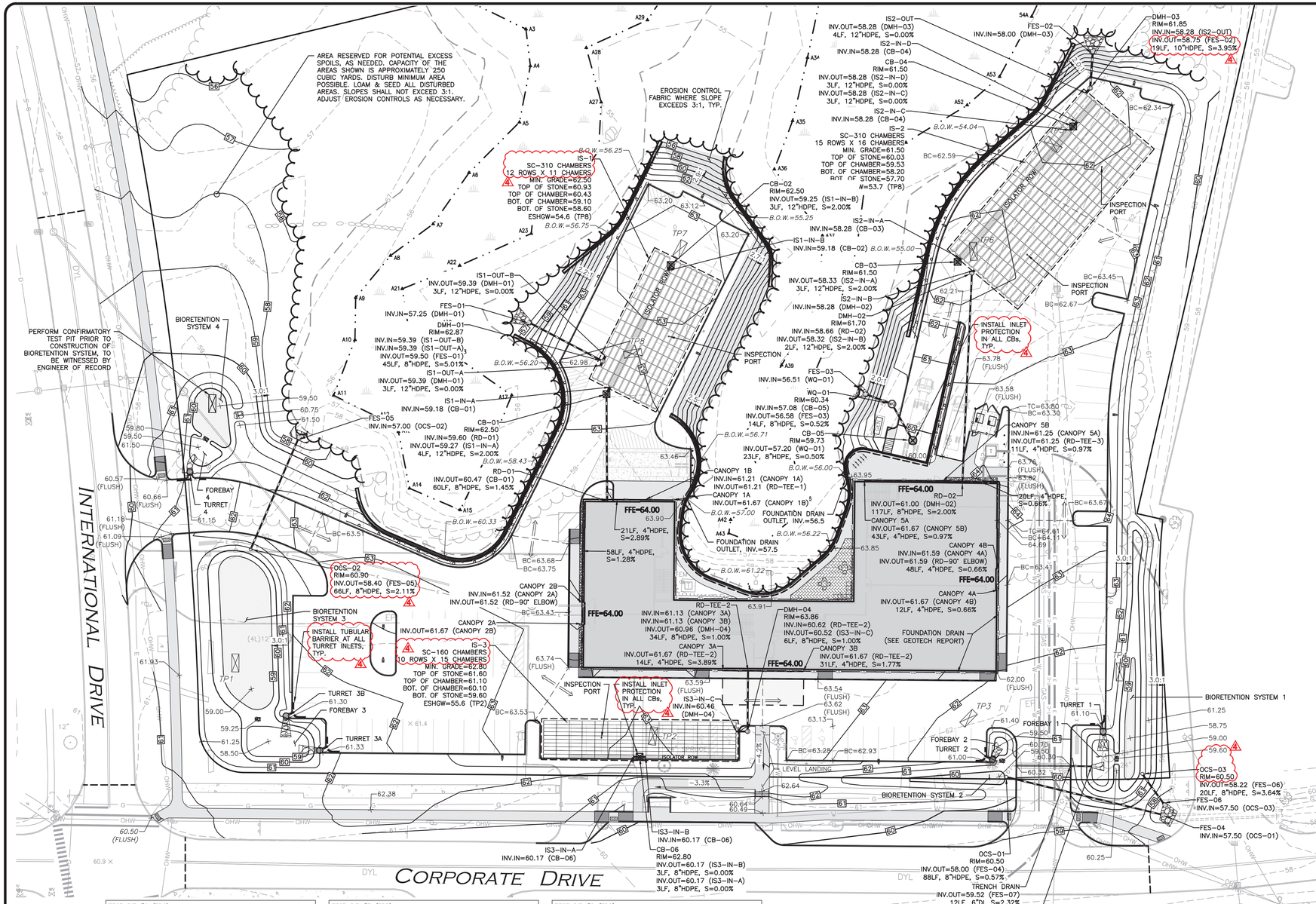


## LEGEND

- DRAIN MANHOLE
- NYLOPLAST DMH (30"ø)
- CATCH BASIN
- NYLOPLAST C.B. (30"/24"ø)
- RAIN GUARDIAN TURRET
- WATER QUALITY UNIT (WQ)
- FLARED END SECTION
- DRAIN LINE
- RIPRAP OUTFALL
- 5' CONTOUR (60)
- 1' CONTOUR (63)
- SPOT GRADE ×64.50
- INFILTRATION SYSTEM PERIMETER
- INFILTRATION SYSTEM (SC-160)
- INFILTRATION SYSTEM (SC-310)
- ISOLATOR ROW
- UNDERDRAIN (UD)
- FLOW DIRECTION
- TEST PIT TP1
- EROSION CONTROL FABRIC
- BIORETENTION SYSTEM

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4. SIDEWALK AND HARDSCAPE AREAS AT ACCESSIBLE ENTRY DOORS SHALL HAVE A MAXIMUM OF 1.5% SLOPE/CROSS SLOPE IN ALL DIRECTIONS AT THE DOOR MANEUVERING CLEARANCE.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ANY STRUCTURAL RETAINING WALLS (WALLS WITH AN EXPOSED FACE OF GREATER THAN 4'). DESIGN SHALL BE BY A REGISTERED STRUCTURAL ENGINEER AND SHALL BE STAMPED ACCORDINGLY. STRUCTURAL RETAINING WALL DESIGNS SHALL BE SUBMITTED TO PEASE DEVELOPMENT AUTHORITY FOR REVIEW. A BUILDING PERMIT IS REQUIRED FOR ANY WALLS OVER 4' IN HEIGHT.
6. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.
7. THE CONTRACTOR SHALL CLEAN THE ENTIRE STORMWATER SYSTEM OF ALL SEDIMENT AND DEBRIS, WITHIN THE LIMIT OF WORK, UPON COMPLETION OF CONSTRUCTION.
8. THE PROJECT, AS SHOWN HEREON, ANTICIPATES A NET IMPORT OF APPROXIMATELY 12,100 CUBIC YARDS OF FILL MATERIAL. THIS IS THE RESULT OF A COMPARISON OF THE EXISTING AND PROPOSED FINISHED GRADES AND DOES NOT INCLUDE REMOVAL OF MATERIAL REQUIRED FOR FOUNDATIONS, UTILITIES, OR UNDERGROUND STORMWATER INFRASTRUCTURE.
9. ALL EXCESS EXCAVATED SOIL MATERIAL SHALL REMAIN ON SITE AND SHALL BE PLACED IN THE EXCESS SOIL BERM AS SHOWN HEREON. NO EXISTING SOIL SHALL BE REMOVED FROM THE PROJECT SITE.

TEST PIT #6 (TP6)
EXISTING GROUND ELEVATION: 56.4
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| O | 0–3" | N.A. | N.A. | N.A. | LEAF LITTER |
| A | 3–10" | SANDY LOAM | 7.5YR 3/2 | MASSIVE FRIABLE | DRY |
| Bw | 10–16" | SANDY LOAM | 10YR 5/4 | MASSIVE FRIABLE | DRY |
| C | 16–80" | SANDY LOAM | 2.5Y 5/4 | MASSIVE, FRIABLE | DRY TO MOIST |

ESHWT: 34" (ELEVATION=53.6)
WEEP: NONE
BEDROCK/REFUSAL: NONE

TEST PIT #7 (TP7)
EXISTING GROUND ELEVATION: 57.8
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| O | 0–3" | N.A. | N.A. | N.A. | LEAF LITTER |
| A | 3–8" | SANDY LOAM | 7.5YR 3/2 | MASSIVE FRIABLE | DRY |
| Bw | 8–14" | SANDY LOAM | 10YR 5/4 | MASSIVE FRIABLE | DRY |
| C | 14–72" | SANDY LOAM | 2.5Y 5/4 | MASSIVE, FRIABLE | DRY TO MOIST |

ESHWT: 40" (ELEVATION=54.5)
WEEP: NONE
BEDROCK/REFUSAL: NONE

TEST PIT #8 (TP8)
EXISTING GROUND ELEVATION: 57.6
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| O | 0–3" | N.A. | N.A. | N.A. | LEAF LITTER |
| A | 3–6" | SANDY LOAM | 7.5YR 3/2 | MASSIVE FRIABLE | DRY |
| Bw | 6–12" | SANDY LOAM | 10YR 5/4 | MASSIVE FRIABLE | DRY |
| C | 12–72" | SANDY LOAM | 2.5Y 5/4 | MASSIVE, FRIABLE | DRY TO MOIST |

ESHWT: 36" (ELEVATION=54.6)
WEEP: NONE
BEDROCK/REFUSAL: NONE

TEST PIT #1 (TP1)
EXISTING GROUND ELEVATION: 61.5
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| HTM (FILL) | 0–48" | GENERALLY LOAMY SAND | N.A. | N.A. | DRY, SOME CONST. DEBRIS |
| C | 48–96" | SANDY LOAM | 2.5Y 5/4 | MASSIVE, FIRM | DRY TO MOIST |

ESHWT: 72" (ELEVATION=55.5)
WEEP: NONE
BEDROCK/REFUSAL: NONE

TEST PIT #2 (TP2)
EXISTING GROUND ELEVATION: 61.4
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| HTM (FILL) | 0–80" | GENERALLY LOAMY SAND | N.A. | N.A. | DRY TO MOIST |
| O | 80–82" | N.A. | GLEY1 N | N.A. | BURIED "O" HORIZON |
| C | 82–96" | FINE SANDY LOAM | GLEY2 4/10G | MASSIVE, FIRM | MOIST |

ESHWT: 70" (ELEVATION=55.6)
WEEP: NONE
BEDROCK/REFUSAL: NONE

TEST PIT #3 (TP3)
EXISTING GROUND ELEVATION: 62.2
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| HTM (FILL) | 0–60" | GENERALLY LOAMY SAND | N.A. | N.A. | DRY, SOME CONSTR. DEBRIS |
| C | 60–94" | SANDY LOAM | 2.5Y 5/4 | MASSIVE, FIRM | DRY TO MOIST |

ESHWT: 76" (ELEVATION=55.9)
WEEP: NONE
BEDROCK/REFUSAL: NONE

TEST PIT #4 (TP4)
EXISTING GROUND ELEVATION: 60.8
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| HTM (FILL) | 0–18" | GENERALLY LOAMY SAND | N.A. | N.A. | DRY |
| Ab | 18–24" | SANDY LOAM | 2.5Y 4/2 | MASSIVE FRIABLE | DRY |
| Bw | 24–32" | SANDY LOAM | 7.5YR 4/6 | MASSIVE FRIABLE | DRY |
| $C_1$ | 32–48" | SANDY LOAM | 2.5Y 5/4 | MASSIVE, FRIABLE | DRY |
| $C_2$ | 48–96" | SANDY LOAM | 2.5Y 7/2 | MASSIVE FIRM | DRY TO MOIST |

ESHWT: 67" (ELEVATION=55.2)
WEEP: NONE
BEDROCK/REFUSAL: NONE

TEST PIT #5 (TP5)
EXISTING GROUND ELEVATION: 56.7
PERFORMED BY: BRIAN D. JONES, PE
DATE: 07-17-2023

| HORIZON | DEPTH | TEXTURE | COLOR | STRUCTURE | NOTES |
|---|---|---|---|---|---|
| O | 0–3" | N.A. | N.A. | N.A. | LEAF LITTER |
| A | 3–9" | SANDY LOAM | 7.5YR 3/2 | MASSIVE FRIABLE | DRY |
| Bw | 9–14" | SANDY LOAM | 10YR 5/4 | MASSIVE FRIABLE | DRY |
| C | 14–72" | SANDY LOAM | 2.5Y 5/4 | MASSIVE, FRIABLE | DRY TO MOIST |

ESHWT: 36" (ELEVATION=53.7)
WEEP: NONE
BEDROCK/REFUSAL: NONE

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GRAPHIC SCALE

30 0 15 30 60 120

( IN FEET )
1 inch = 30 ft.

R: \PROJECTS \3250-01 \CIVIL \DRAWINGS \CURRENT \C-3250-01_GRADING & DRAINAGE.DWG

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER
11-20-23

PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 4 | 11-10-23 | REVISED PER AOT COMMENTS |
| 3 | 10-20-23 | REVISED PER TAC COMMENTS |
| 2 | 08-28-23 | ISSUED FOR AOT PERMIT APPLICATION |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE:
GRADING & DRAINAGE PLAN

SHEET No.
C-103

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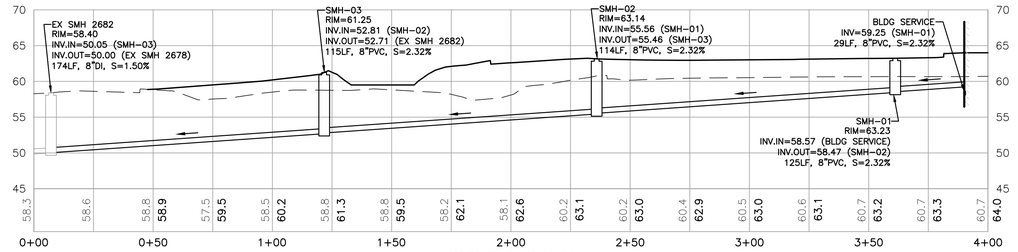
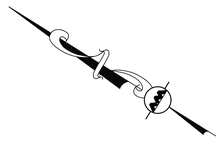
## UTILITY NOTES:

1. A MINIMUM OF 10 FEET CLEAR HORIZONTALLY SHALL BE MAINTAINED BETWEEN WATER MAINS AND SANITARY SEWER MAINS AND/OR STORM DRAINS. WHENEVER CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET TO A WATER MAIN, THE WATER MAIN SHALL BE LAID IN A SEPARATE TRENCH AND THE DIFFERENCE IN ELEVATION BETWEEN THE WATER MAIN AND THE SEWER MAIN SHALL BE AT LEAST 18 INCHES.
2. IN THE CASE THAT WATER MAINS CROSS SANITARY SEWER MAINS AND/OR STORM DRAINS AND ARE SEPARATED BY LESS THAT 18" OF VERTICAL CLEARANCE, THE CROSSING PIPES SHALL BE ENCASED IN CONCRETE OR SLEEVED IN A LARGER DIAMETER PIPE FOR A DISTANCE OF 10 FEET ON EITHER SIDE OF THE CROSSING.
3. THE CONTRACTOR SHALL REFER TO ARCHITECT'S PLANS AND SPECIFICATIONS FOR ACTUAL LOCATION OF ALL ROOF DRAIN LATERALS AND UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS, DOMESTIC AND FIRE PROTECTION WATER SERVICE, ELECTRIC, TELEPHONE, AND GAS SERVICE. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO AVOID CONFLICTS AND COORDINATE WITH THE PROPER AGENCY THE LOCATION AND SCHEDULING OF CONNECTIONS WITH THEIR FACILITIES.
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION.
5. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENTS OF NATURAL GAS, ELECTRIC, TELEPHONE AND ANY OTHER UTILITY BY THE UTILITY OWNER.
6. ALL WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 4.5 FEET OF COVER AND A MAXIMUM OF 8 FEET OF COVER EXCEPT AS NOTED OR DETAILED OTHERWISE.
7. DOMESTIC WATER SERVICES SHALL BE INSTALLED WITH APPROPRIATELY SIZED GATE, BOX AND TEE FITTINGS.
8. GENERALLY, WATER MAIN FITTINGS, AND VALVES SHOWN ON THIS DRAWING ARE FOR INSTALLATION LOCATION PURPOSES. THE CONTRACTOR SHALL NOTE THAT NOT ALL FITTINGS AND VALVES ARE NOTED, SHOWN OR INDICATED.
9. LOCATION OF PROPOSED ELECTRICAL/COMMUNICATION SERVICE IS SCHEMATIC IN NATURE AND FOR COORDINATION PURPOSES ONLY. SPECIFIC ALIGNMENTS ARE TO BE DESIGNED BY OTHERS AND REVIEWED BY THE UTILITY PROVIDING SERVICE.
10. LOCATION OF PROPOSED GAS MAIN IS SCHEMATIC IN NATURE AND FOR COORDINATION PURPOSES ONLY. SPECIFIC ALIGNMENTS ARE TO BE DESIGNED BY OTHERS AND REVIEWED BY THE UTILITY PROVIDING SERVICE.
11. ALL WATER MAIN TAPS SHALL BE COORDINATED BY INSTALLING CONTRACTOR WITH THE CITY OF PORTSMOUTH.
12. ALL VALVES AND HYDRANT MUST BE OPEN LEFT AND MUST SAY "OPEN LEFT" ON GATE BOXES.

### SEWER PROFILE

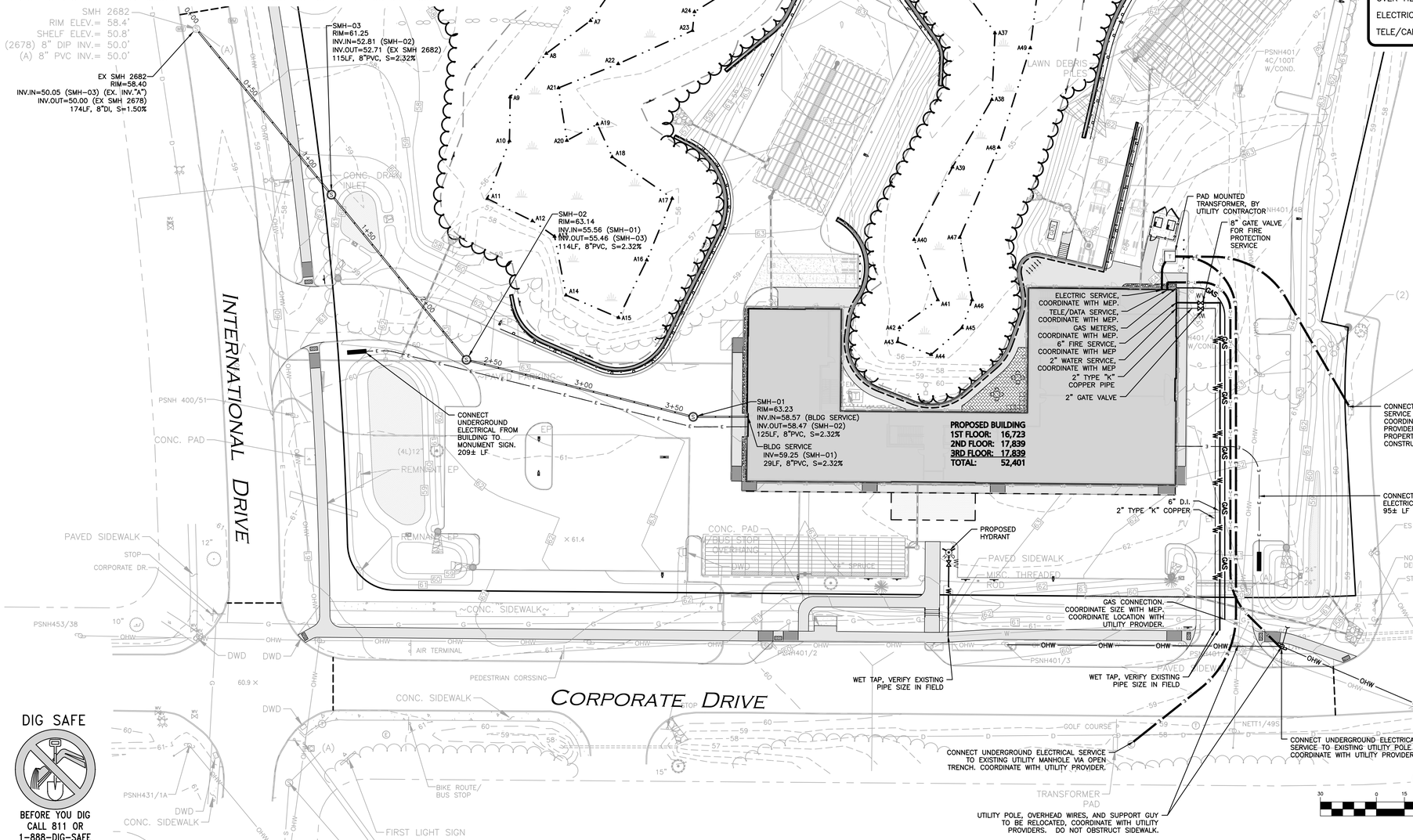



HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'



### LEGEND

| | |
|---|---|
| SEWER MANHOLE | S |
| SEWER LINE | |
| WATER LINE | W |
| WATER VALVE | WV |
| HYDRANT | |
| GAS LINE | GAS |
| UTILITY POLE | |
| OVER HEAD WIRE | OHW |
| ELECTRICAL CONDUIT | E E |
| TELE/CABLE CONDUIT | T/C T/C |

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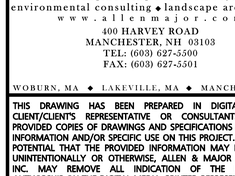


PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 3 | 10-25-23 | MISC. UTILITY REVISIONS |
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:


ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
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DRAWING TITLE: UTILITIES PLAN

SHEET No. C-104


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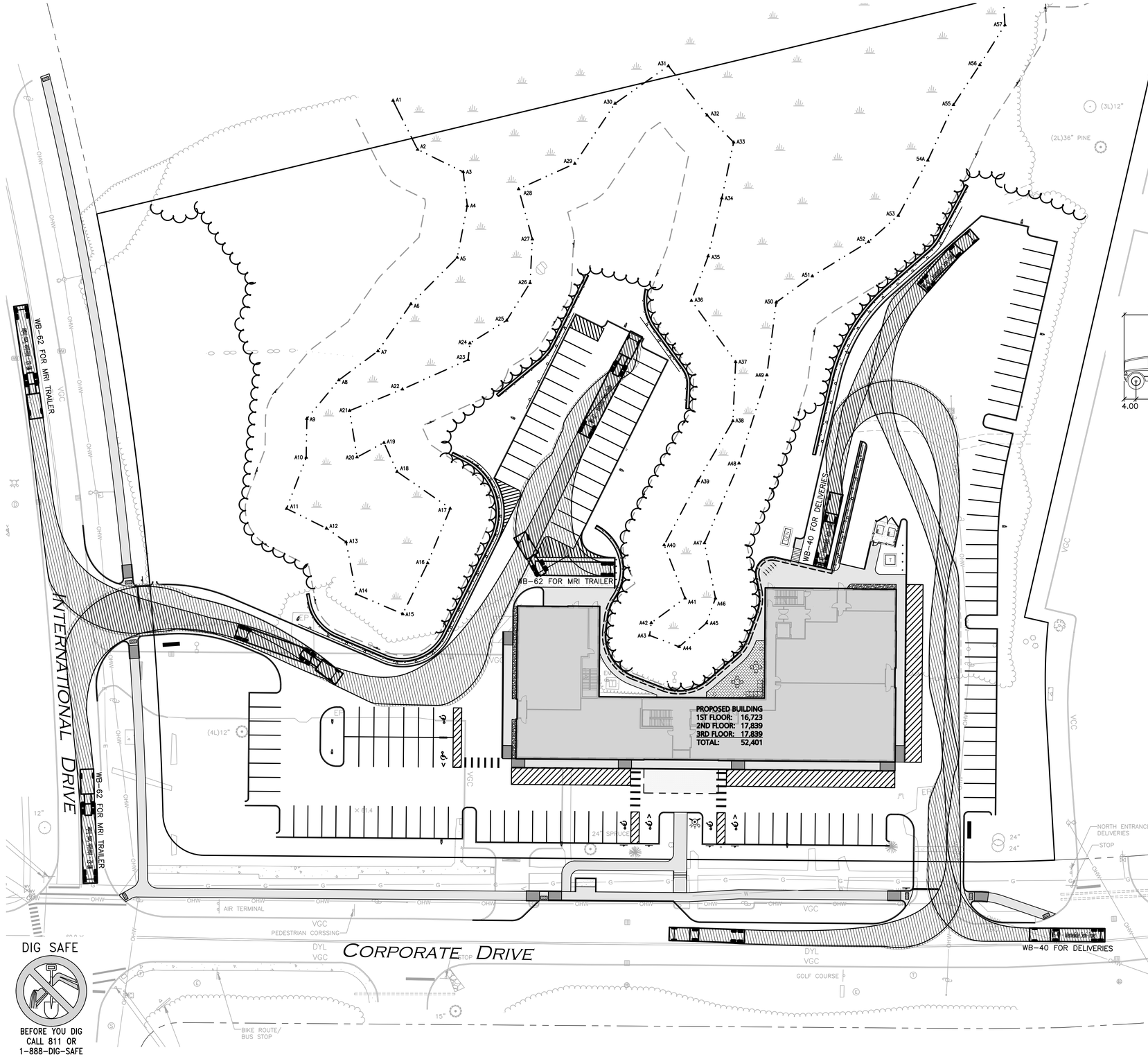
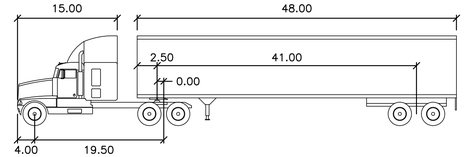
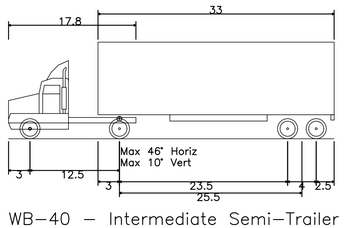



WB–62 – Interstate Semi–Trailer




WB–40 – Intermediate Semi–Trailer

**NOTES:**

1. THE PURPOSE OF THIS PLAN IS TO DEPICT TRUCK MOVEMENTS THROUGH THE SITE.
2. THE EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED TO ALLEN & MAJOR ASSOCIATES, INC. (A&M) BY THE APPLICANT AND ARE TAKEN FROM A DRAWING ENTITLED "EXISTING CONDITIONS PLAN FOR ATDG, LLC", PREPARED BY DOUCET SURVEY LLC, DATED APRIL 5, 2023.
3. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.

GRAPHIC SCALE

30 0 15 30 60 120

( IN FEET )
1 inch = 30 ft.

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R:\PROJECTS\3250-01\CIVIL\DRAWINGS\CURRENT\C-3250-01_TRUCK TURNING.DWG

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER

1-20-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:

ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:

# ASC / MEDICAL OFFICE

360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:

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civil engineering ◆ land surveying
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MANCHESTER, NH 03103
TEL: (603) 627-5500
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DRAWING TITLE:

TRUCK TURNING PLAN

SHEET No.

C-105

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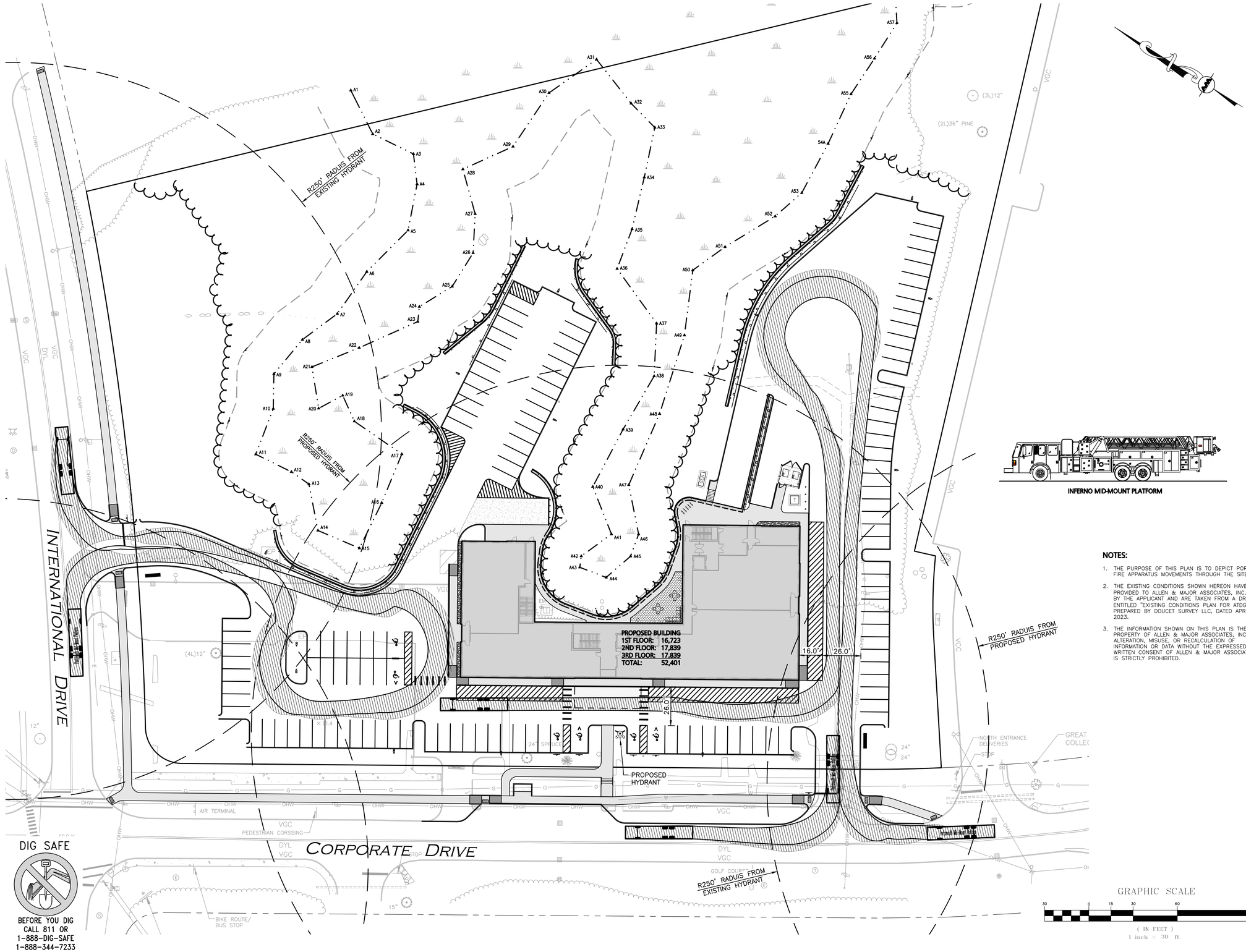






INFERNO MID-MOUNT PLATFORM

**NOTES:**

1. THE PURPOSE OF THIS PLAN IS TO DEPICT PORTSMOUTH FIRE APPARATUS MOVEMENTS THROUGH THE SITE.
2. THE EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED TO ALLEN & MAJOR ASSOCIATES, INC. (A&M) BY THE APPLICANT AND ARE TAKEN FROM A DRAWING ENTITLED "EXISTING CONDITIONS PLAN FOR ATDG, LLC", PREPARED BY DOUCET SURVEY LLC, DATED APRIL 5, 2023.
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GRAPHIC SCALE

30 0 15 30 60 120

( IN FEET )
1 inch = 30 ft.

DIG SAFE

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CALL 811 OR
1-888-DIG-SAFE
1-888-344-7233

R: \PROJECTS \3250-01 \CIVIL \DRAWINGS \CURRENT \C-3250-01_TRUCK TURNING.DWG

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER

1-20-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |

APPLICANT/LESSEE:

ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:

# ASC / MEDICAL OFFICE

360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 10-20-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |


PREPARED BY:

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DRAWING TITLE:

FIRE TRUCK TURNING PLAN

SHEET No.

C-106


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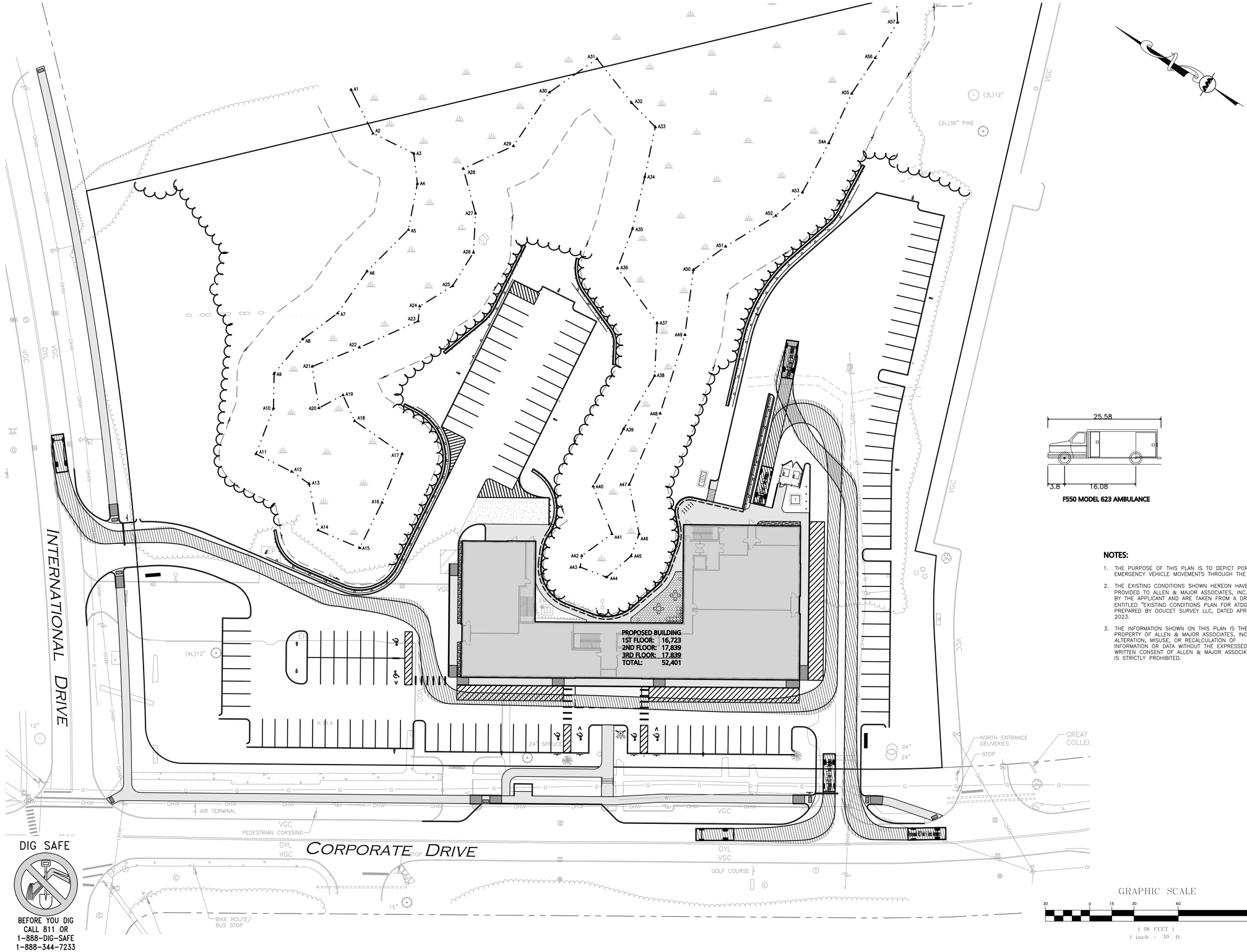





F550 MODEL 623 AMBULANCE

**NOTES:**

1. THE PURPOSE OF THIS PLAN IS TO DEPICT PORTSMOUTH EMERGENCY VEHICLE MOVEMENTS THROUGH THE SITE.
2. THE EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED TO ALLEN & MAJOR ASSOCIATES, INC. (A&M) BY THE APPLICANT AND ARE TAKEN FROM A DRAWING ENTITLED "EXISTING CONDITIONS PLAN FOR ATDG, LLC", PREPARED BY DOUCET SURVEY LLC, DATED APRIL 5, 2023.
3. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.

GRAPHIC SCALE

30 0 15 30 60 120

( IN FEET )
1 inch = 30 ft.

DIG SAFE

BEFORE YOU DIG
CALL 811 OR
1-888-DIG-SAFE
1-888-344-7233

R:\PROJECTS\3250-01\CIVIL\DRAWINGS\CURRENT\C-3250-01_TRUCK TURNING.DWG

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER

1-20-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |

APPLICANT/LESSEE:

ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:

# ASC / MEDICAL OFFICE

360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 10-20-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE:

## AMBULANCE TURNING PLAN

SHEET No.

C-107

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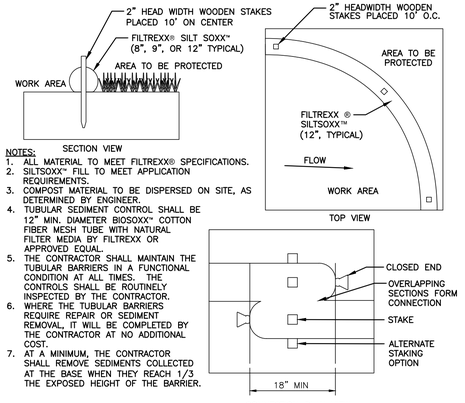
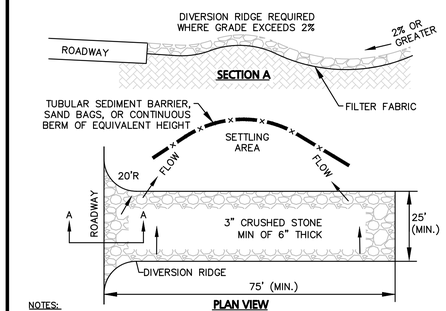


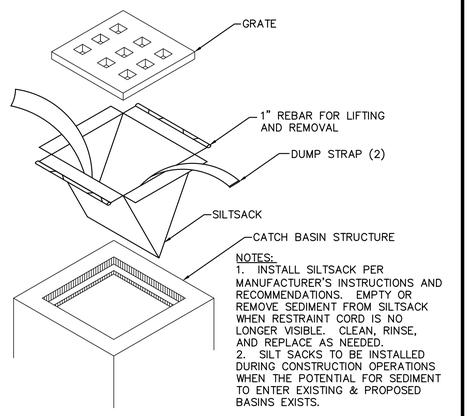

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILTSOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
4. TUBULAR SEDIMENT CONTROL SHALL BE 12" MIN. DIAMETER BIOSOXX™ COTTON FIBER MESH TUBE WITH NATURAL FILTER MEDIA BY FILTREXX OR APPROVED EQUAL.
5. THE CONTRACTOR SHALL MAINTAIN THE TUBULAR BARRIERS IN A FUNCTIONAL CONDITION AT ALL TIMES. THE CONTROLS SHALL BE ROUTINELY INSPECTED BY THE CONTRACTOR.
6. WHERE THE TUBULAR BARRIERS REQUIRE REPAIR OR SEDIMENT REMOVAL, IT WILL BE COMPLETED BY THE CONTRACTOR AT NO ADDITIONAL COST.
7. AT A MINIMUM, THE CONTRACTOR SHALL REMOVE SEDIMENTS COLLECTED AT THE BASE WHEN THEY REACH 1/3 THE EXPOSED HEIGHT OF THE BARRIER.

**FILTREXX SILTSOXX DETAIL** — NOT TO SCALE — 1



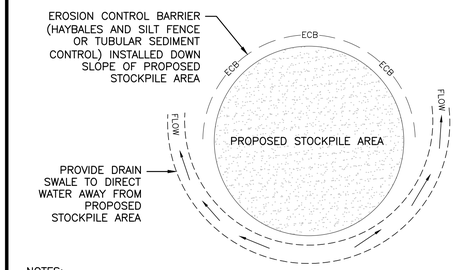

NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTERING THE PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

**STABILIZED CONSTRUCTION ENTRANCE** — NOT TO SCALE — 2



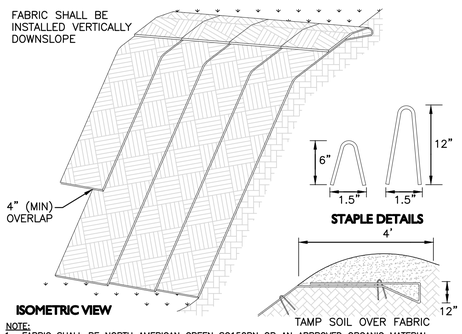

NOTES:
1. INSTALL SILTSACK PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. EMPTY OR REMOVE SEDIMENT FROM SILTSACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, RINSE, AND REPLACE AS NEEDED.
2. SILT SACKS TO BE INSTALLED DURING CONSTRUCTION OPERATIONS WHEN THE POTENTIAL FOR SEDIMENT TO ENTER EXISTING & PROPOSED BASINS EXISTS.

**CATCH BASIN INLET PROTECTION** — NOT TO SCALE — 3



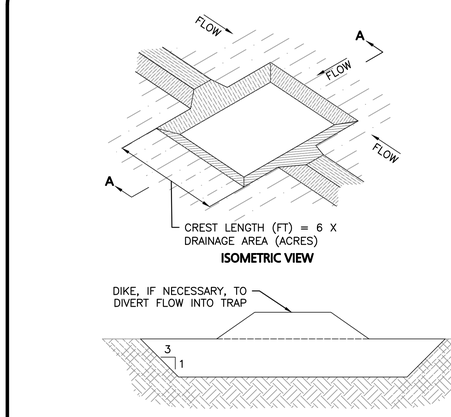

NOTES:
1. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN IN PLACE FOR LESS THAN 90 DAYS SHALL BE COVERED WITH HAY AND MULCH (AT 100LBS/1,000 SF), OR WITH AN ANCHORED TARP WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
2. SOIL AND FILL STOCKPILES EXPECTED TO REMAIN IN PLACE FOR 90 DAYS OR MORE SHALL BE SEEDED WITH WINTER RYE (FOR FALL SEEDING AT 3LB/1,000 SF) OR OATS (FOR SUMMER SEEDING AT 2LB/1,000 SF) AND THEN COVERED WITH HAY MULCH (AT 100LB/1,000 SF) OR AN ANCHORED TARP WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.

**STOCKPILE PROTECTION** — NOT TO SCALE — 4



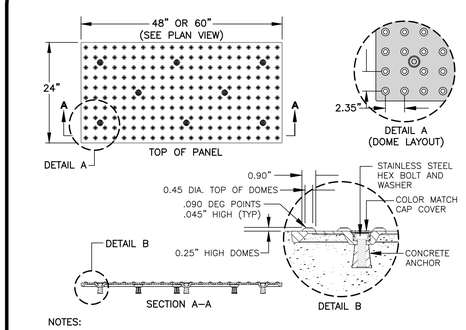

NOTE:
1. FABRIC SHALL BE NORTH AMERICAN GREEN SC150BN OR AN APPROVED ORGANIC MATERIAL EQUAL.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS.
3. APPLY PERMANENT SEEDING BEFORE PLACING FABRIC.
4. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
5. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES MATERIAL UTILIZED.

**EROSION CONTROL FABRIC** — NOT TO SCALE — 5



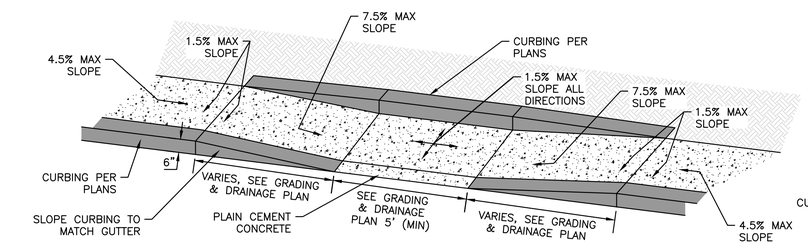

NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. THE SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER, AND SHALL BE STABILIZED IMMEDIATELY AFTER THEIR CONSTRUCTION.
5. THE OUTLET OF THE TRAP SHALL BE A MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA.
6. THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
7. THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AN STABILIZED.

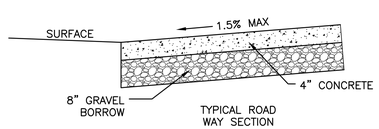
**TEMPORARY EARTH OUTLET SEDIMENT TRAP** — NOT TO SCALE — 6

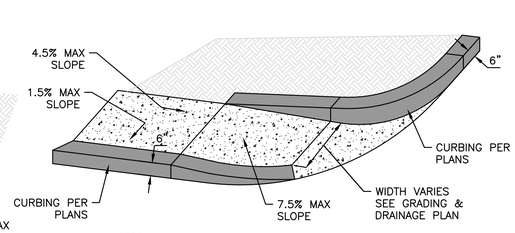



NOTES:
1. VENDOR INFORMATION: "ADATILE" WET SET ADA REPLACEABLE TACTILE (OR APPROVED EQUAL) AS MANUFACTURED BY ADATILE, PHONE: 1-800-372-0519, WWW.ADATILE.COM, EMAIL: INFO@ADATILE.COM
2. COLOR SHALL BE YELLOW.
3. INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES.

**WET SET ADA REPLACEABLE TACTILE PANEL** — NOT TO SCALE — 7

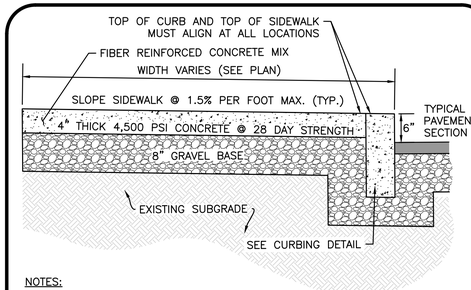



NOTES:
1. THE DIMENSIONS SHOWN AT ROADWAY EDGE ARE FIXED DISTANCES.
2. RAMP CROSS SECTION TO BE THE SAME AS ADJACENT SIDEWALK; I.E. DEPTH OF SURFACE AND FOUNDATION.
3. PORTLAND CEMENT CONCRETE RAMPS ARE TO BE TEXTURED BY BROOMING IN A DIRECTION PARALLEL TO THE LENGTH OF THE RAMP.
4. IN NO CASE ARE THE RAMPS TO BE PLACED BEHIND THE STOP LINE.
5. THE DIMENSIONS ARE SUBJECT TO CHANGE IN THE FIELD IF EXISTING APPURTENANCES OR CONDITIONS WILL MAKE THE RAMP LOCATIONS IMPRACTICAL OR UNSAFE. CONSULT CIVIL ENGINEER PRIOR TO MAKING ANY MODIFICATIONS.

**ADA ACCESSIBLE CURB CUT AND TRANSITION** — NOT TO SCALE — 8




NOTES:
1. SIDEWALK TO HAVE TOOLED JOINTS IN A 5' x 5' (TYP.) GRID WITH EXPANSION JOINTS 15' ON CENTER AND PREMOLDED FILLER
2. TOOLED JOINT 6" FROM FACE OF CURB
3. SEE PLAN FOR ELEVATIONS AT CURB
4. SIDEWALK CROSS SLOPE TO BE 1.5% MAX & SIDEWALK LONGITUDINAL SLOPE TO BE 4.5% MAX, TYP.
5. ALL SIDEWALKS SHALL BE PORTLAND CEMENT CONCRETE, PER PDA REQUIREMENTS.

**CONCRETE SIDEWALK WITH CURB** — NOT TO SCALE — 9

R:\PROJECTS\3250-01\CIVIL\DRAWINGS\CURRENT\C-3250-01_DETAILS.DWG

STATE OF NEW HAMPSHIRE — BRIAN D. JONES No. 13809 LICENSED PROFESSIONAL ENGINEER
11-20-23
PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
# ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | AS SHOWN | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |


PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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| DRAWING TITLE: | SHEET No. |
|---|---|
| DETAILS | C-501 |


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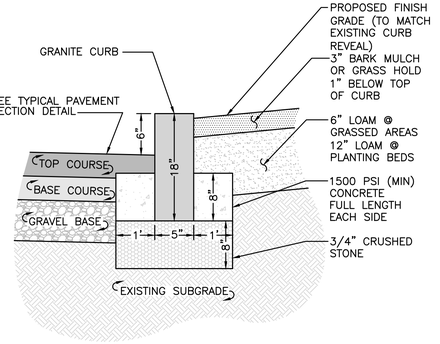
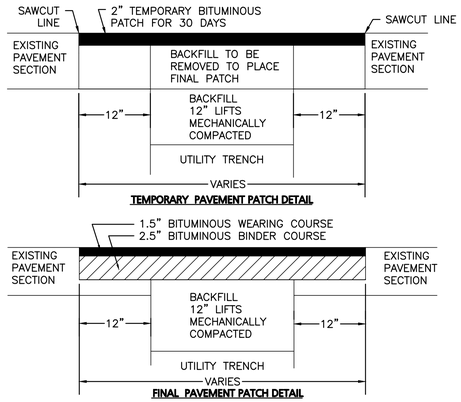



**VERTICAL GRANITE CURB**
NOT TO SCALE (1)




**TEMPORARY PAVEMENT PATCH DETAIL**




**FINAL PAVEMENT PATCH DETAIL**

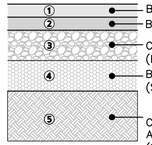
**PAVEMENT TRENCH PATCH**
NOT TO SCALE (2)

**STANDARD DUTY FLEXIBLE PAVEMENT DESIGN SECTION**

| LAYER NUMBER | LAYER DESCRIPTION | LAYER THICKNESS (INCHES) |
|---|---|---|
| 1 | BITUMINOUS WEARING COURSE (¼" AGGREGATE – NHDOT PRE-APPROVED MIX DESIGN) | 1.5" |
| 2 | BITUMINOUS BINDER COURSE (¾" AGGREGATE – NHDOT PRE-APPROVED MIX DESIGN) | 1.5" |
| 3 | CRUSHED GRAVEL (BASE COURSE) (NHDOT ITEM 304.3) | 6.0" |
| 4 | GRAVEL BORROW (SUBBASE COURSE) (NHDOT ITEM 304.2) | 12" |
| 5 | CLEAN GRANULAR FILL MATERIAL OR APPROVED ON-SITE MATERIALS (SUBGRADE) | AS NECESSARY |

**NHDOT GRADATION SPECIFICATION**

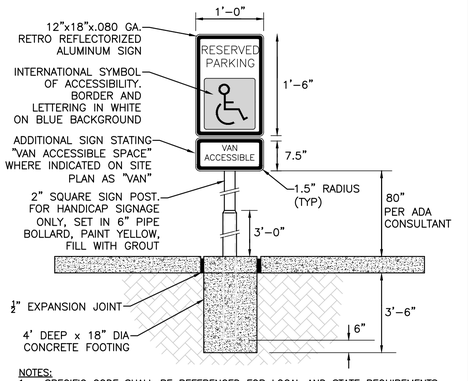
| SIEVE SIZE | PERCENT PASSING BY WEIGHT | | |
|---|---|---|---|
| | CLEAN GRANULAR FILL | BASE COURSE | SELECT GRANULAR FILL |
| 8" | 100 | 100 | 100 |
| 3" | 70–100 | 100 | 70–100 |
| ¼" | 40–100 | 40–80 | 40–90 |
| No. 4 | 25–100 | 30–70 | 25–80 |
| No. 10 | 15–95 | 20–60 | 15–70 |
| No. 40 | 10–70 | 10–30 | 5–40 |
| No. 200 | 0–15 | 3–10 | 0–12 |




NOTES:
IF A GEOTECHNICAL REPORT IS PREPARED THE RECOMMENDATIONS WITHIN THAT REPORT SHALL SUPERCEDE RECOMMENDATIONS HEREIN. THE CONTRACTOR SHALL HAVE AND REVIEW A COPY OF THE GEOTECHNICAL REPORT AND COMPLY WITH THE RECOMMENDATIONS THEREIN.

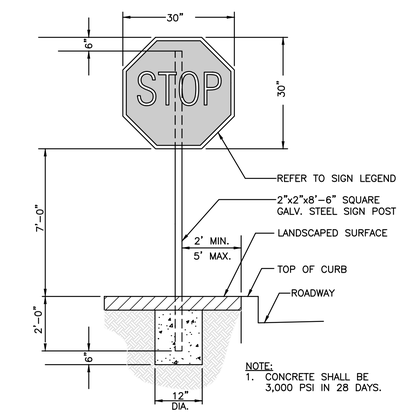
1. TOPSOIL SHALL BE REMOVED BENEATH ALL PAVEMENT AREAS TO EXPOSE THE NATURALLY–OCCURRING SOILS OR ACCEPTABLE ON–SITE FILL MATERIALS.
2. THE SUBGRADE SHOULD BE PROOFROLLED UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER USING AT LEAST 4 PASSES OF A 10–TON VIBRATORY ROLLER. AREAS OF THE SUBGRADE THAT "WEAVE" OR "ROLL" EXCESSIVELY SHOULD BE OVEREXCAVATED AND REPLACED WITH DRIER CLEAN GRANULAR FILL MATERIAL.
3. THE PAVEMENT SUBGRADE CONSISTING OF THE SPECIFIED CLEAN GRANULAR FILL SHALL BE PLACED IN 12" MAXIMUM LIFTS AND COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF THE MATERIALS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM DESIGNATION D–1557.
4. PAVEMENT AND GRAVEL SPECIFICATIONS WITHIN THE CITY RIGHT–OF–WAY ARE TO BE DESIGNATED BY THE CITY'S DESIGN CONSULTANT FOR THE ROUNDABOUT PROJECT.

**PAVEMENT SECTIONS**
NOT TO SCALE (3)



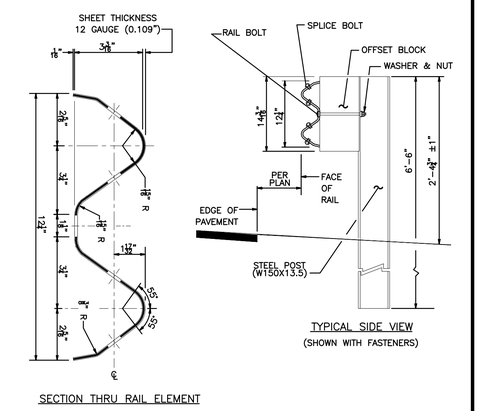

NOTES:
1. SPECIFIC CODE SHALL BE REFERENCED FOR LOCAL AND STATE REQUIREMENTS.
2. PROVIDE (1) SIGN PER HANDICAP SPACE. SEE SITE PLAN FOR EXACT LOCATION.
3. EXPANSION JOINT MATERIAL NOT REQUIRED WITH FLEXIBLE PAVEMENT.

**ACCESSIBLE PARKING SIGN POST**
NOT TO SCALE (4)




NOTE:
1. CONCRETE SHALL BE 3,000 PSI IN 28 DAYS.

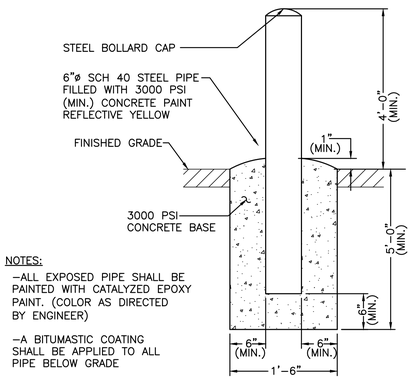
**STOP SIGN POST**
NOT TO SCALE (5)




SECTION THRU RAIL ELEMENT

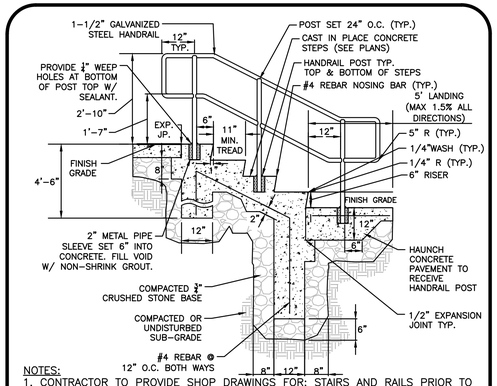
TYPICAL SIDE VIEW
(SHOWN WITH FASTENERS)

**STEEL GUARDRAIL**
NOT TO SCALE (6)



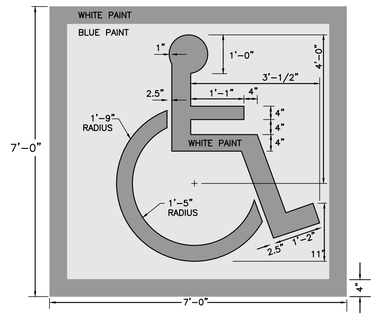

NOTES:
–ALL EXPOSED PIPE SHALL BE PAINTED WITH CATALYZED EPOXY PAINT. (COLOR AS DIRECTED BY ENGINEER)
–A BITUMASTIC COATING SHALL BE APPLIED TO ALL PIPE BELOW GRADE

**FIXED PIPE BOLLARD**
NOT TO SCALE (7)



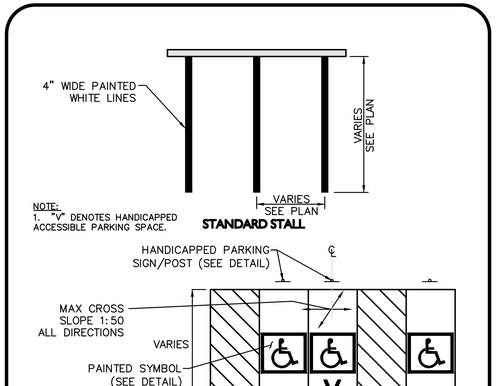

NOTES:
1. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR: STAIRS AND RAILS PRIOR TO FABRICATION OF HANDRAILS; AND, DESIGN OF CAST–IN–PLACE WALLS REQUIRED TO RETAIN SOIL ADJACENT TO STAIRS.
2. ALL POSTS TO BE SET PLUMB AND VERTICAL. ALL RAILS SHALL FOLLOW GRADE AT BASE. 3. ALL CONSTRUCTION SHALL CONFORM TO MASS. STATE BUILDING CODE, LATEST EDITION.

**CONCRETE STAIRS WITH HANDRAILS**
NOT TO SCALE (8)



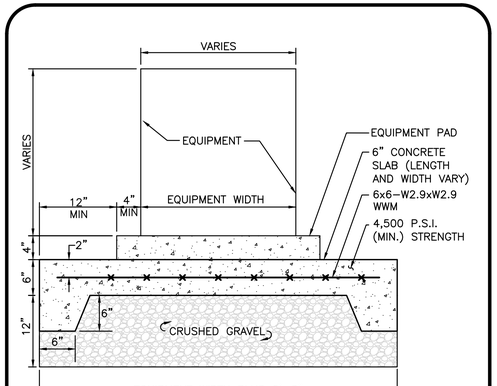

SYMBOL TO BE CENTERED ON WIDTH OF PARKING STALL. SYMBOL IS REQUIRED TO CONTRAST WITH BACKGROUND. USE WHITE ON BLUE (COLOR #105090 IN FEDERAL STANDARD 5952) DOUBLE COAT.

**ACCESSIBLE PARKING STALL PAVEMENT MARKING**
NOT TO SCALE (9)




**STANDARD AND VAN ACCESSIBLE HANDICAPPED PARKING SPACE**

**HANDICAP & STANDARD PARKING STRIPING**
NOT TO SCALE (10)




NOTE:
REFERENCE MECHANICAL ENGINEER'S PLANS FOR ANY PIPE, CONDUIT AND GROUND WIRE LOCATIONS

**TYPICAL UTILITY PAD**
NOT TO SCALE (11)

R: \PROJECTS\3250–01\CIVIL\DRAWINGS\CURRENT\C–3250–01_DETAILS.DWG

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER
1·20·23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
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| | | |
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | AS SHOWN | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE:
DETAILS

SHEET No.
C-502

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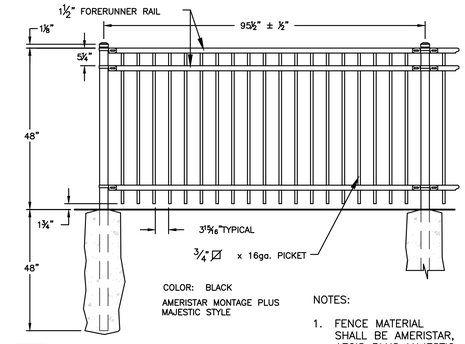


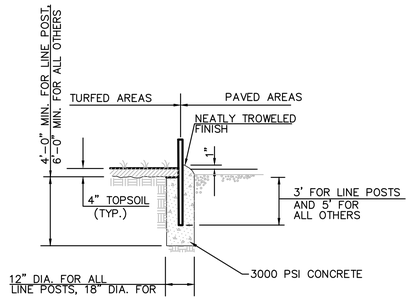

AMERISTAR®

1555 N. Mingo
Tulsa, OK 74116
1-888-333-3422

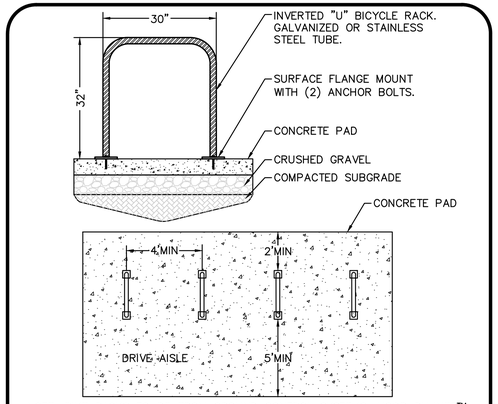
NOTES:

1. FENCE MATERIAL SHALL BE AMERISTAR, AEGIS PLUS MAJESTIC, COLOR BLACK.
2. POST SIZE SHALL BE PER AEGIS PLUS SIZING CHART

**48" HIGH DECORATIVE STEEL FENCE** — 1
NOT TO SCALE

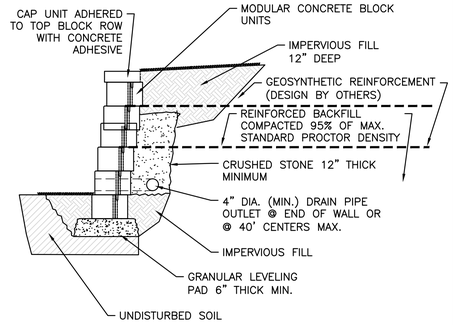



**POST SETTING DETAIL** — 2
NOT TO SCALE




NOTE: BIKE RACKS TO BE FROM GROUND CONTROL SYSTEMS: HOOP RUNNER™ –INVERTED U SURFACE MOUNTED BIKE PARKING RACKS. SURFACE MOUNT PER MANUFACTURER'S RECOMMENDATIONS. FINISH SELECTED BY OWNER. PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO ORDERING.

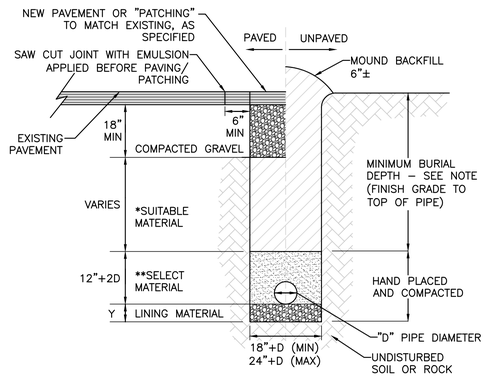
**BICYCLE RACK DETAIL** — 3
NOT TO SCALE




NOTES:

1. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE STRUCTURAL DESIGN OF THE MODULAR BLOCK RETAINING WALLS.
2. WALLS THREE FEET OR GREATER IN HEIGHT SHALL BE DESIGNED BY A NEW HAMPSHIRE REGISTERED PROFESSIONAL STRUCTURAL ENGINEER.
3. WALL DESIGNS AND CALCULATIONS SHALL BE PROVIDED TO THE PROJECT GEOTECHNICAL ENGINEER TO CONFIRM THAT GEOTECHNICAL RECOMENDATIONS HAVE BEEN PROPERLY INCLUDED.
4. WALL DESIGNS AND CALCULATIONS SHALL BE PROVIDED TO THE PROJECT CIVIL ENGINEER TO CONFIRM ELEVATIONS AND ALIGNMENT HAVE BEEN PROPERLY INCLUDED.
5. SMALL BLOCK UNITS SHALL BE THE SQUARE FOOT PRODUCT BY VERSA-LOK OR APPROVED EQUAL.
6. WALL HEIGHT WITHOUT REINFORCEMENT SHALL BE LIMITED TO 3' EXPOSED FACE.
7. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

**TYPICAL "SMALL BLOCK" RETAINING WALL** — 5
NOT TO SCALE

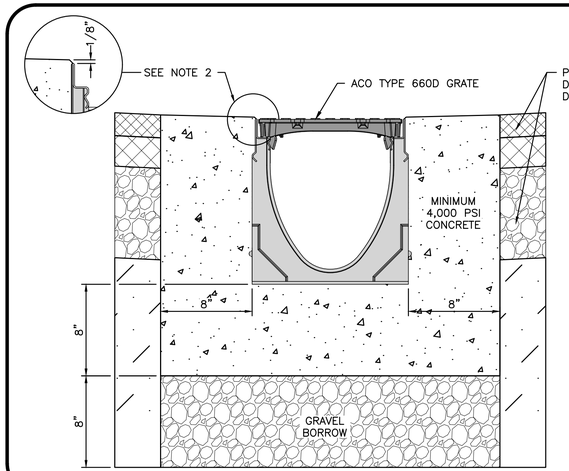



| CONDITION & PIPE | **SELECT MATERIAL | LINING MATERIAL | Y–DIMENSION |
|---|---|---|---|
| DUCTILE IRON "ORDINARY SOIL" | TYPE I, II, OR III | SAND OR TYPE III | 3" |
| RCP "ORDINARY SOIL" | TYPE II OR III | SAND OR TYPE III | 3" |
| ALL PIPE OVER BEDROCK OR LEDGE | TYPE II OR III | SAND OR TYPE III | 8" |
| DUCTILE IRON IN CLAY OR MUCK | TYPE II OR III | SAND | 4" |
| RCP IN CLAY | TYPE II OR III | SAND | 8" |
| ALL PLASTICS | TYPE III | SAND OR TYPE III | 6" |

NOTES:
1. MINIMUM BURIAL DEPTH (FINISH GRADE TO TOP OF PIPE)
   GRAVITY PIPE – SEE PLAN OR PROFILE
   PRESSURE PIPE UNDER PAVING – 4'
   PRESSURE PIPE BENEATH UNPAVED – 3'
2. WHERE BACKFILL IS DESIGNATED AS COMPACTED, THIS MEANS 90 TO 95% STANDARD PROCTOR. AASHTO T-99. ALL FILL PLACED BELOW PIPES AND STRUCTURES MUST MEET THIS REQUIREMENT.
3. FOR ALL TRENCHES WITH A GRADE GREATER THAN 4% AND/OR WHERE GROUNDWATER IS APPARENT, INSTALL CLAY DAMS AROUND THE PIPE AT 100' INTERVALS.
4. BACKFILL AS PER DCED-R100 AND REFERENCED AS STANDARD DRAWING.

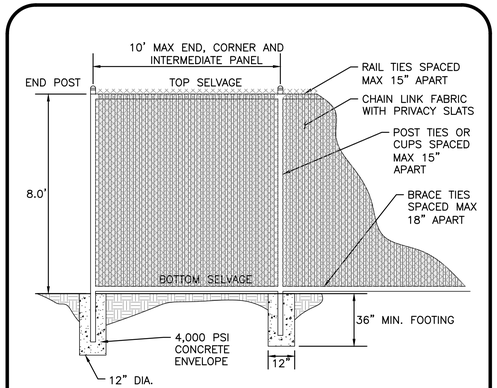
* SUITABLE MATERIAL SHALL CONTAIN NO STONE GREATER THAN 4" IN DIAMETER, NO FROZEN LUMPS, AND ONLY MINOR AMOUNTS OF CLAY OR ORGANIC MATERIAL. ALL MATERIAL TO BE PLACED IN MAX 6" LIFTS AND COMPACTED BEFORE PLACING NEXT LIFT.
**TYPE I MATERIAL SHALL BE EITHER GRAVEL OR EXCAVATED MATERIAL CONTAINING NO STONES GREATER THAN 1.5" DIAMETER, NO FROZEN LUMPS, CLAY OR ORGANIC MATERIAL.
**TYPE II MATERIAL SHALL BE CLEAN, HARD, CRUSHED OR NATURAL STONE WITH A GRADATION BY WEIGHT OF 100% PASSING A 1.5" SQUARE OPENING, NOT MORE THAN 25% PASSING A ¾" OPENING, AND NOT MORE THAN 5% PASSING A ½" SQUARE OPENING.
**TYPE III MATERIAL SHALL BE CLEAN, HARD, CRUSHED STONE FREE FROM COATINGS AND THOROUGHLY WASHED WITH A GRADATION BY WEIGHT OF 100% PASSING A 1" SQUARE OPENING, AND 0 TO 5% PASSING A ¼" SQUARE OPENING.

**TRENCH DETAIL** — 4
NOT TO SCALE



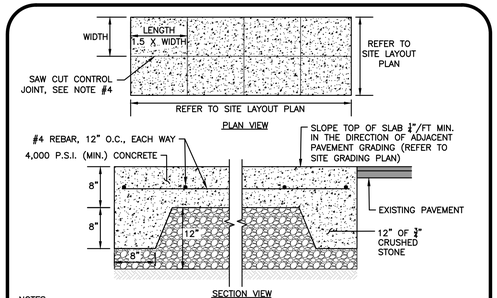

NOTES:
1. MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
2. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" ABOVE THE TOP OF THE CHANNEL EDGE.
3. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS.
4. TRENCH DRAIN SHALL BE K200 BY ACO, OR APPROVED EQUAL. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS. TRENCH DRAIN SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS AND RECOMMENDATIONS.

**TRENCH DRAIN** — 6
NOT TO SCALE




NOTES:
1. ALL INTERMEDIATE POSTS TO BE MECHANICALLY DRIVEN INTO THE GROUND.
2. COLOR OF PRIVACY SLATS TO BE APPROVED BY OWNER.

**8'-HIGH CHAIN LINK FENCE FOR DUMPSTER ENCLOSURE** — 7
NOT TO SCALE




NOTES:
1. PROVIDE NON-SLIP BROOM FINISH TO TOP SURFACE.
2. ALL CONCRETE SHALL BE PROPORTIONED, MIXED AND PLACED CONFORMING TO CURRENT AMERICAN CONCRETE INSTITUTE (ACI) 301, 304, AND 308 STANDARDS. THE FOLLOWING MIX DESIGNS SHALL BE SUBMITTED FOR REVIEW:
   EXTERIOR CONCRETE
   28-DAY STRENGTH (MIN): 4,000 PSI
   COARSE AGGREGATE (MAX): 3/4"
   WATER CEMENT RATIO (W/C): 0.45
   AIR ENTRAINMENT: 6% (±1%)
   SLUMP: 3.5" (±1")
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL IN ACCORDANCE WITH ASTM A615, GRADE 60. ALL DETAILS SHALL BE IN ACCORDANCE WITH ACI DETAIL STANDARD ACI 315.
4. CONTROL JOINTS SHALL BE SAW CUT TO A DEPTH OF 1.0" AT A RATIO NOT TO EXCEED 1.5:1.0 LENGTH TO WIDTH, SEE PLAN VIEW ABOVE.

**HEAVY DUTY CONCRETE PAD** — 8
NOT TO SCALE

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER

1-20-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

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| 3 | 10-20-23 | REVISED PER TAC COMMENTS |
| 2 | 08-28-23 | ISSUED FOR AOT PERMIT APPLICATION |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

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7 SINCLAIR DRIVE
EXETER, NH 03833

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**DRAWING TITLE:** DETAILS

**SHEET No.** C-503

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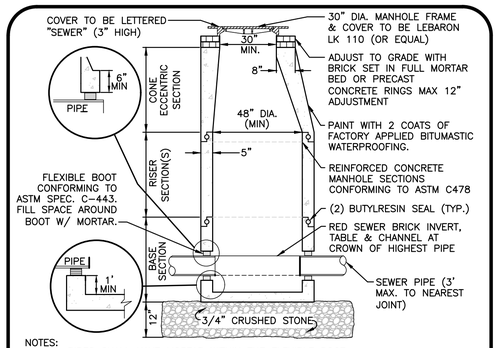
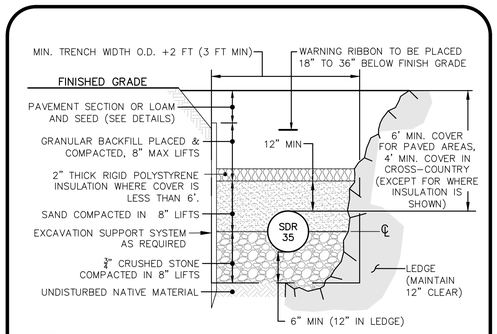



NOTES:
1. ALL PIPES SHALL HAVE MORTAR WITHIN THE FLEXIBLE BOOT.
2. TWO (2) BUTYL SEALS ARE REQUIRED AT JOINTS.
3. ALL MANHOLES SHALL BE PRESSURE TESTED PER NHDOT REGULATIONS.
4. THE MANHOLE, INCLUDING ALL COMPONENT PARTS, SHALL HAVE ADEQUATE SPACE, STRENGTH AND LEAK PROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENT AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND (H-20 LOADING) OR WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE.

**SEWER MANHOLE** 1
NOT TO SCALE

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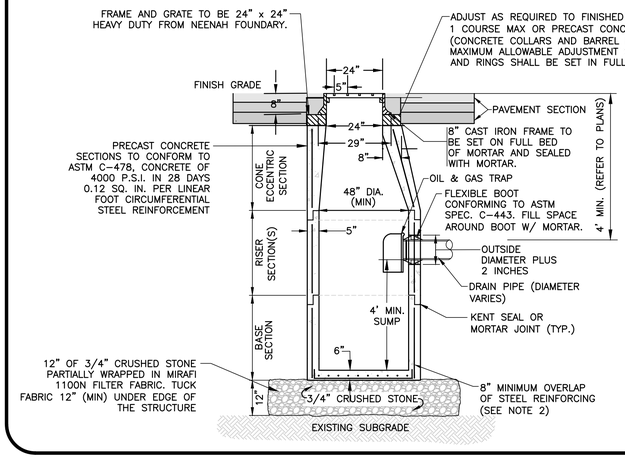
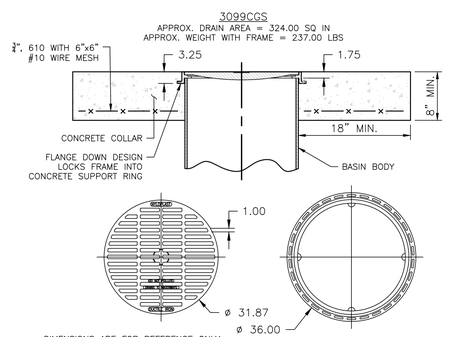
2. FOR ALL TRENCHES WITH A GRADE GREATER THAN 4% AND/OR WHERE GROUNDWATER IS APPARENT, INSTALL CLAY DAMS AROUND THE PIPE AT 100' INTERVALS.
3. CRUSHED STONE SHALL BE CLEAN, HARD, FREE FROM COATINGS AND THOROUGHLY WASHED WITH A GRADATION BY WEIGHT OF 100% PASSING A 1" SQUARE OPENING, AND 0 TO 5% PASSING A ¼" SQUARE OPENING.

**SEWER TRENCH DETAIL** 2
NOT TO SCALE

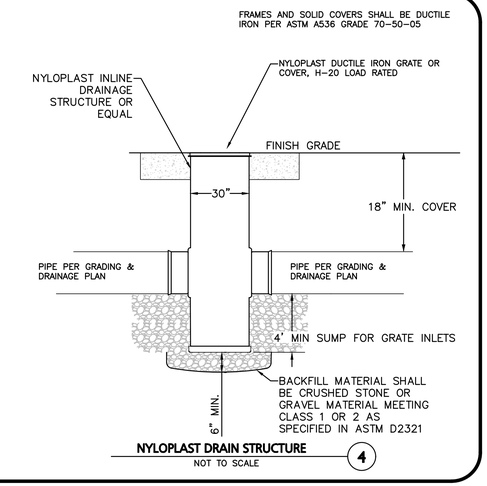



NOTES:
1. CATCH BASIN STRUCTURE TO BE CAPABLE OF AASHTO H-20 LOADING WITHOUT FAILURE.
2. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN.FT. (BOTH WAYS).
3. BASE SECTION SHALL BE MONOLITHIC
4. ANY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW CUTTING AND/OR CORING. THE USE OF JACKHAMMERS, HAMMERS, AND CHISELS WILL NOT BE ALLOWED.
5. ALL CATCH BASINS SHALL BE EQUIPPED WITH OIL ABSORPTIVE PILLOWS DURING CONSTRUCTION.

**STANDARD CATCH BASIN** 3
NOT TO SCALE

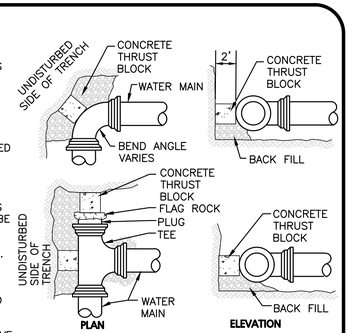



DIMENSIONS ARE FOR REFERENCE ONLY
ACTUAL DIMENSIONS MAY VARY
DIMENSIONS ARE IN INCHES
GRATE MEETS H-20 LOAD RATING
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
LOCKING DEVICE AVAILABLE UPON REQUEST SEE DRAWING NO. 7001-110-022




**NYLOPLAST DRAIN STRUCTURE** 4
NOT TO SCALE

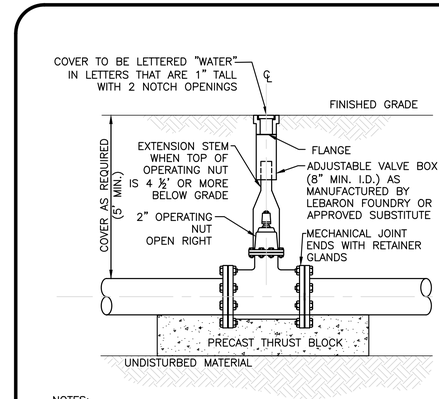
NOTES:
1. ALL THRUST BLOCKS SHALL BE PRECAST CONCRETE.
2. ALL WATER MAIN FITTINGS, BENDS, TEES, PLUGS ETC. SHALL BE RESTRAINED W/ THRUST BLOCKS EXCEPT WHERE NOTED.
3. ALL THRUST BLOCKS & COLLARS SHALL BE INSTALLED SO THAT THEY BEAR AGAINST UNDISTURBED EARTH.
4. SIZE OF CONCRETE THRUST BLOCKS SHALL BE AS NOTED BELOW.
5. MINIMUM COMPRESSIVE STRENGTH OF THRUST BLOCK CONCRETE SHALL BE 3,000 P.S.I.
6. KEEP CONCRETE CLEAR OF MECHANICAL JOINTS.




MINIMUM THRUST BLOCK BEARING AREAS

| PIPE ø | 90° BEND (SQ. FT.) | 45° BEND (SQ. FT.) | 22.5° BEND (SQ. FT.) | TEES, PLUGS, CAPS & HYD. (SQ.FT.) |
|---|---|---|---|---|
| 6" | 5 | 3 | 3 | 4 |
| 8" | 9 | 6 | 3 | 9 |
| 10" | 13 | 7 | 4 | 12 |
| 12" | 20 | 10 | 5 | 16 |

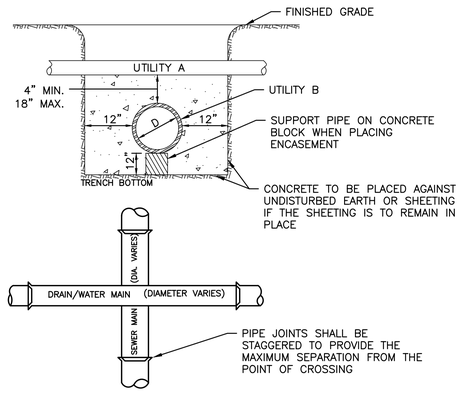
**THRUST BLOCK DETAILS** 5
NOT TO SCALE



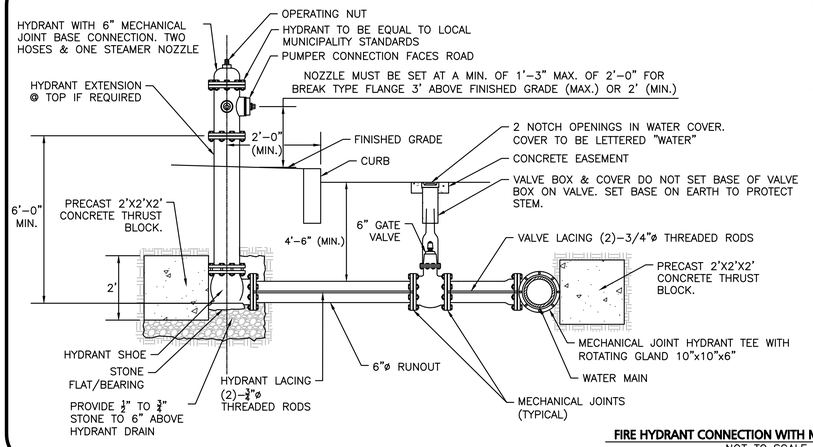

NOTES:
1. CONTRACTOR MAY USE ANCHOR TEES AT HIS OPTION.
2. HYDRANTS AND VALVES SHALL BE LEFT TURN OPEN (OPEN LEFT).
3. ALL VALVES SHALL SAY "OPEN LEFT" ON GATE BOXES.

**GATE VALVE** 6
NOT TO SCALE

NOTES:
1. WHENEVER CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET BETWEEN A SEWER MAIN AND A WATER/DRAIN MAIN:
2. THE WATER/DRAIN MAIN SHALL BE LAID IN A SEPARATE TRENCH AND THE DIFFERENCE IN ELEVATION BETWEEN THE WATER/DRAIN MAIN AND THE SEWER MAIN SHALL BE AT LEAST 18 INCHES.
3. THE PIPE CROSSING SHALL OCCUR AS CLOSE TO 90° AS PRACTICABLE.
4. THE PIPE JOINTS SHALL BE STAGGERED TO PROVIDE THE MAXIMUM SEPARATION FROM THE POINT OF CROSSING, 6' OF SEPARATION MINIMUM.
5. THE CROSSING SHALL BE ENCASED IN CONCRETE FOR THE ENTIRE WIDTH OF THE TRENCH AND FOR A DISTANCE OF 10 LINEAR FEET CENTERED ON THE CROSSING.
6. UTILITIES A AND B CAN BE EITHER NEW OR EXISTING.
7. WHEN ONE UTILITY IS A SANITARY SEWER. IT IS PREFERABLE TO BE POSITIONED AS SHOWN FOR UTILITY B.
8. ENCASEMENT EXTENDS 10'-0" ON EACH SIDE OF THE CENTERLINE OF UTILITY A.
9. PIPE MUST BE BRACED VERTICALLY AND HORIZONTALLY TO PREVENT FLOATATION DURING PLACEMENT OF CONCRETE.




**SEWER, WATER/DRAIN CROSSING DETAIL** 7
NOT TO SCALE




NOTES:
1. ALL HYDRANTS, VALVES AND LOCAL CONNECTIONS SHALL COMPLY WITH THE SPECIFICATIONS OF THE LOCAL MUNICIPALITY.
2. PIPING TO BE RESTRAINED WITH RODDING OR RETAINING GLANDS.
3. GATE VALVE INSTALLATION IS TYPICAL FOR ALL GATES SHOWN ON THE DRAWINGS.
4. HYDRANTS AND VALVES SHALL BE LEFT TURN OPEN (OPEN LEFT).
5. ALL VALVES SHALL SAY "OPEN LEFT" ON GATE BOXES.

**FIRE HYDRANT CONNECTION WITH MECHANICAL JOINT** 8
NOT TO SCALE

R: \PROJECTS\3250-01\CIVIL\DRAWINGS\CURRENT\C-3250-01_DETAILS.DWG

STATE OF NEW HAMPSHIRE
BRIAN D. JONES No. 13809 LICENSED PROFESSIONAL ENGINEER
11-20-23
PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

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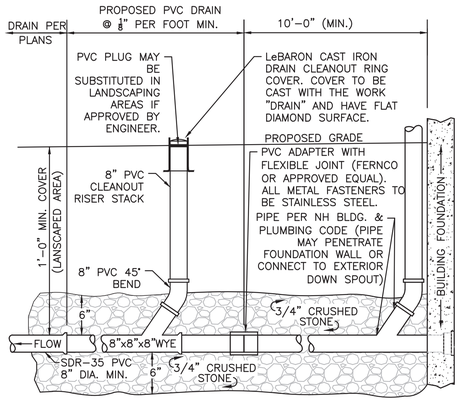
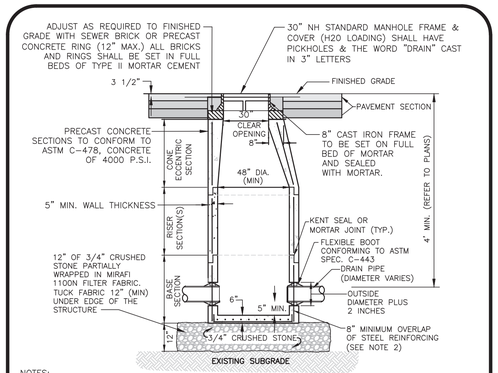
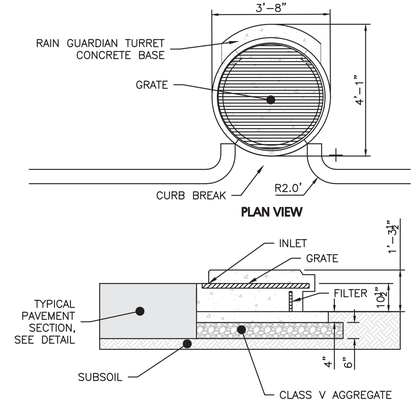



**ROOF DRAIN**
NOT TO SCALE 1




NOTES:
1. MANHOLE TO BE CAPABLE OF AASHTO H-20 LOADING WITHOUT FAILURE.
2. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
3. BASE SECTION SHALL BE MONOLITHIC
4. ANY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW CUTTING AND/OR CORING. THE USE OF JACKHAMMERS, HAMMERS, AND CHISELS WILL NOT BE ALLOWED.

**DRAIN MANHOLE**
NOT TO SCALE 2



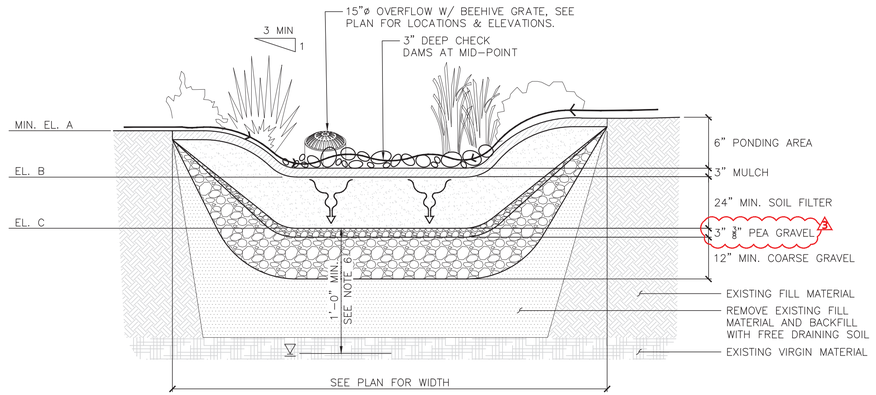

NOTES:
1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURE (1,030 LBS).
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4% TO 8% BY VOLUME).
3. MANUFACTURED AND DESIGNED TO ASTM C858.
4. THREE-POINT PICK USING RECESSED LIFTING POCKETS WITH A STANDARD HOOK.
5. SOIL UNDER BASE TO BE COMPACTED TO 95% STANDARD PROCTOR.
6. TWO-PIECE LIGHT DUTY GALVANIZED GRATE (34.5 LBS/PIECE) FOR 541 LB CONCENTRATED LOAD OR 309 LB/SQ FT UNIFORM LOAD.
7. TWO-PIECE HEAVY DUTY GALVANIZED GRATE (77.5 LBS/PIECE) FOR 2,456 LB CONCENTRATED LOAD OR 1,404 LB/SQ FT UNIFORM LOAD.
8. USE EXPANSION JOINT MATERIAL BETWEEN TURRET AND BIORETENTION INLET.

**RAIN GUARDIAN - TURRET TYPICAL DETAIL**
NOT TO SCALE 3

**BIORETENTION FILTER MEDIA**

| COMPONENT MATERIAL | PERCENT OF MIXTURE BY VOLUME | GRADATION OF MATERIAL | |
|---|---|---|---|
| | | SIEVE NO. | PERCENT BY WEIGHT PASSING STANDARD SIEVE |
| FILTER MEDIA OPTION A | | | |
| ASTM C-22 CONCRETE SAND | 50 TO 55 | | |
| LOAMY SAND TOPSOIL, WITH FINES AS INDICATED | 20 TO 30 | 200 | 15 TO 25 |
| MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED | 20 TO 30 | 200 | <5 |
| FILTER MEDIA OPTION B | | | |
| MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED | 20 TO 30 | 200 | <5 |
| LOAMY COARSE SAND | 70 TO 80 | 10 | 85 TO 100 |
| | | 20 | 70 TO 100 |
| | | 60 | 15 TO 40 |
| | | 200 | 8 TO 15 |

| BIORETENTION ELEVATION TABLE | | | | | |
|---|---|---|---|---|---|
| ELEV. ID | BR #1 | BR #2 | BR #3 | BR #4 |
| A | 61.25 | 61.25 | 61.25 | 61.50 |
| B | 58.75 | 59.50 | 59.00 | 59.50 |
| C | 56.75 | 57.50 | 57.00 | 57.50 |

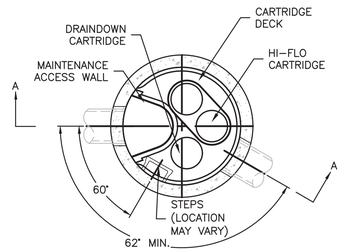



NOTES:

1. SEE LANDSCAPE PLAN FOR PLANT TYPES.
2. GRADING, AND PLANTING OF BIORETENTION SHALL BE COMPLETED IN EARLY PHASES OF CONSTRUCTION. PLANTS AND SEED ON SLOPES AND BOTTOM OF BASIN MUST BE ESTABLISHED PRIOR TO CONNECTING STORM DRAINAGE SYSTEM OUTLETS TO BIORETENTION AREA. PLANTS AND SEED MIX SHALL HAVE A MINIMUM OF 6 MONTHS GROWING, BE ESTABLISHED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO CONNECTING STORM DRAINAGE SYSTEM OUTLETS TO BIORETENTION AREA.
3. EROSION CONTROL MEASURES AS SHOWN ON THE EROSION CONTROL PLAN, SHALL BE IN PLACE PRIOR TO ANY REGRADING ACTIVITY.
4. EXCAVATION, FILLING AND PLANTING SHALL OCCUR IN THE DRY. WATER LEVELS MUST BE LOWERED IN THE BIORETENTION AREA BY RELYING ON DRY SEASON AND OR DRY SPELLS; OR MAY BE ACCOMPLISHED THROUGH THE USE OF DEWATERING METHODS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ANY DEWATERING METHODS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
5. WATER FROM ANY DEWATERING OPERATION SHALL BE TREATED TO REDUCE TOTAL SUSPENDED SOLIDS AND BE IN COMPLIANCE WITH STATE AND FEDERAL STANDARDS. BEFORE ANY DEWATERING IS PERFORMED, THE CONTRACTOR SHALL FILE AND OBTAIN A TEMPORARY GROUNDWATER DISCHARGE PERMIT FROM NHDES. COORDINATION BETWEEN THE APPLICANT, PDA, NHDES AND THE AIR FORCE IS NECESSARY PRIOR TO FILING THIS APPLICATION.
6. A MINIMUM OF 1 FOOT SEPARATION BETWEEN THE BOTTOM OF THE PRACTICE AND SEASONAL HIGH WATER TABLE SHALL BE PROVIDED, VERIFY IN FIELD. IF SEPARATION CAN NOT BE ACHIEVED, SET UNDERDRAIN AT BOTTOM OF COARSE GRAVEL LAYER, OMIT PEA GRAVEL LAYER, AND PROVIDE IMPERMEABLE LINER AT BOTTOM OF PRACTICE.

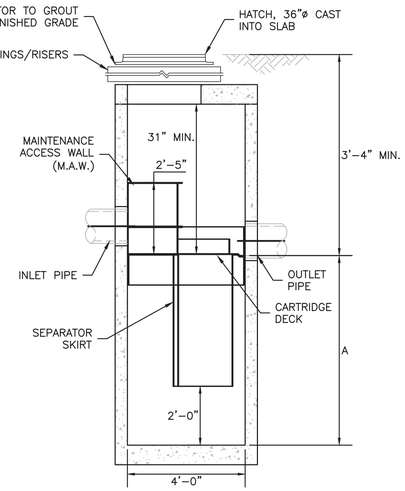
CONSTRUCTION NOTES:
1. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM. 3

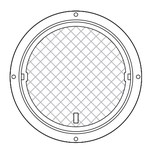
**BIORETENTION SYSTEM DETAIL**
NOT TO SCALE 4




**GENERAL NOTES:**
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS DIRECTED BY THE ENGINEER OF RECORD.

**INSTALLATION NOTES:**
1. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED).
2. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
3. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
4. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.



**36" DIA. HATCH**

**WQ-01 - JELLYFISH (JF4) STANDARD DETAIL**
NOT TO SCALE 5


STATE OF NEW HAMPSHIRE
BRIAN D. JONES No. 13809 LICENSED PROFESSIONAL ENGINEER
11-20-23

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.


| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| 3 | 11-10-23 | REVISED PER AOT COMMENTS |
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
# ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | AS SHOWN | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |


PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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DRAWING TITLE: DETAILS

SHEET No. C-505


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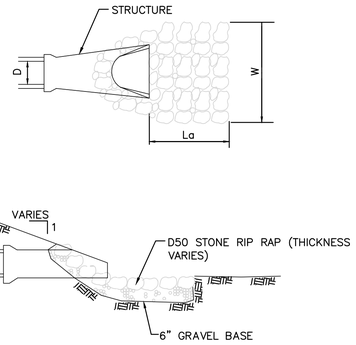
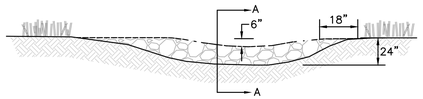
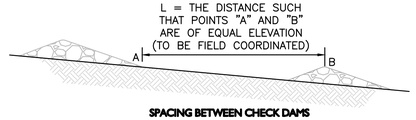



| RIP-RAP SIZING CHART | | | | | |
|---|---|---|---|---|---|
| STRUCTURE | D | La | W | D50 | THICKNESS |
| FES-01 | 8" | 10' | 10' | 3" | 7" |
| FES-02 | 10" | 9' | 11' | 3" | 7" |
| FES-03 | 8" | 6.5' | 8' | 3" | 7" |
| FES-04 | 8" | 8' | 8' | 3" | 7" |
| FES-05 | 8" | 5' | 7' | 3" | 7" |
| FES-06 | 8" | 8' | 9' | 3" | 7" |

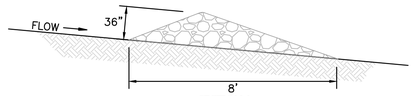
**RIP-RAP OUTFALL APRON** (1)
NOT TO SCALE




**VIEW LOOKING UPSTREAM**




**SPACING BETWEEN CHECK DAMS**




**SECTION A**

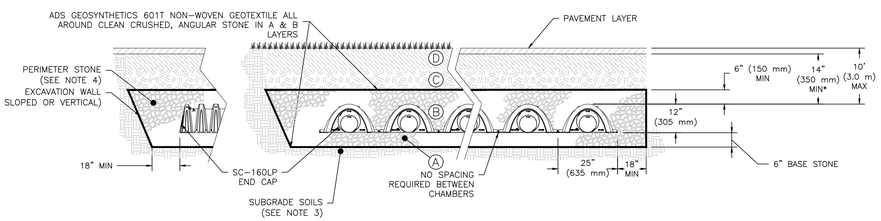
NOTES:
1. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE DAM SHALL BE LESS THAN ONE ACRE.
2. THE MAXIMUM HEIGHT OF THE DAM SHALL BE 2 FEET.
3. THE CENTER OF THE DAM SHALL BE AT LEAST 6 INCHES LOWER THAN THE OUTER EDGES.
4. THE MAXIMUM SPACING BETWEEN THE DAMS SHALL BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE OVERFLOW ELEVATION OF THE DOWNSTREAM DAM.
5. THE DAMS SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
6. CHECK DAMS SHALL BE CONSTRUCTED OF A WELL-GRADED ANGULAR 2-INCH TO 3-INCH STONE.

**TEMPORARY CHECK DAM** (2)
NOT TO SCALE

## ACCEPTABLE FILL MATERIALS: STORMTECH SC-160LP CHAMBER SYSTEMS

| MATERIAL LOCATION | | DESCRIPTION | AASHTO MATERIAL CLASSIFICATIONS | COMPACTION / DENSITY REQUIREMENT |
|---|---|---|---|---|
| D | **FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER | GENERAL BACKFILL. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS. | N/A | SEE FULL DEPTH PAVEMENT SECTION DETAIL |
| C | **INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 14" (355 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER. | GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE.<br>MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER. | AASHTO M145'<br>A-1, A-2-4, A-3<br>OR<br>AASHTO M43'<br>3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 | BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN). |
| B | **EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE. | CLEAN, CRUSHED, ANGULAR STONE | AASHTO M43'<br>3, 357, 4, 467, 5, 56, 57 | NO COMPACTION REQUIRED. |
| A | **FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER. | CLEAN, CRUSHED, ANGULAR STONE | AASHTO M43'<br>3, 357, 4, 467, 5, 56, 57 | PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3] |

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.




### INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

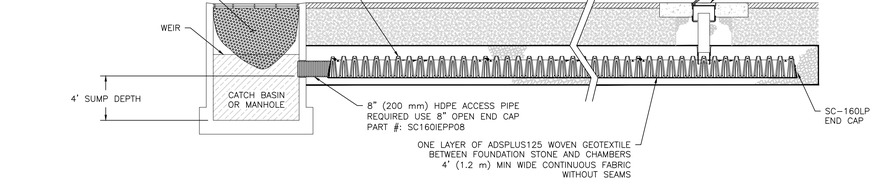
### NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

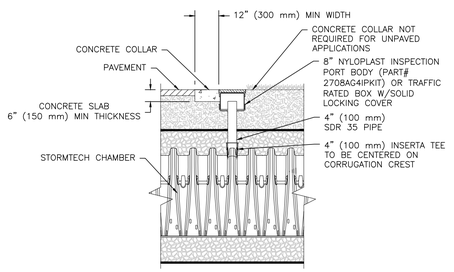
### SC-160LP STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-160LP.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 1.5".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT/% . THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

**CONSTRUCTION NOTES:**
1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE INFILTRATION SYSTEM.
2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
3. AFTER THE AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.




**SC-160LP ISOLATOR ROW PLUS DETAIL**
NOT TO SCALE




NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

**INSPECTION PORT DETAIL**
NOT TO SCALE

**STORMTECH SC-160LP INFILTRATION SYSTEM** (3)
NOT TO SCALE

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ADS Advanced Drainage Systems, Inc.

STATE OF NEW HAMPSHIRE — BRIAN D. JONES No. 13809 LICENSED PROFESSIONAL ENGINEER
11-20-23
PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 4 | 11-10-23 | REVISED PER AOT COMMENTS |
| 3 | 10-20-23 | REVISED PER TAC COMMENTS |
| 2 | 08-28-23 | ISSUED FOR AOT PERMIT APPLICATION |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | AS SHOWN | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE: DETAILS
SHEET No. C-506

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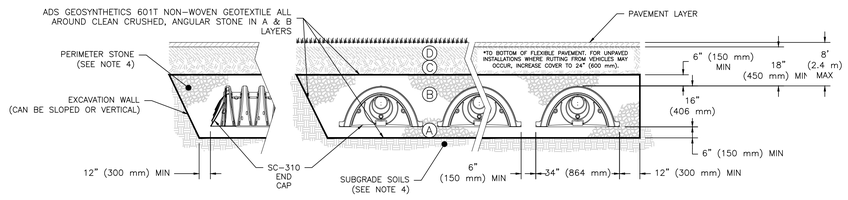
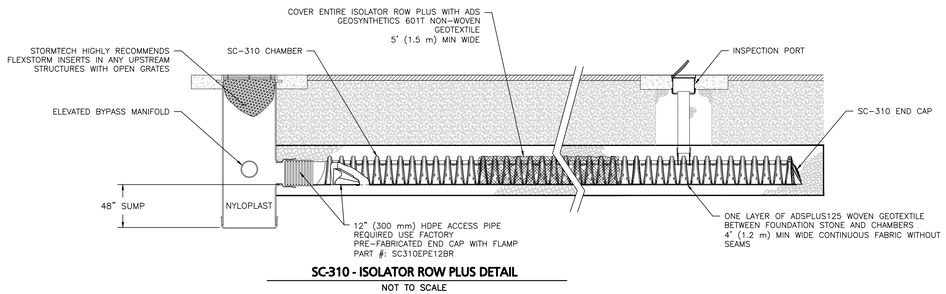
## ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

| | MATERIAL LOCATION | DESCRIPTION | AASHTO MATERIAL CLASSIFICATIONS | COMPACTION / DENSITY REQUIREMENT |
|---|---|---|---|---|
| D | **FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER. | ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS. | N/A | PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS. |
| C | **INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER. | GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE.<br><br>MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER. | AASHTO M145[1]<br>A-1, A-2-4, A-3<br><br>OR<br><br>AASHTO M43[1]<br>3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 | BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN). |
| B | **EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE. | CLEAN, CRUSHED, ANGULAR STONE | AASHTO M43[1]<br>3, 357, 4, 467, 5, 56, 57 | NO COMPACTION REQUIRED. |
| A | **FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER. | CLEAN, CRUSHED, ANGULAR STONE | AASHTO M43[1]<br>3, 357, 4, 467, 5, 56, 57 | PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3] |

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

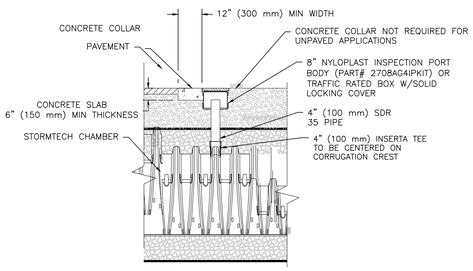



### SC-310 - CROSS SECTION DETAIL
NOT TO SCALE



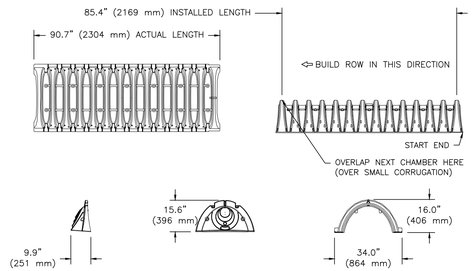

### SC-310 - ISOLATOR ROW PLUS DETAIL
NOT TO SCALE

## NOTES:
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. COORDINATE WITH THE PROJECT GEOTECHNICAL ENGINEER FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.




NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

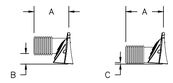
### 4" PVC INSPECTION PORT
NOT TO SCALE




## NOMINAL CHAMBER SPECIFICATIONS

| | | |
|---|---|---|
| SIZE (W X H X INSTALLED LENGTH) | 34.0" X 16.0" X 85.4" | (864 mm X 406 mm X 2169 mm) |
| CHAMBER STORAGE | 14.7 CUBIC FEET | (0.42 $m^3$) |
| MINIMUM INSTALLED STORAGE* | 31.0 CUBIC FEET | (0.88 $m^3$) |
| WEIGHT | 35.0 lbs. | (16.8 kg) |

*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS




PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE CORED END CAPS END WITH "PC"

| PART # | STUB | A | B | C |
|---|---|---|---|---|
| SC310EPE06T / SC310EPE06TPC | 6" (150 mm) | 9.6" (244 mm) | 5.8" (147 mm) | --- |
| SC310EPE06B / SC310EPE06BPC | | | --- | 0.5" (13 mm) |
| SC310EPE08T / SC310EPE08TPC | 8" (200 mm) | 11.9" (302 mm) | 3.5" (89 mm) | --- |
| SC310EPE08B / SC310EPE08BPC | | | --- | 0.6" (15 mm) |
| SC310EPE10T / SC310EPE10TPC | 10" (250 mm) | 12.7" (323 mm) | 1.4" (36 mm) | --- |
| SC310EPE10B / SC310EPE10BPC | | | --- | 0.7" (18 mm) |
| SC310EPE12B | 12" (300 mm) | 13.5" (343 mm) | --- | 0.9" (23 mm) |
| SC310EPE12BR | 12" (300 mm) | 13.5" (343 mm) | --- | 0.9" (23 mm) |

ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

### TECHNICAL SPECIFICATIONS
NOT TO SCALE

## SC-310 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-310.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

Advanced Drainage Systems, Inc.

## STORMTECH SC-310 CHAMBER INFILTRATION SYSTEM
NOT TO SCALE

R:\PROJECTS\3250-01\CIVIL\DRAWINGS\CURRENT\C-3250-01_DETAILS.DWG

STATE OF NEW HAMPSHIRE
BRIAN D. JONES
No. 13809
LICENSED PROFESSIONAL ENGINEER
1-20-23
PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
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www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
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## SECTION 33 36 00 - SANITARY SEWER SYSTEMS

PART 1 GENERAL

1.01 PRODUCTS

A. GENERAL: MATERIALS SHALL BE AS SPECIFIED HEREIN, EXCEPT THAT CONSIDERATION SHALL BE GIVEN TO OTHER PRODUCTS THAT MEET OR EXCEED THOSE SPECIFIED IF REQUESTED TEN (10) DAYS PRIOR TO DATE OF BID OPENING, IN ACCORDANCE WITH THE GENERAL CONDITIONS.

1.02 DESCRIPTION:

A. THE WORK UNDER THIS SECTION SHALL INCLUDE THE FURNISHING OF ALL MATERIAL, LABOR, EQUIPMENT AND SUPPLIES AND THE PERFORMANCE OF ALL OPERATIONS TO PROVIDE A COMPLETE WORKING SYSTEM AS REQUIRED BY THE DRAWINGS AND DETAILS AND AS SPECIFIED HEREIN, IN GENERAL, TO INCLUDE THE FOLLOWING ITEMS:

1. SANITARY SEWER SYSTEM FROM 5 FEET OUTSIDE THE BUILDING TO POINT OF TERMINATION AS SHOWN ON THE DRAWINGS.

2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE LOCAL DEPARTMENT OF PUBLIC WORKS AND NHDES.

1.03 RELATED WORK:

A. SECTION 31 23 00 – EARTHWORK.

B. SECTION 15401 – PLUMBING.

1.04 RELATED DOCUMENTS:

A. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE MUNICIPALITY.

B. ALL WORK FOR ITEMS NOT OTHERWISE COVERED BY 1.03.A ABOVE SHALL CONFORM TO THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION (LATEST EDITION).

C. ALL WORK SHALL CONFORM TO THE PERMITS ISSUED BY THE STATE OF NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.

1.05 PROJECT CONDITIONS:

A. KNOWN UNDERGROUND AND SURFACE UTILITY LINES ARE INDICATED ON THE DRAWINGS. INFORMATION ON THE DRAWINGS RELATING TO EXISTING UTILITY LINES AND SERVICES IS FROM THE BEST SOURCE PRESENTLY AVAILABLE. ALL SUCH INFORMATION IS FURNISHED ONLY FOR INFORMATION AND IS NOT GUARANTEED. COORDINATE WITH UTILITY COMPANIES, DIG SAFE AND THEIR CONTRACTORS, AND EXCAVATE TEST PITS AS REQUIRED TO DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES.

B. TEST BORINGS HAVE BEEN PERFORMED BY OWNER'S SEPARATE CONTRACTOR. LOCATIONS OF TEST BORINGS ARE SHOWN ON THE DRAWINGS. NEITHER THE OWNER NOR THE ENGINEERS MAKE WARRANTY, EITHER EXPRESSED OR IMPLIED, OF ACCURACY OF BORING DATA AS A REPRESENTATION OF TYPICAL CONDITIONS. THE CONTRACTOR SHALL MAKE HIS/HER OWN INVESTIGATION OF SUBSURFACE CONDITIONS AND SATISFY HER/HIMSELF AS TO CONDITION THEREOF AND SHALL BASE HIS/HER BID IN SOLE RELIANCE THEREON. SUCH INVESTIGATION MAY INCLUDE, BUT IS NOT NECESSARILY LIMITED TO: ADDITIONAL TEST PITS, BORINGS. NO ALLOWANCE WILL BE MADE FOR THE CONTRACTOR'S FAILURE TO PERFORM INVESTIGATION NECESSARY TO FULLY IDENTIFY AND SATISFY HIM/HERSELF AS TO SUBSURFACE CONDITIONS WHICH COULD AFFECT THE WORK.

C. PROTECT EXCAVATIONS BY SHORING, BRACING, SHEETING, UNDERPINNING, OR OTHER METHODS, AS REQUIRED TO PREVENT CAVE–INS OR LOOSE DIRT FROM ENTERING EXCAVATIONS. BARRICADE OPEN EXCAVATIONS AND POST WARNING LIGHTS AT WORK ADJACENT TO PUBLIC STREETS AND WALKS.

D. UNDERPIN ADJACENT STRUCTURE(S), INCLUDING UTILITY SERVICE LINES, WHICH MAY BE DAMAGED BY EXCAVATION OPERATIONS.

E. PROMPTLY REPAIR DAMAGE TO ADJACENT FACILITIES CAUSED BY SITE SEWER AND DRAINAGE OPERATIONS.

F. PROMPTLY NOTIFY THE OWNER OF UNEXPECTED SUB–SURFACE CONDITION

1.06 QUALITY ASSURANCE:

A. STANDARDS: COMPLY WITH STANDARDS SPECIFIED IN THIS SECTION. PROVIDE SHOP DRAWINGS TO THE OWNER OR OWNER'S REPRESENTATIVE.

B. QUALIFICATIONS OF INSTALLERS: USE ADEQUATE NUMBERS OF SKILLED WORKERS WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND METHODS FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION.

C. OBTAIN OWNER OR OWNER'S REPRESENTATIVE'S ACCEPTANCE OF INSTALLED AND TESTED SITE DRAINAGE SYSTEM PRIOR TO BACKFILLING.

1.07 SUBMITTALS:

A. PRODUCT DATA:

1. COMPLETE MATERIALS LIST OF ALL ITEMS PROPOSED TO BE FURNISHED AND INSTALLED UNDER THIS SECTION.

2. MANUFACTURER'S SPECIFICATIONS AND OTHER DATA REQUIRED TO DEMONSTRATE COMPLIANCE WITH THE SPECIFIED REQUIREMENTS.

3. MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.

B. TESTING AND INSPECTION REPORTS.

C. PROVIDE SITE SEWER AND DRAINAGE RECORD DRAWINGS:

1. LEGIBLY MARK DRAWINGS TO RECORD ACTUAL CONSTRUCTION.

2. INDICATE HORIZONTAL AND VERTICAL LOCATIONS REFERENCED TO PERMANENT SURFACE IMPROVEMENTS.

3. IDENTIFY FIELD CHANGES OF DIMENSIONS AND DETAILS AND CHANGES MADE BY CHANGE ORDER.

1.08 COOPERATION AND COORDINATION WITH OTHER TRADES:

A. THE WORK SHALL BE SO PERFORMED THAT THE PROGRESS OF THE ENTIRE PROJECT CONSTRUCTION, INCLUDING ALL OTHER TRADES, SHALL NOT BE DELAYED AND NOT INTERFERED WITH. MATERIALS AND APPARATUS SHALL BE INSTALLED AS FAST AS CONDITIONS WILL PERMIT AND MUST BE INSTALLED PROMPTLY WHEN AND AS DIRECTED.

B. ALL WORK SHALL BE COORDINATED WITH OTHERS TRADES. THE WORK IN THIS SECTION SHALL AT NO TIME INTERRUPT THE NORMAL OPERATIONS OF EXISTING BUILDINGS.

PART 2 PRODUCTS

2.01 POLYVINYL CHLORIDE PIPE (PVC):

A. PVC PIPE SHALL BE MADE FROM VIRGIN PLASTIC AND SHALL CONFORM TO ASTM D1784. SOLID PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM D3034 SDR 35. PERFORATED PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM D2729 SDR 35.

B. STANDARD NOMINAL LENGTHS OF PIPE SHALL BE A MINIMUM OF 10 FEET.

C. THE PIPE FITTINGS SHALL BE AS UNIFORM AS COMMERCIALLY PRACTICAL IN COLOR, OPACITY, DENSITY AND OTHER PHYSICAL PROPERTIES.

D. PIPE SHALL BE TESTED IN ACCORDANCE WITH SECTION 10 OF ASTM D2412 STANDARD METHOD OF "TEST FOR EXTERNAL LOADING PROPERTIES OF PLASTIC PIPE BY PARALLEL–PLATE LOADING". THE MINIMUM VALUE OF PIPE STIFFNESS AT 5% DEFLECTION COMPUTED FROM DATA OBTAINED FROM THE ABOVE TESTING PROCEDURE SHALL BE IN ACCORDANCE WITH ASTM D2412.

E. EACH PIPE AND ALL COUPLINGS AND FITTINGS SHALL BE CLEARLY MARKED ON THE OUTSIDE SURFACE WITH THE NAME OF THE MANUFACTURER, ASTM DESIGNATION WITH TYPE AND GRADE, AND NOMINAL DIAMETER.

2.02 DUCTILE IRON (D.I.) SEWER PIPE:

A. ANSI/AWWA C151/ A21.51 CLASS 52 WITH CEMENT LINING CONFORMING TO ANSI A21.4. PRESSURE CLASS SHALL BE ANSI PRESSURE CLASS 350. PROTECTIVE COATING ON EXTERIOR SHALL BE APPROVED BITUMASTIC OR COAL TAR ENAMEL CONFORMING TO ANSI A21.4 AND A21.10

B. FITTINGS FOR DUCTILE IRON PIPE SHALL BE DUCTILE IRON SHORT BODY FITTINGS CONFORMING TO ANSI A21.1 WITH CEMENT LINING CONFORMING TO ANSI A21.4. THICKNESS CLASS SHALL BE ANSI PRESSURE CLASS 350.

C. LENGTH AND JOINTS – DUCTILE IRON PIPE LENGTHS SHALL GENERALLY BE AS LONG AS POSSIBLE BUT SHALL HAVE A BELL–AND–SPIGOT OR SHALL HAVE FURNISHED WITH IT A SEPARATE JOINTING SLEEVE OR COUPLING WITH RUBBER RINGS COMPRESSED INTO PLACE TO MAKE A WATERTIGHT CLOSURE. JOINTS SHALL BE SEALED WITH A RUBBER RING GASKET AND SHALL BE OF A COMPOSITION AND TEXTURE WHICH WILL ENDURE PERMANENTLY UNDER THE CONDITIONS LIKELY TO BE IMPOSED BY THIS USE, AND SHALL CONFORM TO ASTM SPECIFICATIONS C–361 AMENDED TO DATE. JOINTS SHALL BE "PUSH–ON" TYPE COMPLYING WITH ANSI A21.1.

2.03 HIGH DENSITY POLYETHYLENE (HDPE)

A. FORCE MAINS AND LOW PRESSURE SEWERS SHALL BE TREATED AS GRAVITY SEWERS FOR PURPOSES OF FOUNDATION BEDDING AND BACKFILL REQUIREMENTS.

B. HDPE PIPE USED FOR FORCE MAINS AND LOW PRESSURE SEWERS SHALL CONFORM TO ASTM D3035–03A.

2.04 CAST IRON SOIL PIPE:

A. CAST IRON SOIL PIPE SHALL BE ASTM A 74, EXTRA HEAVY TYPE, INSIDE NOMINAL DIAMETER AS SPECIFIED ON CONSTRUCTION DRAWINGS, BELL AND SPIGOT END. JOINTS SHALL BE IN CONFORMANCE WITH AWWA C111, RUBBER GASKET JOINT DEVICES.

2.05 PIPE JOINTS AND FITTINGS:

A. DUCTILE IRON FITTINGS SHALL BE MECHANICAL JOINTS. ALL FITTINGS SHALL BE RESTRAINED OR RODDED.

B. DUCTILE IRON FITTINGS SHALL CONFORM TO ANSI 21.10 AND 21.11 (AWWA C110 AND AWWA C111).

C. HDPE AND PVC FITTINGS SHALL BE WATERTIGHT. STRUCTURAL INTEGRITY AND JOINT CONFIGURATION SHALL BE IDENTICAL TO THAT OF PIPE.

2.06 SEWER MANHOLES:

A. PRECAST CONCRETE MANHOLE, CATCH BASIN, LEACHING CATCH BASIN BASE, AND LEACHING PIT SECTIONS, RISER SECTIONS AND CONE SECTIONS SHALL BE CONSTRUCTED OF A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, AIR ENTRAINED CONCRETE WITH HOOP REINFORCING AND LIFTING HOLES. SECTIONS SHALL BE FURNISHED WITH "O" RING RUBBER GASKETS. LIFTING HOLES IN ALL SECTIONS SHALL BE FILLED WITH NONSHRINK MORTAR AFTER SECTIONS ARE IN PLACE.

B. CLASS "A" CONCRETE: ASTM C94. ALL CONCRETE SHALL BE CLASS A UNLESS STATED OTHERWISE.

1. STRENGTH : 3000 PSI @ 28 DAYS
2. CEMENT CONTENT : TYPE II, 6.5 SACKS/CY (MIN)
3. W/C RATIO : 0.464 (MAX)
4. FINE AGGREGATE : ASTM C33
5. COARSE AGGREGATE : ASTM C33 SIZE #67

C. CLASS "B" CONCRETE:

1. STRENGTH : 3000 PSI @ 28 DAYS
2. CEMENT CONTENT : TYPE II, 6.0 SACKS/CY (MIN)
3. W/C RATIO : 0.488 (MAX)
4. FINE AGGREGATE : ASTM C33
5. COARSE AGGREGATE : ASTM C33 SIZE #67

D. REINFORCING STEEL: ASTM A615, A616, OR A185.

E. PRECAST CONCRETE: ASTM C478 EXCEPT AS SPECIFIED OTHERWISE.

F. TABLES AND INVERTS SHALL BE CONSTRUCTED OF BRICK, SHALL HAVE THE SAME SHAPE OF THE PIPE THAT ARE CONNECTED AND ANY CHANGE IN SIZE OR DIRECTION SHALL BE GRADUAL AND EVEN.

G. PRECAST STRUCTURES SHALL BE ABLE TO WITHSTAND H–20 LOADING.

H. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER–TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC–LIKE SEALANT.

I. PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:

1. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;

2. CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;\

3. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING.

4. PIPE TO MANHOLE JOINTS SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUAL:

a. KOR – N – SEAL

b. LOCK JOINT

c. PRESS WEDGE II

2.07 BRICK MASONRY:

A. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C 150–05, TYPE H.

B. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207–06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES".

C. SAND SHALL BE CLEAN, HARD, DURABLE PARTICLES AND WITH NOT MORE THAN 5% IN VOLUME OF MICA, CLAY AND OTHER DELETERIOUS MATERIALS. THE SAND SHALL BE GRADED FROM FINE TO COURSE SO THAT WHEN TESTED DRY, IT WILL CONFORM TO THE LIMITS OF ASTM C33–03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES".

D. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;

1. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:

a. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR

b. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME

E. WATER SHALL BE FREE FROM OILS, ACIDS, ALKALIS OR ORGANIC MATTER, AND SHALL BE CLEAN AND FRESH.

F. BRICK SHALL BE SOUND, HARD AND UNIFORMLY BURNED, REGULAR AND UNIFORM IN SHAPE AND SIZE, OF COMPACT TEXTURE AND SATISFACTORY TO THE OWNER OR OWNER'S REPRESENTATIVE. BRICKS SHALL COMPLY WITH ASTM C32, GRADE SS. ONLY WHOLE BRICK SHALL BE USED UNLESS OTHERWISE PERMITTED.

2.08 MANHOLE STEPS: (NOT USED)

2.09 MANHOLE FRAMES AND COVERS:

A. CASTINGS SHALL BE OF GOOD QUALITY, STRONG, TOUGH EVENLY GRAINED, SMOOTH CAST IRON, FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES, AND DEFECTS OF ANY KIND. CASTINGS SHALL BE THOROUGHLY CLEANED AND ALL FINISHED SURFACES SHALL BE MACHINED TO A TRUE PLANED SURFACE AND SHALL SEAT AT ALL POINTS WITHOUT ROCKING.

B. CASTINGS SHALL NOT BE ACCEPTABLE IF THE ACTUAL WEIGHT IS LESS THAN 95% OF THE THEORETICAL WEIGHT OF THE CASTINGS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL FURNISH INVOICES TO THE OWNER SHOWING TRUE WEIGHTS, CERTIFIED BY THE SUPPLIER.

C. CAST IRON SHALL CONFORM TO ASTM A48, CLASS 30 AND FRAMES, COVERS AND GRATES SHALL BE ABLE TO WITHSTAND H–20 LOADING.

D. PROVIDE A 30 INCH DIAMETER CLEAR OPENING. SEWER MANHOLE COVERS SHALL HAVE THE WORD "SEWER" IN 3" LETTERS CAST INTO THE TOP SURFACE.

2.10 FORCE MAINS

A. FORCE MAINS FOR CONSTANT SPEED PUMPS SHALL BE SIZED TO YIELD A CLEANSING VELOCITY OF 3 FEET PER SECOND OR GREATER AT DESIGN PUMP CAPACITY.

B. FORCE MAINS SHALL ENTER THE GRAVITY SEWER SYSTEM AT THE FLOW LINE OF THE RECEIVING MANHOLE.

C. TO PREVENT AIR LOCKING, FORCE MAINS SHALL BE PROVIDED WITH AN AUTOMATIC AIR RELIEF VALVE AT EACH HIGH POINT, INSTALLED WITHIN A MANHOLE STRUCTURE THAT MEETS THE DESIGN REQUIREMENTS OF ENV–WQ 704.12 THROUGH ENV–WQ 704.17.

D. FORCE MAINS SHALL BE PROVIDED WITH A DRAINAGE BLOW–OFF AT EACH LOW POINT THAT:

- HAS A PROPERLY VALVED CONNECTION FOR A VACUUM TRUCK OR OTHER SUITABLE CONTAINMENT DEVICE;
- IS INSTALLED WITHIN A MANHOLE STRUCTURE THAT MEETS THE DESIGN REQUIREMENTS OF ENV–WQ 704.12 THROUGH ENV–WQ 704.17, WITH SUFFICIENT SPACE FOR HANDLING THE DISPLACED WASTE WITHOUT DANGER OF POLLUTION OR HEALTH HAZARD.

E. FORCE MAINS SHALL BE DESIGNED IN ACCORDANCE WITH ENV–WQ 704.07, CONSTRUCTED WITH MATERIALS AS SPECIFIED IN ENV–WQ 704.08, AND TESTED AS SPECIFIED IN ENV–WQ 704.09.

F. THRUST BLOCKS MADE FROM INORGANIC, CORROSION–RESISTANT MATERIAL SHALL BE PLACED AT ALL BENDS, ELBOWS, TEES, AND JUNCTIONS.

G. FORCE MAINS SHALL BE DESIGNED TO WITHSTAND HYDROSTATIC PRESSURES OF AT LEAST 2.5 TIMES THE DESIGN TOTAL DYNAMIC HEAD;

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS:

A. OBTAIN DETAILED INFORMATION FROM THE MANUFACTURERS OF APPARATUS AS TO THE PROPER METHOD OF INSTALLING AND CONNECTING SAME.

B. CAREFULLY STORE MATERIALS AND EQUIPMENT WHICH ARE NOT IMMEDIATELY INSTALLED AFTER DELIVERY. CLOSE OPEN ENDS OF WORK WITH TEMPORARY COVERS OR PLUG DURING CONSTRUCTION TO PREVENT ENTRY OF OBSTRUCTING MATERIAL.

C. ANY DEFECTIVE PIPE, FITTING OR DRAIN APPARATUS THAT IS DISCOVERED AFTER IT HAS BEEN INSTALLED OR HAS BEEN INSTALLED IMPROPERLY, SHALL BE REMOVED AND REPLACED WITH NON–DEFECTIVE PARTS TO THE SATISFACTION OF THE OWNER OR OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

D. TRENCHES SHALL BE KEPT FREE OF WATER AND AS DRY AS POSSIBLE DURING THE INSTALLATION OF THE BEDDING MATERIAL, PIPE AND JOINTING FOR AS LONG A PERIOD AS REQUIRED. PIPE SHALL NOT BE LAID IN WATER OR WHEN TRENCH CONDITIONS ARE UNSUITABLE FOR THE WORK.

E. PROVIDE ALL INSPECTION AGENTS AT LEAST 24 HOURS NOTICE PRIOR TO WORK BEGINNING. INSPECTOR SHALL BE ON–SITE DURING ANY/ALL EXCAVATION, INSTALLATION, BACKFILL, AND TESTING OF ALL SEWERAGE PIPES, MANHOLES, AND APPURTENANCES.

F. NO BACKFILLING SHALL TAKE PLACE, UNLESS OTHERWISE ORDERED BY THE OWNER OR OWNER'S REPRESENTATIVE, UNTIL THE INSPECTION HAS BEEN COMPLETED.

G. EXCAVATION, BACKFILL AND PIPE BEDDING MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 31 23 00, EARTHWORK.

3.02 LAYING PIPE:

A. THIS WORK SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE COMPLETE INSTALLATION OF DRAIN LINES IN ACCORDANCE WITH THESE SPECIFICATIONS, THE MUNICIPALITY AND OTHER AUTHORITIES HAVING JURISDICTION.

B. ALL PIPE SHALL BE SOUND AND CLEAN BEFORE INSTALLING. WHEN LAYING OF PIPE IS NOT IN PROGRESS, INCLUDING LUNCH TIME, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY WATERTIGHT PLUGS OR OTHER APPROVED MEANS.

C. THE FULL LENGTH OF PIPE SHALL REST SOLIDLY ON THE UNDISTURBED TRENCH BOTTOM, WITH RECESSES EXCAVATED TO ACCOMMODATE BELLS, COUPLINGS AND JOINTS. BLOCKING WILL NOT BE PERMITTED.

D. PIPE SHALL BE LAID TRUE TO THE SPECIFIED LINES AND GRADES. THE BELL END SHALL BE TOWARD THE RISING GRADE AND EACH SECTION OF PIPE SHALL HAVE A FIRM BEARING THROUGHOUT ITS LENGTH. MATERIAL PLACED AROUND AND UNDER THE PIPE SHALL BE FREE OF STONES. ROCKS SHALL NOT BE ROLLED INTO TRENCHES AND ALLOWED TO DROP ONTO PIPES. PIPE SHALL BE BEDDED IN $\frac{3}{4}$" STONE TO SPRING LINE OF PIPE AND THEN BURIED IN CLEAN SAND FREE OF STONES. STONE AND SAND SHALL BE IN ACCORDANCE WITH ENV–WQ 704.11(a) AND (b).

E. WHEN PIPE CUTTING IS REQUIRED AND APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE, THE PIPE MATERIAL SHALL BE CUT BY USING A SAW OR MILLING PROCESS, APPROVED BY THE PIPE MANUFACTURER AND NOT BY ANY IMPACT DEVICE, SUCH AS A HAMMER AND CHISEL, TO BREAK THE PIPE. THE PIPE SHALL BE CUT, NOT BROKEN. THE CUT END OF THE PIPE SHALL BE SQUARE TO THE AXIS OF THE PIPE AND ANY ROUGH EDGES GROUND SMOOTH.

F. INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPE SHALL BE IN ACCORDANCE WITH ASTM D2321 AND AS RECOMMENDED BY THE PIPE MANUFACTURER. BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 31 23 00, EARTHWORK. BACKFILL SHALL BE PLACED IN SIX INCH LIFTS AND COMPACTED TO 95% MINIMUM DENSITY AS PER AASHTO T99. CARE SHOULD BE TAKEN TO AVOID ANY USE OF FRACTURED STONE IN BACKFILL EXCEEDING TWO INCHES (2").

G. THE CONTRACTOR MAY USE A LASER BEAM TO ASSIST IN SETTING THE PIPE, PROVIDED HE CAN DEMONSTRATE SATISFACTORY SKILL IN ITS USE. THE USE OF STRING LEVELS, HAND LEVELS, CARPENTERS LEVELS OR OTHER RELATIVELY CRUDE DEVICES FOR TRANSFERRING GRADE OR SETTING PIPE WILL NOT BE PERMITTED.

H. WHEN LAYING REINFORCED CONCRETE PIPE, BEDDING SHALL CONSIST OF CAREFULLY PREPARING AND SHAPING A BED OF FINE GRANULAR MATERIAL TO FIT THE LOWER 15 PERCENT OF THE EXTERNAL HEIGHT OF THE PIPE WITH A MINIMUM OF 4 IN. UNDER THE BOTTOM OF THE PIPE. RECESS SHALL BE EXCAVATED FOR THE BELLS OF THE PIPE. AS SOON AS THE EXCAVATION IS COMPLETED AND THE SPECIFIED PIPE BEDDING PROVIDED, THE CONTRACTOR SHALL FIRMLY BED THE PIPE TO CONFORM ACCURATELY TO THE LINE AND GRADE INDICATED ON THE PLANS. NO BLOCKING WILL BE PERMITTED UNDER THE PIPE. AS SOON AS THE PIPE IS IN PLACE, FINE GRANULAR MATERIAL SHALL BE PLACED AND COMPACTED TO THE MID–DIAMETER OF THE PIPE. THE REMAINING BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 31 23 00, EARTHWORK. BACKFILL SHALL BE PLACED IN SIX INCH LIFTS AND COMPACTED TO 95% MINIMUM DENSITY AS PER AASHTO T99.

3.03 SEWER MANHOLES:

A. SEWER MANHOLES, DRAIN MANHOLES, CATCH BASINS AND INSPECTION MANHOLES SHALL BE BUILT TO THE LINES, GRADES, DIMENSIONS AND DESIGN SHOWN ON THE PLANS WITH THE NECESSARY FRAMES, COVERS AND GRATES.

B. MANHOLE AND CATCH BASIN BASES SHALL BE PLACED ON 6 INCHES OF COMPACTED BEDDING MATERIAL.

C. PRECAST SECTIONS SHALL BE SET SO AS TO BE VERTICAL AND IN TRUE ALIGNMENT WITH A 1/4 INCH MAXIMUM TOLERANCE TO BE ALLOWED. THE PRECAST SECTIONS SHALL BE INSTALLED IN A MANNER THAT WILL RESULT IN A WATERTIGHT JOINT.

D. WHERE HOLES MUST BE CUT IN THE PRECAST SECTIONS TO ACCOMMODATE PIPES, CUTTING SHALL BE DONE PRIOR TO SETTING THEM IN PLACE TO PREVENT ANY SUBSEQUENT JARRING WHICH MAY LOOSEN THE JOINTS.

3.04 BRICKWORK:

A. MORTAR SHALL BE MIXED ONLY IN SUCH QUANTITY AS MAY BE REQUIRED FOR IMMEDIATE USE AND USED BEFORE THE INITIAL SET HAS TAKEN PLACE. MORTAR SHALL NOT BE RETAINED FOR MORE THAN ONE HOUR AND SHALL BE CONSISTENTLY WORKED OVER WITH A SHOVEL OR HOE UNTIL USED.

B. BRICK MASONRY SHALL BE PROTECTED FROM TOO RAPID DRYING BY APPROVED MEANS AND SHALL BE PROTECTED FROM WEATHER AND FROST AS REQUIRED.

C. BRICKS SHALL BE CLEANED AND THOROUGHLY WETTED SHORTLY BEFORE THEY ARE PUT INTO THE WORK, AND EACH BRICK SHALL BE LAID IN A FULL BED OF MORTAR WITHOUT REQUIRING SUBSEQUENT GROUTING OR FILLING. JOINTS BETWEEN BRICKS SHALL NOT EXCEED 1/2 INCH AND SHALL BE POINTED.

3.05 FRAMES AND COVERS:

A. MANHOLE FRAMES – SHALL BE SET WITH THE TOPS CONFORMING ACCURATELY TO THE GRADE OF THE PAVEMENT OR FINISHED GROUND SURFACE OR AS INDICATED ON THE DRAWINGS. FRAMES SHALL BE SET CONCENTRIC WITH THE TOP OF THE MASONRY AND IN A FULL BED OF MORTAR SO THAT THE SPACE BETWEEN THE TOP OF THE MANHOLE MASONRY AND THE BOTTOM FLANGE OF THE FRAME SHALL BE COMPLETELY FILLED AND MADE WATERTIGHT. A THICK RING OF MORTAR EXTENDING TO THE OUTER EDGE OF THE MASONRY SHALL BE PLACED ALL AROUND AND ON THE TOP OF THE BOTTOM FLANGE. THE MORTAR SHALL BE SMOOTHLY FINISHED AND HAVE A SLIGHT SLOPE TO SHED WATER AWAY FROM THE FRAME.

B. MANHOLE COVERS SHALL BE LEFT IN PLACE IN THE FRAMES ON COMPLETION OF OTHER WORK AT THE MANHOLES.

C. A MAXIMUM OF 12" OF BRICK AND MORTAR SHALL BE ALLOWED FOR GRADE ADJUSTMENT.

D. COVERS AND GRATES SHALL BE SET IN THE FRAMES, SEATING BEING CLEANED BEFORE COVERS AND GRATES ARE SET.

3.06 SEWER SERVICE CONNECTIONS:

A. THE MINIMUM SIZE FOR THE BUILDING SEWER SERVICE CONNECTION SHALL BE 6".

B. THE MINIMUM SLOPE FOR THE BUILDING SEWER SERVICE SHALL BE 1/4" PER, FOOT, UNLESS OTHERWISE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE.

C. BEFORE BACKFILLING, THE CONTRACTOR SHALL NOTIFY THE INSPECTOR SO THAT HE CAN MAKE THE NECESSARY MEASUREMENTS TO LOCATE THE OPENING LATER. IN ADDITION, AN APPROVED FERROUS ROD OR PIPE SHALL BE PLACED OVER THE PLUGGED OPENING AT THE PROPERTY LINE, EXTENDING TO WITHIN 2 INCHES OF THE FINAL GROUND SURFACE.

1. PROXIMITY TO WATER LINES:

a. THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN A PUBLIC OR PRIVATE POTABLE WATER SUPPLY SYSTEM AND A SEWER OR SEWER APPURTENANCE WHICH WOULD PERMIT THE PASSAGE OF SEWAGE OR POLLUTED WATER INTO THE POTABLE SUPPLY. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE.

1) NO SEWER SHALL BE LOCATED WITHIN THE WELL PROTECTIVE RADII ESTABLISHED IN ENV–WS 300 FOR ANY PUBLIC WATER SUPPLY WELLS OR WITHIN 100 FEET OF ANY PRIVATE WATER SUPPLY WELL.

2) SEWERS SHALL BE LOCATED AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.

3) A DEVIATION FROM THE SEPARATION REQUIREMENTS OF (1) OR (2) ABOVE SHALL BE ALLOWED WHERE NECESSARY TO AVOID CONFLICT WITH SUBSURFACE STRUCTURES, UTILITY CHAMBERS, AND BUILDING FOUNDATIONS, PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENTS SPECIFIED IN ENV–WQ 704.08.

b. WHENEVER SEWERS MUST CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:

c. VERTICAL SEPARATION OF THE SEWER AND WATER MAIN SHALL BE NOT LESS THAN 18 INCHES, WITH WATER ABOVE SEWER; AND

d. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.

e. HOWEVER, SHOULD CONSTRUCTION OPERATIONS REVEAL OR EXPOSE A WATERLINE MAIN OR SERVICE RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FEET HORIZONTALLY FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICABLE TO RELOCATE THE SEWER, THE FOLLOWING METHODS OF PROTECTION MUST BE EMPLOYED:

1) IF THE ABOVE SEPARATION CANNOT BE ACHIEVED, THE SEWER SHALL BE DUCTILE IRON PIPE OF THE SAME SIZE SHALL BE UTILIZED. APPROPRIATE MANUFACTURED FITTINGS SHALL BE EMPLOYED TO ADAPT THE IRON PIPE TO THE CONTRACT SEWER PIPE.

2) WHENEVER THE WATERLINE CROSSES OVER THE NEW SEWER WITH LESS THAN 18 INCHES OF SEPARATION, THE SEWER PIPE FOR A DISTANCE OF 6 FEET ON EACH SIDE OF THE WATERLINE SHALL BE CLASS 52 DUCTILE IRON PIPE. APPROPRIATE MANUFACTURED FITTINGS SHALL BE EMPLOYED TO ADAPT THE IRON PIPE TO THE CONTRACT SEWER PIPE. AS AN ALTERNATIVE, THE WATERLINE MAY BE RAISED, IF FEASIBLE, TO ACHIEVE THE REQUIRED SEPARATION.

3) SHOULD THE WATERLINE IN EITHER SITUATION BE AT OR BELOW THE SEWER ELEVATION, THE WATERLINE OR THE SEWER MUST BE RELOCATED TO ACHIEVE 10 FT. SEPARATION OR THE WATERLINE RAISED.

3.07 GRAVITY SEWER PIPE TESTING:

A. ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW–PRESSURE AIR TESTS.

B. LOW–PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:

1. ASTM F1417–92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW–PRESSURE AIR"; OR

2. UNI–BELL PVC PIPE ASSOCIATION UNI–B–6, "LOW–PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (1998).

C. ALL NEW GRAVITY SEWERS SHALL BE:

1. CLEANED AND VISUALLY INSPECTED USING A LAMP TEST AND BY INTRODUCING WATER TO DETERMINE THAT THERE IS NO STANDING WATER IN THE SEWER; AND

2. TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.

D. ALL PLASTIC SEWER PIPE SHALL BE VISUALLY INSPECTED AND DEFLECTION TESTED NOT LESS THAN 30 DAYS NOR MORE THAN 90 DAYS FOLLOWING INSTALLATION.

E. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5% OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95% OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.

F. INSPECTION AND TESTING: – UPON COMPLETION OF THE INSTALLATION AND BACKFILLING PORTIONS OF THE SANITARY SEWER, THE PIPE SHALL BE INSPECTED BY THE VISUAL AND AIR TEST METHODS SUBSEQUENTLY DESCRIBED, OR AS REQUIRED BY THE TOWN DPW AND THE NHDES. THIS INSPECTION AND TESTING SHALL BE UNDERTAKEN AS THE WORK PROGRESSES. THE ENGINEER SHALL BE NOTIFIED IN ADVANCE OF SUCH INSPECTION AND TESTING AND THE CONTRACTOR SHALL PROVIDE ALL FACILITIES, MATERIALS, EQUIPMENT AND LABOR REQUIRED FOR SUCH TESTING. SUCH INSPECTION AND TESTING SHALL BE A PREREQUISITE FOR ACCEPTANCE OF ALL WORK.

1. VISUAL INSPECTION: – AN INSPECTION OF THE INTERIOR OF THE COMPLETED SANITARY SEWER PIPE BY DIRECT VISUAL INSPECTION SHALL BE MADE FOR ALL PIPE INSTALLED FROM MANHOLE TO MANHOLE AND FOR SERVICE LATERALS. ANY LIGHTS, EQUIPMENT OR LABOR NECESSARY FOR SUCH INSPECTION SHALL BE PROVIDED BY THE CONTRACTOR. CAMERA WORK TO BE PERFORMED BY NASSCO CERTIFIED CONTRACTOR.

ANY FOREIGN MATERIAL FOUND IN THE INTERIOR OF THE SEWER, ANY DIRT, DEBRIS OR OTHER OBJECTS SHALL BE REMOVED BY THE CONTRACTOR. VISIBLE DEFECTS SUCH AS BROKEN PIPE SECTIONS, IMPROPERLY INSTALLED GASKETS, PROJECTING CONNECTIONS, CRACKS, VISIBLE LEAKS OR OTHER DEFECTS SHALL BE NOTED, CORRECTED AND THE PIPE RE–INSPECTED.

2. AIR TESTING OF MAIN LINE GRAVITY SEWERS:

PROCEDURE:

a. PLUG PIPE OUTLETS WITH SUITABLE TEST PLUGS. BRACE EACH PLUG SECURELY.

b. PIPE AIR SUPPLY TO PIPELINE TO BE TESTED IN SUCH MANNER THAT AIR SUPPLY MAY BE SHUT OFF, PRESSURE OBSERVED, AND AIR PRESSURE RELEASED FROM PIPE WITHOUT WORKMEN ENTERING MANHOLE.

c. ADD AIR SLOWLY TO PORTION OF PIPE UNDER TEST UNTIL INTERNAL PRESSURE OF LINE IS RAISED TO APPROXIMATELY 4 PSIG, BUT LESS THAN 5 PSIG.

d. SHUT AIR SUPPLY OFF AND ALLOW AT LEAST 2 MINUTES FOR AIR PRESSURE TO STABILIZE.

e. WHEN PRESSURE HAS STABILIZED AND IS AT OR ABOVE STARTING TEST PRESSURE OF 3.5 PSI, START TEST.

f. DETERMINE TIME IN SECONDS WITH STOPWATCH FOR PRESSURE TO FALL 0.5 PSIG SO THAT PRESSURE AT END OF TIME IS AT OR ABOVE 3.0 PSIG.

g. COMPARE OBSERVED TIME WITH MINIMUM ALLOWABLE TIMES IN CHART BELOW FOR PASS/FAIL DETERMINATION.

AIR TESTING PASS/FAIL TESTING CRITERIA
SPECIFICATION TIME FOR LENGTH (L) SHOWN (MIN:SEC)

| 1 Pipe Diameter (in.) | 2 Minimum Time (min:sec) | 3 Length for Minimum Time (ft.) | 4 Time for Longer Length (sec.) | 100 ft | 150 ft. | 200 ft. | 250 ft. | 300 ft. | 350 ft. | 400 ft. |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1:53 | 597 | .190L | 1:53 | 1:53 | 1:53 | 1:53 | 1:53 | 1.53 | 1:53 |
| 6 | 2:50 | 398 | .427L | 2:50 | 2:50 | 2:50 | 2:50 | 2:50 | 2:50 | 2:51 |
| 8 | 3:47 | 298 | .760L | 3:47 | 3:47 | 3:47 | 3:47 | 3:48 | 4:26 | 5:04 |
| 10 | 4:43 | 239 | 1.187L | 4:43 | 4:43 | 4:43 | 4:57 | 5:56 | 6.55 | 7:54 |
| 12 | 5:40 | 199 | 1.709L | 5:40 | 5:40 | 5:42 | 7:08 | 8:33 | 9:58 | 11:24 |
| 15 | 7:05 | 159 | 2.671L | 7:05 | 7:05 | 8:54 | 11:08 | 13:21 | 15:35 | 17:48 |
| 18 | 8:30 | 133 | 3.846L | 8:30 | 9:37 | 12:49 | 16:01 | 19:14 | 22:26 | 25:38 |
| 24 | 11:20 | 99 | 2.671L | 11:24 | 17:57 | 22:48 | 28:30 | 34:11 | 39:53 | 45:35 |

3. SAFETY PRECAUTIONS:

LOW–PRESSURE AIR TEST MAY BE DANGEROUS TO PERSONNEL IF, THROUGH LACK OF UNDERSTANDING OR CARELESSNESS, LINE IS OVERPRESSURIZED OR PLUGS ARE INSTALLED IMPROPERLY. IT IS EXTREMELY IMPORTANT THAT VARIOUS PLUGS BE INSTALLED SO AS TO PREVENT THE SUDDEN EXPULSION OF POORLY INFLATED PLUGS. AS EXAMPLE OF HAZARD, FORCE OF 250–LB IS EXERTED ON 8–IN. PLUG BY INTERNAL PRESSURE OF 5 PSI. OBSERVE FOLLOWING SAFETY PRECAUTIONS:

a. NO PERSON SHALL BE ALLOWED IN MANHOLES DURING TEST OR WHEN PLUGGED PIPE IS UNDER PRESSURE.

b. GAUGES, AIR PIPING MANIFOLDS AND VALVES SHALL BE LOCATED AT TOP OF GROUND.

c. INSTALL AND BRACE PLUGS SECURELY.

d. DO NOT OVERPRESSURE LINES.

4. GROUNDWATER ELEVATION:

IF PIPELINE TO BE TESTED IS BELOW GROUNDWATER LEVEL, STARTING TEST PRESSURE SHALL BE INCREASED BY 0.433 PSI FOR EACH FOOT GROUNDWATER LEVEL IS ABOVE INVERT OF SEWER PIPE. IN NO CASE SHALL STARTING TEST PRESSURE EXCEED 9.0 PSIG.

FOR THE DETERMINATION OF GROUNDWATER LEVELS, OBSERVATION PIPES MAY BE PLACED IN THE TRENCH PRIOR TO BACKFILLING AS REQUIRED. THE LOWER END OF THE OBSERVATION PIPE SHALL BE EMBEDDED IN THE FOUNDATION STONE USED FOR SEWER BEDDING AT APPROXIMATELY THE SEWER INVERT ELEVATION AND THE UPPER END AT OR ABOVE FINISHED GRADE. PIPE SO INSTALLED FOR DEWATERING PURPOSES MAY BE USED FOR THIS PURPOSE. OBSERVATION PIPES SHALL BE INSTALLED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AT LOCATIONS ADJACENT TO MANHOLES WHERE ORDERED BY THE ENGINEER.

5. ACCEPTANCE OF INSTALLATION:

NO GRAVITY SEWER OR MANHOLE WILL BE ACCEPTED THAT DOES NOT COMPLY WITH MINIMUM REQUIREMENTS OF TESTS DESCRIBED IN HEREIN. SEWERS, WHICH FAIL TO MEET TESTS, SHALL BE REPAIRED UNTIL THE NECESSARY REQUIREMENTS OF THIS SPECIFICATION ARE COMPLIED WITH AS EVIDENCED BY SUBSEQUENT TESTS. GROUNDWATER LEAKAGE INTO MANHOLES SHALL BE SUFFICIENT REASON FOR REQUIRING THE CONTRACTOR TO UNCOVER OR EXPOSE ANY PORTION OF THE MANHOLE FOR A THOROUGH EXAMINATION BY THE ENGINEER, AFTER WHICH THE MANHOLE SHALL BE REPAIRED AND AGAIN TESTED BY THE CONTRACTOR. FINAL ACCEPTANCE OF THE ENTIRE LENGTH OF SEWER CONSTRUCTED UNDER THIS CONTRACT WILL NOT BE ISSUED UNTIL THE ACCEPTABLE CRITERIA FOR EACH SECTION TESTED HAS BEEN REDUCED TO RATES HEREINBEFORE SPECIFIED. FAILURE TO CONFORM TO THE FOREGOING REQUIREMENTS SHALL CAUSE THE WORK TO BE REJECTED. IF THERE IS A VISIBLE LEAK AT ANY JOINT OR AT ANY OTHER PART OF THE SEWER OR SEWER STRUCTURE, THE WORK SHALL BE REJECTED.

6. TEST EQUIPMENT:

NECESSARY EQUIPMENT TO PERFORM AIR TEST IN ACCORDANCE WITH SPECIFICATIONS SHALL BE PROVIDED BY CONTRACTOR. TEST GAUGE SHALL PREFERABLY HAVE INCREMENTAL DIVISION OF 0.10 PSI AND HAVE ACCURACY OF AT LEAST 0.04 PSI. IN NO CASE SHALL TEST GAUGE BE USED WHICH HAS INCREMENTAL DIVISIONS OF GREATER THAN 0.25 PSI. GAUGE SHALL BE OF SUFFICIENT SIZE IN ORDER TO DETERMINE THIS ACCURACY.

7. SUBMITTALS:

FURNISH 1 COPY OF GRAVITY SEWER AND MANHOLE TEST RESULTS TO OWNER AND GOVERNING AGENCY UPON COMPLETION OF GRAVITY SEWER SYSTEM BACKFILLING OPERATIONS.

3.08 SANITARY MANHOLE TESTING:

A. MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.

B. THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:

C. THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES HG; AND

1. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1–INCH HG PRESSURE DROP TO 9 INCHES HG SHALL BE:

a. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP IN DEPTH;

b. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP; AND

c. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP;

2. THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED ABOVE.

3. FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON THE TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN, OR ANIMALS, UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENT TO GRADE

4. NO INVERTS SHALL BE INSTALLED UNTIL MANHOLE TESTING HAS BEEN SATISFACTORILY COMPLETED.

3.09 FORCE MAIN TESTING: PER Env–Wq 704.09, FORCE MAINS AND PRESSURE SEWERS SHALL BE TESTED IN ACCORDANCE WITH SECTION 5 OF THE AWWA C600, "INSTALLATION OF CAST IRON WATER MAINS AND THEIR APPURTENANCES" STANDARD IN EFFECT WHEN THE TEST IS CONDUCTED AT A PRESSURE EQUAL TO THE GREATER OF 150 PERCENT OF THE DESIGN OPERATING TOTAL DYNAMIC HEAD OR AT LEAST 100 PSI.

PROFESSIONAL ENGINEER FOR
ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| PROJECT NO. 3250-01 | DATE: 08-14-23 |
|---|---|
| SCALE: AS SHOWN | DWG. NAME: C-3250-01.dwg |
| DESIGNED BY: BDJ | CHECKED BY: RPC |

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE: DETAILS

SHEET No. C-508

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## LEGEND

| | |
|---|---|
| DECIDUOUS TREE | |
| EVERGREEN TREE | |
| FLOWERING TREE | |
| SHRUBS | |
| MULCH BED | |
| PERENNIALS/GROUNDCOVER | |
| WILDFLOWER SEED MIX | |
| EROSION CONTROL SEED MIX | |

## GENERAL NOTES

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. IT'S INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.
3. ALL LANDSCAPED AREAS WITH SHRUBS, TREES, AND PERENNIALS TO HAVE 2 FEET MINIMUM DEPTH OF TOPSOIL. TWO FEET OF TOPSOIL AROUND TREES AND SHRUBS DOES NOT INCLUDE AMENDED PLANTING SOIL WITHIN TREE / SHRUB PIT FOR FULL DEPTH OF ROOTBALLS. SEE PLANTING DETAILS FOR PLANTING DEPTH AT SHRUBS AND TREES. ALL AREAS OF LOAM AND SEED TO HAVE 6" MINIMUM DEPTH OF TOPSOIL. TOPSOIL TO BE TESTED BY CONTRACTOR, AND APPROVED BY A&M PRIOR TO PURCHASE AND OR PLACEMENT. GENERAL CONTRACTOR, DEMOLITION CONTRACTOR, AND LANDSCAPE CONTRACTOR TO COORDINATE PROPER DEPTH OF EXISTING MATERIAL REMOVAL ACROSS SITE SO THAT 2 FEET MINIMUM AND 6" MINIMUM DEPTHS OF PROPOSED TOPSOIL NOTED ABOVE ARE MET AT NO ADDITIONAL COST TO OWNER. SEE TOPSOIL DETAIL.
4. ALL PLANTING AND SEEDING WORK WITHIN THE RIGHT-OF-WAY SHALL CONFORM TO THE CITY OF PORTSMOUTH REQUIREMENTS, SEE SHEET L-502 FOR ADDITIONAL INFORMATION.
5. NO CLEARING OR WORK SHALL BE PERFORMED WITHIN THE 25' WETLAND BUFFER. SIGNS SHALL BE INSTALLED ALONG THE 25' WETLAND BUFFER AND SHALL READ "NO MOWING BEYOND THIS POINT". SIGNS SHALL BE INSTALLED ON METAL POSTS AT 48" ABOVE THE GROUND AND SPACED NO MORE THAN 50' APART.

GRAPHIC SCALE

30 0 15 30 60 120

( IN FEET )
1 inch = 30 ft.

LICENSED LANDSCAPE ARCHITECT
BETHANY C. DERMODY
006
STATE OF NEW HAMPSHIRE
11-10-23

PROFESSIONAL LANDSCAPE ARCHITECT FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| 3 | 11-10-23 | REVISED PER TAC COMMENTS |
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:

ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:

ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 30' | DWG. NAME: | L-3250-01.dwg |
| DESIGNED BY: | BCD | CHECKED BY: | RPC |

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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| DRAWING TITLE: | SHEET No. |
|---|---|
| LANDSCAPE PLAN | L-101 |

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## PEASE DEVELOPMENT CONTROLS REGULATIONS:

305.03 LANDSCAPING AND SCREENING

(a) LANDSCAPING

(1) APPROPRIATE LANDSCAPING SHALL BE PROVIDED IN ACCORDANCE WITH AN APPROVED LANDSCAPING PLAN.

(2) LANDSCAPING TREATMENT SHALL CONSIST OF NATURAL VEGETATION OR FEATURES, GROUND COVER,
SHRUBS AND TREES AS APPROPRIATE.

(3) LANDSCAPING PLANS SHALL MEET THE REQUIREMENTS OF SECTION 405.03 OF THE PEASE DEVELOPMENT AUTHORITY SITE PLAN REGULATIONS.

(b) SCREENING

(1) APPROPRIATE BUFFERS SHALL BE PROVIDED AND MAINTAINED TO SCREEN THE FOLLOWING USES
FROM ADJOINING PROPERTIES:

a) ANY OFF-STREET PARKING OR LOADING AREA.

b) ALL OUTDOOR AREAS OR FACILITIES FOR THE STORAGE OF FUEL, SOLID WASTE, MATERIALS OR
PRODUCTS.

c) ANY COMMERCIAL PARKING LOT.

d) ANY PRINCIPAL USE NOT CONDUCTED WHOLLY WITHIN A BUILDING.

1. E) AS OTHERWISE REQUIRED BY THE BOARD.

## PEASE DEVELOPMENT SITE PLAN REGULATIONS:

405.03

SCREENING AND LANDSCAPING

(a) LANDSCAPING PLAN

(1) A LANDSCAPING PLAN SHALL BE SUBMITTED AS PART OF THE SITE PLAN APPLICATION. THE
PLAN SHALL IDENTIFY EXISTING AND PROPOSED LANDSCAPING ELEMENTS AND SHOW LOCATION AND PLANTING AND/OR CONSTRUCTION DETAILS. WHERE EXISTING PLANTINGS ARE TO BE RETAINED, PROPOSED METHODS OF PROTECTING SUCH PLANTINGS DURING CONSTRUCTION SHALL BE INCLUDED WHERE APPLICABLE.

(2) LANDSCAPING SHALL BE CONCEIVED IN A TOTAL PATTERN THROUGHOUT THE SITE, INTEGRATING THE VARIOUS ELEMENTS OF SITE DESIGN, PRESERVING AND ENHANCING THE PARTICULAR IDENTITY OF THE SITE, AND CREATING A PLEASING SITE CHARACTER.

(3) LANDSCAPING MAY INCLUDE PLANT MATERIALS SUCH AS TREES, SHRUBS, GROUND COVERS, PERENNIALS, AND ANNUALS, AND OTHER MATERIALS SUCH AS ROCKS, WATER, SCULPTURE, ART, WALLS, FENCES, PAVING MATERIALS AND STREET FURNITURE.

(4) ALL PARKING LOTS CONSTRUCTED OR REDEVELOPED AT PEASE SHALL MEET THE FOLLOWING REQUIREMENTS:

a) SCREENING: ALL PARKING LOTS CONTAINING MORE THAN 25 PARKING SPACES SHALL BE APPROPRIATELY SCREENED FROM ADJACENT PROPERTIES AND ROADWAYS WITH LANDSCAPE BERMS AND/OR PLANTINGS IN ORDER TO MINIMIZE THE AESTHETIC IMPACT OF THE PARKING LOT.

b) LANDSCAPED ISLANDS: ALL PARKING ROWS CONTAINING MORE THAN 10 SPACES SHALL HAVE LANDSCAPED ISLANDS THE SIZE OF A PARKING SPACE AT BOTH ENDS OF THE ROW.

c) LENGTH OF ROWS: NO PARKING LOT SHALL CONTAIN MORE THAN 18 PARKING SPACES IN A ROW WITHOUT THE INCLUSION OF A LANDSCAPED ISLAND OF THE SAME SIZE AS THE PARKING SPACES IN THAT ROW.

d) MULTIPLE PARKING AISLES: THERE MUST BE A 12' WIDE LANDSCAPED STRIP BETWEEN EVERY SECOND ROW OF DOUBLE STACKED PARKING.

e)LANDSCAPE ISLANDS EXCEPT THAT THE CURBING MAY BE INTERRUPTED TO ALLOW FOR INFILTRATION OF STORMWATER.

(B) SCREENING

(1) SCREENING SHALL BE PROVIDED FOR ALL DEVELOPMENT OF LAND IN ORDER TO MINIMIZE ADVERSE VISUAL IMPACTS.

(2) STRUCTURES VISIBLE FROM A PUBLIC STREET SHALL BE PARTIALLY SCREENED WITH FLOWERING OR EVERGREEN SHRUBS.

(3) SOLID WASTE COLLECTION EQUIPMENT, PUMP STATIONS, OUTDOOR STORAGE AND OTHER OUTDOOR USES VISIBLE FROM A PUBLIC STREET SHALL BE SCREENED WITH A SOLID FENCE AND/OR EVERGREEN SHRUBS.

## PLANTING SCHEDULE -TREES, SHRUBS, GROUNDCOVERS & PERENNIALS

| KEY | QUANTITY | BOTANICAL NAME | COMMON NAME | MIN. SIZE | SPACING | COMMENTS |
|---|---|---|---|---|---|---|
| **DECIDUOUS TREES** | | | | | | |
| AR | 7 | ACER RUBRUM 'RED SUNSET' | RED SUNSET MAPLE | 2"-2.5" CAL. | AS SHOWN | B&B |
| AC | 5 | AMELANCHIER CANADENSIS | SERVICEBERRY | 6-7' HT. | AS SHOWN | B&B, MULTISTEM |
| BP | 4 | BETULA PAPYRIFERA | PAPER BIRCH | 12-14' HT. | AS SHOWN | B&B, MULTISTEM |
| CK | 3 | CORNUS KOUSA | KOUSA DOGWOOD | 2"-2.5" CAL. | AS SHOWN | B&B |
| CKW | 1 | CORNUS KOUSA 'WOLF EYES' | WOLF EYES KOUSA DOGWOOD | 2"-2.5" CAL. | AS SHOWN | B&B-SPECIMEN |
| CV | 3 | CHIONANTHUS VIRGINICUS | WHITE FRINGE TREE | 2"-2.5" CAL. | AS SHOWN | B&B |
| FA | 3 | FRANKLINIA ALATAMAHA | FRANKLIN TREE | 6-7' HT. | AS SHOWN | B&B |
| FS | 1 | FAGUS SYLVATICA 'RIVERSII' | RIVER'S PURPLE BEECH | 2"-2.5" CAL. | AS SHOWN | B&B |
| MB | 2 | MAGNOLIA 'BUTTERFLY' | BUTTERFLY MAGNOLIA | 6-7' HT. | AS SHOWN | B&B |
| QA | 3 | QUERCUS ALBA | WHITE OAK | 2"-2.5" CAL. | AS SHOWN | B&B |
| QC | 3 | QUERCUS COCCINEA | SCARLET OAK | 2"-2.5" CAL. | AS SHOWN | B&B |
| NS | 8 | NYSSA SYLVATICA 'GREEN GABLE' | GREEN GABLE TUPELO | 2"-2.5" CAL. | AS SHOWN | B&B |
| TC | 6 | TILIA CORDATA 'GREENSPIRE' | GREENSPIRE LINDEN | 2"-2.5" CAL. | AS SHOWN | B&B |
| **EVERGREEN TREES** | | | | | | |
| PG | 9 | PICEA GLAUCA | WHITE SPRUCE | 6-7' HT. | AS SHOWN | B&B |
| TO | 9 | THUJA OCCIDENTALIS 'SMARAGD' | EMERALD GREEN ARBORVITAE | 5-6' HT. | AS SHOWN | B&B |
| **SHRUBS** | | | | | | |
| AZ | 24 | AZALEA 'DELAWARE WHITE' | DELAWARE WHITE AZALEA | #5 | AS SHOWN | POT |
| BG | 8 | BUXUS 'GREEN GEM' | GREEN GEM BOXWOOD | #3 | AS SHOWN | B&B |
| CA | 26 | CLETHRA ALNIFOLIA 'HUMMINGBIRD' | HUMMINGBIRD SUMMERSWEET | #5 | AS SHOWN | POT |
| CI | 18 | CORNUS SERICEA 'ALLEMAN'S COMPACTA' | ALLEMAN'S COMPACT RED OSIER DOGWOOD | #5 | AS SHOWN | POT |
| FG | 24 | FOTHERGILLA GARDENII | DWARF FOTHEREGILLA | 2-2.5' | AS SHOWN | B&B |
| HY | 18 | HYDRANGEA ARBORESCENS 'INCREDIBALL' | INCREDIBALL HYDRANGEA | #5 | AS SHOWN | B&B |
| IG | 61 | ILEX GLABRA 'SHAMROCK' | SHAMROCK INKBERRY | #5 | AS SHOWN | B&B |
| MP | 52 | MYRICA PENSYLVANICA | BAYBERRY | 2.5'-3' HT. | AS SHOWN | B&B |
| RA | 6 | RHODODENDRON 'APRIL ROSE' | APRIL ROSE RHODODENDRON | 2.5'-3' HT. | AS SHOWN | B&B |
| PM | 12 | PRUNUS MARITIMA | BEACH PLUM | #10 | AS SHOWN | POT |
| RK | 12 | PINK DOUBLE KNOCK OUT | PINK DOUBLE KNOCK OUT ROSE | #3 | AS SHOWN | POT |
| TM | 86 | TAXUS MEDIA 'GREENWAVE' | GREENWAVE YEW | 18-24" | AS SHOWN | B&B |
| VD | 22 | VIBURNUM DENTATUM 'BLUE MUFFIN' | BLUE MUFFIN VIBURNUM | 3-4' HT. | AS SHOWN | B&B |
| **PERENNIALS/GRASSES** | | | | | | |
| AI | 73 | ASCLEPIAS INCARNATA | ROSE MILK WEED | #2 | 36" O.C. | STAGGERED |
| AT | 113 | ASCLEPIAS TUBEROSA | BUTTERFLY WEED | #2 | 24" O.C. | STAGGERED |
| AH | 57 | AMSONIA HUBRICHTII | THREAD-LEAFED BLUESTAR | #2 | 24" O.C. | STAGGERED |
| BA | 41 | BAPTISIA AUSTRALIS | BLUE FALSE INDIGO | #2 | AS SHOWN | STAGGERED |
| PV | 62 | PANICUM VIRGATUM | SWITCH GRASS | #3 | 36" O.C. | STAGGERED |
| DP | 79 | DENSTEADTIA PUNCTILOBA | HAYSCENTED FERN | #2 | 24" O.C. | STAGGERED |
| DS | 42 | SPOROBOLUS HETEROLEPIS | PRAIRIE DROPSEED | #2 | 24" O.C. | STAGGERED |
| HO | 34 | HOSTA 'GUACAMOLE' | GUACAMOLE HOSTA | #2 | 24" O.C. | STAGGERED |
| HS | 48 | HEMEROCALLIS 'BIG TIME HAPPY' | BIG TIME HAPPY DAYLILLY | #2 | 24" O.C. | STAGGERED |
| NP | 42 | NEPETA 'PURRSIAN BLUE' | PURRSIAN BLUE CATMINT | #2 | 24" O.C. | STAGGERED |
| RF | 182 | RUDBECKIA FULGIDA FULGIDA | BLACK EYED SUSAN | #2 | 24" O.C. | STAGGERED |

'ANNUALS / SEASONAL COLOR TO BE "MIDNIGHT FROST" MIX BY PROVEN WINNERS OR EQUAL.

## CONSERVATION WILDLIFE SEED MIX:

NEW ENGLAND CONSERVATION / WILDLIFE MIX
(BY NEW ENGLAND WETLAND PLANTS INC. - NEWP.COM)
APPLICATION RATE: 25 LBS/ACRE | 1750 SQ FT/LB

| ITEM | BOTANICAL NAME | COMMON NAME | INDICATOR |
|---|---|---|---|
| 1. | ELYMUS VIRGINICUS | VIRGINIA WILD RYE | FACW |
| 2. | CHAMAECRISTA FASCICULATA | PARTRIDGE PEA | FACU |
| 3. | FESTUCA RUBRA | RED FESCUE | FACU |
| 4. | SCHIZACHYRIUM SCOPARIUM | LITTLE BLUESTEM | FACU |
| 5. | ANDROPOGON GERARDII | BIG BLUESTEM | FACU |
| 6. | PANICUM VIRGATUM | SWITCH GRASS | FAC |
| 7. | DESMODIUM PANICULATUM | PANICLEDLEAF TICK TREFOIL | FACU |
| 8. | SORGHASTRUM NUTANS | INDIAN GRASS | FACU |
| 9. | VERBENA HASTATA | BLUE VERVAIN | FACW |
| 10. | ASCLEPIAS TUBEROSA | BUTTERFLY MILKWEED | |
| 11. | RUDBECKIA HIRTA | BLACK EYED SUSAN | FACU |
| 12. | HELENIUM AUTUMNALE | FALL SNEEZEWEED | FACW |
| 13. | ASTERPILOSUS/SYMPHYOTRICHUM PILOSUM | HEATH ASTER | FACU |
| 14. | SOLIDAGO JUNCEA | EARLY GOLDENROD | |
| 15. | AGROSTIS PERENNANS | UPLAND BENTGRASS | FACU |

THE NEW ENGLAND CONSERVATION/WILDLIFE MIX PROVIDES A PERMANENT COVER OF GRASSES, WILDFLOWERS, AND LEGUMES. FOR BOTH GOOD EROSION CONTROL AND WILDLIFE HABITAT VALUE. THE MIX IS DESIGNED TO BE A NO MAINTENANCE SEEDING, AND IS APPROPRIATE FOR CUT AND FILL SLOPES, DETENTION BASIN SIDE SLOPES, AND DISTURBED AREAS ADJACENT TO COMMERCIAL AND RESIDENTIAL PROJECTS.

## LANDSCAPE NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY/TOWN OF PORTSMOUTH, NH. PLANTING PLAN IS DIAGRAMMATIC IN NATURE. FINAL PLACEMENT OF PLANTS TO BE APPROVED BY THE LANDSCAPE ARCHITECT IN THE FIELD.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES, ANY PERMITTING AGENCIES, AND "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS IN ADVANCE OF ANY WORK THAT WILL REQUIRE EXCAVATION. CONTRACTOR SHALL NOTIFY THE OWNERS REPRESENTATIVE OF NAY CONFLICTS IN WRITING.
3. NO PLANT MATERIAL SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
4. ANY TREES NOTED AS "SEAL OR SELECTED SPECIMEN" SHALL BE TAGGED AND SEALED BY THE LANDSCAPE ARCHITECT.
5. ALL TREES SHALL BE BALLED AND BURLAPPED (B&B) UNLESS OTHERWISE NOTED OR APPROVED BY THE OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
6. CONTRACTOR SHALL VERIFY QUANTITIES SHOWN ON PLANT LIST. QUANTITIES SHOWN ON PLANS SHALL GOVERN OVER PLANT LIST.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE APPROVED IN WRITING BY OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE GUIDELINES ESTABLISHED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY AMERICANHORT (LATEST EDITION).
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF ACCEPTANCE. ANY PLANT MATERIALS WHICH DIE WITHIN THE ONE YEAR PLANT GUARANTEE PERIOD WILL BE REPLACED BY THE LANDSCAPE CONTRACTOR. OWNERS TO COORDINATE DIRECTLY WITH THE LANDSCAPE CONTRACTOR FOR REPLACEMENT PLANTINGS.
10. ALL DISTURBED AREAS NOT OTHERWISE NOTED SHALL RECEIVE 6" OF SUITABLE LOAM & SEED.
11. LAWNS WITH 3:1 OR GREATER SLOPES SHALL BE PROTECTED WITH AN EROSION CONTROL BLANKET.
12. ANY FALL TRANSPLANTING HAZARD PLANTS SHALL BE DUG IN THE SPRING AND STORED FOR FALL PLANTING.
13. TREES SHALL HAVE A MINIMUM CALIPER AS INDICATED ON THE PLANTING SCHEDULE TAKEN ONE FOOT ABOVE THE ROOT CROWN.
14. ALL PLANT BEDS AND TREE SAUCERS TO RECEIVE 3" OF PINE BARK MULCH. GROUNDCOVER AREAS SHALL RECEIVE 1" OF PINE BARK MULCH.
15. ALL DECIDUOUS TREES ADJACENT TO WALKWAYS AND ROADWAYS SHALL HAVE A BRANCHING PATTERN TO ALLOW FOR A MINIMUM OF 7' OF CLEARANCE BETWEEN THE GROUND AND THE LOWEST BRANCH.
16. ALL TREE STAKES SHALL BE STAINED DARK BROWN.
17. CONTRACTOR RESPONSIBLE FOR WATERING AND RESEEDING OF BARE SPOTS UNTIL A UNIFORM STAND OF VEGETATION IS ESTABLISHED AND ACCEPTED.
18. ALL PARKING ISLANDS PLANTED WITH SHRUBS SHALL HAVE 24" OF TOP SOIL. FINISH GRADE SHALL BE SLOPED TO SIX INCHES (6") ABOVE THE TOP OF CURB.
19. SOIL SAMPLES, TESTS, AND SHOP DRAWINGS SHALL BE PROVIDED TO THE LANDSCAPE ARCHITECT OR THE OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.
20. SLOPES AT 2:1 SHOULD HAVE 6" LOAM & SEED. SEEDING OF 2:1 SLOPES SHALL OCCUR IN THE DRY & AFTER SLOPES ARE COMPACTED.
21. ALL LANDSCAPED AREAS WITH SHRUBS, TREES, AND PERENNIALS TO HAVE 2 FEET MINIMUM DEPTH OF TOPSOIL. TWO FEET OF TOPSOIL AROUND TREES AND SHRUBS DOES NOT INCLUDE AMENDED PLANTING SOIL WITHIN TREE / SHRUB PIT FOR FULL DEPTH OF ROOTBALLS. SEE PLANTING DETAILS FOR PLANTING DEPTH AT SHRUBS AND TREES. ALL AREAS OF LOAM AND SEED TO HAVE 6" MINIMUM DEPTH OF TOPSOIL. TOPSOIL TO BE TESTED BY CONTRACTOR, AND APPROVED BY A&M PRIOR TO PURCHASE AND OR PLACEMENT. GENERAL, DEMOLITION, AND LANDSCAPE CONTRACTORS TO COORDINATE PROPER DEPTH OF EXISTING MATERIAL REMOVAL ACROSS SITE SO THAT 2 FEET MINIMUM AND 6" MINIMUM DEPTHS OF PROPOSED TOPSOIL NOTED ABOVE ARE MET. SEE TOPSOIL DETAIL.
22. PRIOR TO LAYING TOPSOIL, ALL SUBSOIL (BELOW PROPOSED TOPSOIL) TO BE TILLED TO A DEPTH OF AT LEAST 18" TO REMOVE CONSTRUCTION COMPACTION AND ALLOW FOR PROPER DRAINAGE OF TOPSOILS.
23. ALL SEEDING TO BE COMPLETED "IN SEASON" BETWEEN APRIL 1 TO JUNE 15 OR AUGUST 15 TO OCTOBER 1, EXCEPT FOR RE-SEEDING OF BARE SPOTS. AT ALL SLOPED AREAS CONTRACTOR TO INSTALL COCONUT FIBER JUTE MESH NETTING ON ALL SLOPES 3:1 AND GREATER, HYDROSEED ALL EXPOSED AREAS, ADD SOIL STABILIZER "FLEXTERRA HP-FGM" AS MANUFACTURED BY "PROFILE" TO HYDROSEED (AT RATE OF 3,000 LBS PER ACRE). CONTRACTOR TO ALSO BE RESPONSIBLE FOR RE-GRADING AND RE-SEEDING ALL DISTURBED, ERODED, OR BARE SPOTS & UNTIL SLOPES ARE FULLY STABLE. CONTRACTOR RESPONSIBLE FOR ALL MAINTENANCE UNTIL FINAL ACCEPTANCE OF LAWN AREAS INCLUDING: WATERING, ADDING FERTILIZERS AND LIME AND MOWING.
24. AFTER SEEDING, ALL AREAS TO BE LIGHTLY MULCHED WITH WEED FREE STRAW & CONTINUALLY WATERED EVERY DAY SO THAT SEED IS KEPT MOIST UNTIL SEED IS ESTABLISHED & APPROVED BY A&M LANDSCAPE ARCHITECT (USE NO HAY).
25. IF THERE IS NO PROPOSED IRRIGATION SYSTEM AFTER PLANTINGS & LAWNS & SEEDED AREAS HAVE BEEN INSTALLED, LANDSCAPE CONTRACTOR RESPONSIBLE TO TEMPORARILY WATER ALL INSTALLED PLANTINGS, SEEDED AREAS, & LAWN AREAS MIN. 4 TIMES A WEEK DURING INITIAL ESTABLISHMENT PERIOD OF 6 MONTHS AFTER ALL LANDSCAPING IS INSTALLED.
26. ALL PROPOSED LANDSCAPE AREAS INCLUDING MOWED LAWNS, TREES, SHRUB BEDS, AND PERENNIALS SHALL BE PROVIDED WITH WATER EFFICIENT UNDERGROUND IRRIGATION. DESIGN AND INSTALLATION OF IRRIGATION SYSTEM TO BE PERFORMED BY AN APPROVED IRRIGATION DESIGN BUILD CONTRACTOR OR BY AN APPROVED EQUAL TO BE DETERMINED BY THE OWNERS REPRESENTATIVE AND LANDSCAPE ARCHITECT. IRRIGATION SYSTEM IS TO BE DESIGNED FOR EFFICIENT WATER USAGE INCLUDING: USE OF DRIP IRRIGATION FOR SHRUBS AND PERENNIALS, IRRIGATION SYSTEM WITH HEAD-TO-HEAD COVERAGE, A CENTRAL SHUT-OFF VALVE, SEPARATE ZONES FOR EACH TYPE OF BEDDING AREA BASED ON WATERING NEEDS, AND A RAIN SENSOR TO SHUT OFF IRRIGATION DURING RAIN EVENTS.
27. SEEDING OF BIORETENTION & DETENTION AREAS & OTHER SLOPE AREAS SHALL OCCUR IN THE DRY & AFTER SLOPES ARE COMPACTED. IT IS IMPORTANT, THAT THE BIORETENTION AREAS/ DETENTION BASIN BE SEEDED AT THE BEGINNING OF THE PROJECT & PRIOR TO ANY DRAINAGE BEING DIRECTED TOWARDS THE BASIN. THE SEED AT DETENTION AREAS & OTHER SLOPED AREAS WILL NEED A MINIMUM OF 6 MONTHS TO INITIALLY ESTABLISH PRIOR TO THE DETENTION BASIN BEING UTILIZED SO THAT THERE IS NOT EROSION & SLOPE FAILURE. LIGHTLY RAKE SOIL TO ENSURE GOOD SEED-TO-SOIL CONTACT. SEE SEED MIX DETAIL NOTES.
28. FOR SPREADING OF THE SEED WITH DRY DETENTION BASINS, WATER LEVELS MAY BE LOWERED IN THE DETENTION AREAS BY RELYING ON DRY SEASON AND OR DRY SPELLS; OR MAY BE ACCOMPLISHED THROUGH THE USE OF DEWATERING METHODS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ANY DEWATERING METHODS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. WATER FROM ANY DEWATERING OPERATION SHALL BE TREATED TO REDUCE TOTAL SUSPENDED SOLIDS AND BE IN COMPLIANCE WITH STATE AND FEDERAL STANDARDS.
29. NO SOIL MATERIAL TO BE REMOVED OFF SITE PER PEASE DEVELOPMENT REGULATIONS.
30. SEE L-502 FOR PORTSMOUTH TREE PLANTING DETAIL, TOPSOIL SPECIFICATIONS AND PLANTING REQUIREMENTS.

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LICENSED LANDSCAPE ARCHITECT
BETHANY C. DERMODY
006
STATE OF NEW HAMPSHIRE
11.10.23

PROFESSIONAL LANDSCAPE ARCHITECT FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | AS SHOWN | DWG. NAME: | L-3250-01.dwg |
| DESIGNED BY: | BCD | CHECKED BY: | RPC |

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE: LANDSCAPE NOTES & DETAILS

SHEET No. L-401

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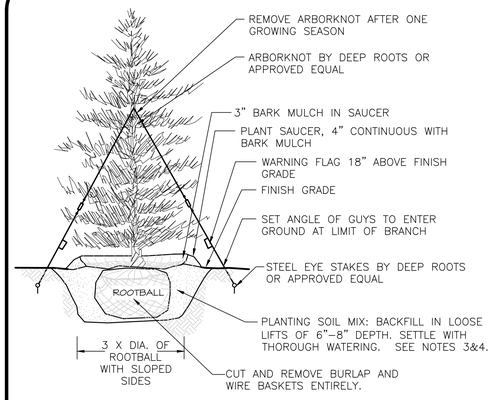
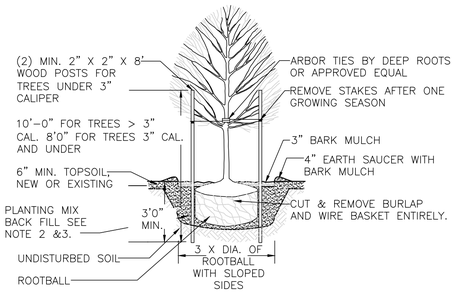



NOTES

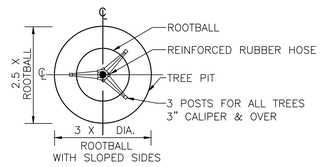
1. TREES SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS IT BORE TO NURSERY OR FIELD GRADE. ROOT FLARE SHALL BE 2" ABOVE FINISH GRADE. REMOVE SOIL FROM TRUNK FLARE OF TREE TO DETERMINE ACTUAL TOP OF ROOTBALL AREA.
2. INSTALL THREE GUYS PER TREE; EQUALLY SPACED AROUND BALL.
3. ATTACH GUYS AT 2/3 HEIGHT OF TREE.
4. BACKFILL WITH PLANTING MIX. PLANT MIX TO BE: 50% NATIVE TOPSOIL, 20% COMPOST (LEAVES & ORGANIC MATERIAL, NO ASH) 20% PEAT MOSS, 10% SAND.
5. ADD MYCORRHIZA SOIL ADDITIVES AND SLOW RELEASE FERTILIZER WHEN PLANT HOLES ARE 50% FILLED AND WATER THOROUGHLY AT COMPLETION.

**EVERGREEN TREE DETAIL** (1)
NOT TO SCALE

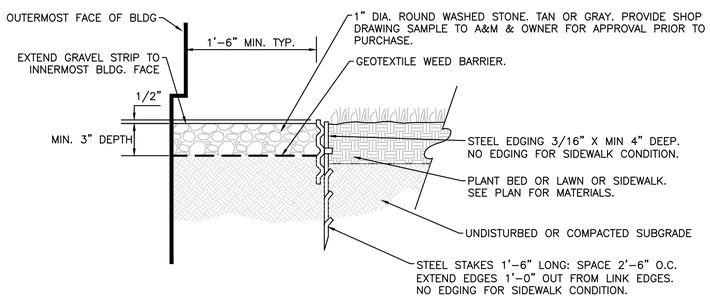



NOTES:

1. ALL TREES SHALL HAVE THE SAME RELATIONSHIP TO FINISH GRADE AFTER PLANTING AS THEY HAD AT THE ORIGINAL NURSERY SETTING. ROOT FLARE SHALL BE 2" ABOVE FINISH GRADE. REMOVE SOIL FROM TRUNK FLARE OF TREE TO DETERMINE ACTUAL ROOTBALL AREA.
2. BACKFILL WITH PLANTING MIX. PLANT MIX TO BE: 50% NATIVE TOPSOIL, 20% COMPOST (LEAVES & ORGANIC MATERIAL, NO ASH) 20% PEAT MOSS, 10% SAND.
3. ADD MYCORRHIZA SOIL ADDITIVES AND SLOW RELEASE FERTILIZER WHEN PLANT HOLES ARE 50% FILLED AND WATER THOROUGHLY AT COMPLETION.
4. SEE MATERIALS PLAN AND DETAILS PLANS FOR STREET TREE PLANTING IN WITH TREE GRATES DETAIL.
5. SEE ALSO PORTSMOUTH TREE PLANTING DETAIL L–502 FOR TREES IN R.O.W.

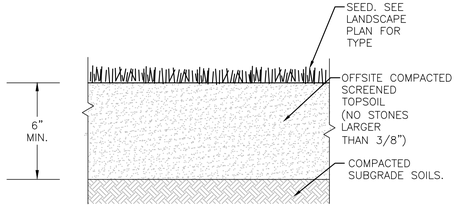



**DECIDUOUS TREE PLANTING DETAIL** (3)
NOT TO SCALE




NOTES:
1. STONE EDGE IS TO BE INSTALLED CONTINUOUS ADJACENT TO THE ENTIRE FACE OF BUILDINGS EXCEPT WHERE OTHER HARD SURFACING MATERIALS ARE SPECIFIED OR IF SHOWN OTHERWISE ON PLAN.

**LANDSCAPE STONE AROUND BUILDING DETAIL** (4)
NOT TO SCALE



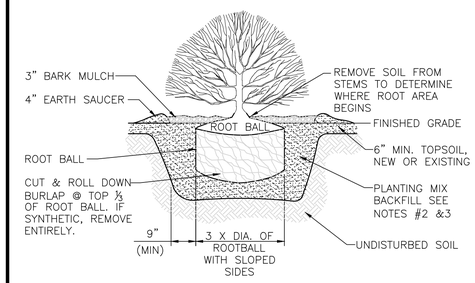

| TEXTURE CLASS | % OF TOTAL WEIGHT |
|---|---|
| SAND | 40% |
| SILT | 40% |
| CLAY | 20% |

| SIEVE | % PASSING |
|---|---|
| 3/8" | 100 |
| NO. 4 | 85–100 |
| NO. 40 | 60–85 |
| NO. 100 | 38–60 |
| NO. 200 | 10–35 |
| 20 um | LESS THAN 5% |

NOTES:
1. TOP OF LOAM (TOPSOIL) IS FINISH GRADE.
2. ALL TOPSOIL (BOTH ONSITE AND OFFSITE SOURCES) SHALL BE COMPOSED OF A NATURAL, FERTILE, FRIABLE SOIL TYPICAL OF CULTIVATED TOPSOILS OF THE LOCALITY. OFFSITE SOIL SHALL BE SUITABLE FOR THE GERMINATION OF SEEDS AND SUPPORT OF VEGETATIVE GROWTH, WITH ADDITIVES, IF REQUIRED, TO ACHIEVE PARTICLE DISTRIBUTION AND ORGANIC CONTENT BELOW. TOPSOIL SHALL BE TAKEN FROM A WELL–DRAINED, ARIABLE SITE, FREE OF SUBSOIL, LARGE STONES, EARTH CLODS, STICKS, STUMPS, CLAY LUMPS, ROOTS, OTHER OBJECTIONABLE, EXTRANEOUS MATTER OR DEBRIS NOR CONTAIN TOXIC SUBSTANCES.
3. THE CONTRACTOR SHALL PROVIDE THE OWNER / LANDSCAPE ARCHITECT WITH TOPSOIL TEST RESULTS (RECOMMEND UMASS AMHERST SOIL TESTING LAB) FOR APPROVAL PRIOR TO OBTAINING AND PLACING THE SOIL. IF ANY TOPSOIL IS PURCHASED OR PLACED PRIOR TO APPROVAL BY OWNER / LANDSCAPE ARCHITECT, IT IS AT CONTRACTORS RISK, AND IT CAN BE REMOVED AT NO ADDITIONAL COST TO THE OWNER. IF THE PLANTING SOIL (BOTH ONSITE AND OFFSITE SOURCES) DOES NOT FALL WITHIN THE REQUIRED SIEVE ANALYSIS, TEXTURAL CLASS, ORGANIC CONTENT, OR PH RANGE, IT SHALL BE ADJUSTED TO MEET THE SPECIFICATIONS THROUGH THE ADDITION OF SAND, COMPOST, LIMESTONE, OR ALUMINUM SULFATE TO BRING IT WITHIN THE SPECIFIED LIMITS AT NO ADDITIONAL COST TO THE OWNER.
4. SEE ALSO CITY OF PORTSMOUTH TOPSOIL SPECIFICATION L–502 FOR THE ADDITION OF 25% COMPOST SPECIFICATIONS FOR R.O.W. WORK.

**TOPSOIL FOR LAWN, TREES, SHRUBS, & PERENNIALS** (2)
NOT TO SCALE

NOTES:
1. ALL SHRUBS SHALL HAVE THE SAME RELATIONSHIP TO FINISH GRADE AFTER PLANTING AS THEY HAD AT THE ORIGINAL NURSERY SETTING. SET SHRUB 1"–2" ABOVE FINISH GRADE.
2. BACKFILL WITH PLANTING MIX. PLANT MIX TO BE: 50% NATIVE TOPSOIL, 20% COMPOST (LEAVES & ORGANIC MATERIAL, NO ASH) 20% PEAT MOSS, 10% SAND.
3. ADD MYCORRHIZA SOIL ADDITIVES AND SLOW RELEASE FERTILIZER WHEN PLANT HOLES ARE 50% FILLED AND WATER THOROUGHLY AT COMPLETION.
4. SHRUB BEDS TO HAVE 24" MIN. OF CONTINUOUS PLANTING SOIL.



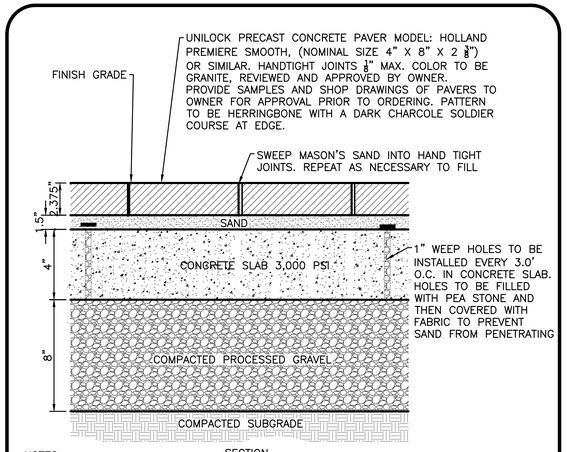

**SHRUB PLANTING DETAIL** (5)
NOT TO SCALE

## LOAM AND SEEDING NOTES:

CONTRACTOR SHALL SEED ALL DISTURBED AREAS NOT NOTED TO RECEIVE OTHER MATERIALS, AND AT AREAS SHOWN ON THE PLAN PER SPECIFICATIONS BELOW

| SCIENTIFIC NAME | COMMON NAME | PROPORTION BY WEIGHT | PERCENT PURITY | PERCENT GERMINATION |
|---|---|---|---|---|
| FESTUCA RUBRA "RUBRA" | CREEPING RED FESCUE | 37% | 95% | 90% |
| PAO PRAENTENSIS "BARON" | BARON KENTUCKY BLUEGRASS | 40% | 85% | 90% |
| LOLIUM PERENNE "PALMER" | PALMER PERENNIAL RYEGRASS | 15% | 95% | 90% |
| FESTUCA RUBRA COMMUTATA WILMA | WILMA CHEWINGS | 8% | 95% | 80% |

1. SEED TO BE SPREAD AT MINIMUM RATE OF 5 LBS. PER 1000 SQ. FT.
2. SEEDING TO BE COMPLETED "IN SEASON" BETWEEN APRIL 1 TO JUNE 15 OR AUGUST 15 TO OCTOBER 1, EXCEPT FOR RESEEDING OF BARE SPOTS. IF UNABLE TO SEED WITHIN THESE TIMEFRAMES, CONTRACTOR TO INSTALL EROSION CONTROL MATS ON ALL SLOPES 3:1 AND OVER, HYDROSEED ALL EXPOSED AREAS, ADD SOIL STABILIZER "FLUX TERRA HP–FGM SOIL STABILIZER" AS MANUFACTURED BY "PROFILE" TO HYDROSEED (AT RATE OF 3,000 LBS PER ACRE), AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR TO COMPLETE ALL ABOVE "OUT OF SEASON" REQUIREMENTS AND THEN ALSO BE RESPONSIBLE FOR RE–GRADING AND RE–SEEDING ALL DISTURBED, ERODED, OR BARE SPOTS WITHIN NEXT CLOSEST PLANTING SEASON IN FALL OR SPRING AT NO ADDITIONAL COST TO OWNER. CONTRACTOR RESPONSIBLE FOR ALL MAINTENANCE UNTIL FINAL ACCEPTANCE OF LAWN AREAS INCLUDING: WATERING, ADDING FERTILIZERS AND LIME AND MOWING AT NO ADDITIONAL COST TO OWNER.
3. COMMERCIAL FERTILIZER SHALL BE APPLIED AT THE RATE OF 25 POUNDS PER 1000 SQ. FT. OR AS RECOMMENDED BY THE TESTING AGENCY. LIME TO BE SPREAD AT THE RATE OF 100 POUNDS PER 1000 SQ. FT OR AS RECOMMENDED BY THE TESTING AGENCY. COMMERCIAL FERTILIZER SHALL BE A COMPLETE FERTILIZER CONTAINING AT LEAST 50% OF THE NITROGEN OF WHICH IS DERIVED FROM NATURAL ORGANIZE SOURCES OF UREAFORM. IT SHALL CONTAIN THE FOLLOWING PERCENTAGES BY WEIGHT: NITROGEN (N) 10%, PHOSPHORUS (P) 6%, POTASH (K) 4%. LIME SHALL BE AN APPROVED AGRICULTURAL LIMESTONE CONTAINING NOT LESS THAN 85% OF TOTAL CARBONATES. LIMESTONE SHALL BE GROUND TO SUCH FINENESS THAT 50% WILL PASS A 100 MESH SIEVE AND 90% WILL PASS THROUGH A 20 MESH SIEVE.
4. LAWN AREAS TO BE SEEDED BY SOWING EVENLY WITH AN APPROVED MECHANICAL SEEDER AT THE RATE OF TEN POUNDS PER 1000 SQUARE FEET.
5. CONTRACTOR RESPONSIBLE FOR WATERING, MOWING, AND RESEEDING OF LAWN BARE SPOTS UNTIL A UNIFORM, HEALTHY STAND OF GRASS IS ESTABLISHED AND ACCEPTED.




SECTION

NOTES:
1. INSTALL EXPANSION JOINTS @ 30'–0" O.C. MIN. IN CONCRETE SLAB
2. WHERE PAVEMENT ABUTS LAWN OR SHRUB BED, PROVIDE 'PAVE–EDGE' OR APPROVED EQUAL.
3. 1" WEEP HOLES TO BE INSTALLED EVERY 3.0' O.C. IN CONCRETE SLAB. HOLES TO BE FILLED WITH GRAVEL AND THEN COVER WITH FABRIC TO PREVENT SAND FROM PENETRATING.

**PEDESTRIAN CONCRETE PAVERS OR EQUAL** (6)
**NOT TO SCALE**


LICENSED LANDSCAPE ARCHITECT · BETHANY C. DERMODY · 006 · STATE OF NEW HAMPSHIRE
11.10.23
PROFESSIONAL LANDSCAPE ARCHITECT FOR ALLEN & MAJOR ASSOCIATES, INC.


| REV | DATE | DESCRIPTION |
|---|---|---|
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| | | |
| | | |
| 2 | 10-20-23 | REVISED PER TAC COMMENTS |
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7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | AS SHOWN | DWG. NAME: | L-3250-01.dwg |
| DESIGNED BY: | BCD | CHECKED BY: | RPC |


PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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DRAWING TITLE:
LANDSCAPE NOTES & DETAILS

SHEET No.
L-501


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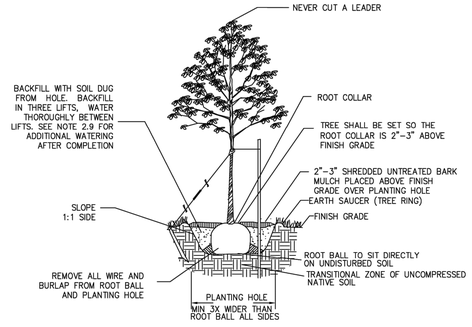


TREE PLANTING DETAIL
N.T.S.

PART 1 – GENERAL:

1.1 THE BASE OF THE CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS IS THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPLANTING. ANSI A300 PART 6 LAYS OUT TERMS AND BASIC STANDARDS AS SET FORTH BY INDUSTRY BUT IT IS NOT THE "END ALL" FOR THE CITY OF PORTSMOUTH. THE FOLLOWING ARE THE CITY OF PORTSMOUTH, NH TREE PLANTING REQUIREMENTS THAT ARE IN ADDITION TO OR THAT GO BEYOND THE ANSI A300 PART 6.

PART 2 – EXECUTION:

2.1 ALL PLANTING HOLES SHALL BE DUG BY HAND – NO MACHINES. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING PITS, PLANTING BEDS WITH GRANITE CURBING, AND PLANTING SITES WITH SILVA CELLS ARE BEING CREATED. IF A MACHINE IS USED TO DIG IN ANY OF THESE SITUATIONS AND PLANTING DEPTH NEEDS TO BE RAISED THE MATERIAL IN THE BOTTOM OF THE PLANTING HOLE MUST BE FIRMED WITH MACHINE TO PREVENT SINKING OF THE ROOT BALL.

2.2 ALL WIRE AND BURLAP SHALL BE REMOVED FROM THE ROOT BALL AND PLANTING HOLE.

2.3 THE ROOT BALL OF THE TREE SHALL BE WORKED SO THAT THE ROOT COLLAR OF THE TREE IS VISIBLE AND NO GIRDLING ROOTS ARE PRESENT.

2.4 THE ROOT COLLAR OF THE TREE SHALL BE 2"–3" ABOVE GRADE OF PLANTING HOLE FOR FINISHING DEPTH.

2.5 ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED NO MORE THAN 20% WITH ORGANIC COMPOST. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE ENGINEERED SOIL IS BEING USED IN CONJUNCTION WITH SILVA CELLS AND WHERE NEW PLANTING BEDS ARE BEING CREATED.

2.6 ALL PLANTINGS SHALL BE BACKFILLED IN THREE LIFTS AND ALL LIFTS SHALL BE WATERED SO THE PLANTING WILL BE SET AND FREE OF AIR POCKETS – NO EXCEPTIONS.

2.7 AN EARTH BERM SHALL BE PLACED AROUND THE PERIMETER OF THE PLANTING HOLE EXCEPT WHERE CURBED PLANTING BEDS OR PITS ARE BEING USED.

2.8 2"–3" OF MULCH SHALL BE PLACED OVER THE PLANTING AREA.

2.9 AT THE TIME OF PLANTING IS COMPLETE THE PLANTING SHALL RECEIVE ADDITIONAL WATER TO ENSURE COMPLETE HYDRATION OF THE ROOTS, BACKFILL MATERIAL AND MULCH LAYER.

2.10 STAKES AND GUYS SHALL BE USED WHERE APPROPRIATE AND/OR NECESSARY. GUY MATERIAL SHALL BE NON–DAMAGING TO THE TREE.

2.11 ALL PLANTING STOCK SHALL BE SPECIMEN QUALITY, FREE OF DEFECTS, AND DISEASE OR INJURY. THE CITY OF PORTSMOUTH, NH RESERVES THE RIGHT TO REFUSE/REJECT ANY PLANT MATERIAL OR PLANTING ACTION THAT FAILS TO MEET THE STANDARDS SET FORTH IN THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPORTATION AND/OR THE CITY OF PORTSMOUTH, NH PLANTING REQUIREMENTS.

DEPARTMENT OF PUBLIC WORKS CITY OF PORTSMOUTH, NH

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | REVISIONS | |

STANDARD DETAIL OF TREE PLANTING
PORTSMOUTH, NEW HAMPSHIRE

DRAWING SCALE: NTS — March, 2019 — P1

**CITY OF PORTSMOUTH TREE PLANTING DETAIL** (1)
NOT TO SCALE

## CITY OF PORTSMOUTH TOPSOIL SPECIFICATIONS

ATTACHMENT B: TOPSOIL SPECIFICATIONS

1. THE CITY OF PORTSMOUTH RECOMMENDS A MIXTURE OF ¾ (75%) LOAM, AND ¼(25%) COMPOST FOR ALL TOPSOIL AREAS. THIS INCLUDES BUT IS NOT LIMITED TO PLANTING BEDS, TURF AREAS AND THE GREEN STRIP BETWEEN THE SIDEWALK AND ROADWAY.

2. THE CITY REQUIRES A CHEMICAL AND COMPOSITION SOIL TEST FOR THIS MIXTURE BEFORE APPLYING TO ANY AREAS.

3. THE SOIL MIXTURE SHALL BE APPLIED AT A MINIMUM DEPTH OF 6".

4. LOAM SHOULD CONSIST OF 40% SAND, 40% SILT, AND 20% CLAY.

5. COMPOST SHALL MEET ALL OF THE FOLLOWING CRITERIA AND A SOIL TEST SHALL BE PROVIDED FROM THE COMPOST DISTRIBUTOR:

A. PRODUCT SHALL BE MANUFACTURED THROUGH THE CONTROLLED AEROBIC, BIOLOGICAL DECOMPOSITION OF BIODEGRADABLE MATERIALS;

B. PRODUCT SHALL HAVE UNDERGONE MESOPHILIC AND THERMOPHILIC TEMPERATURES IN ORDER TO REDUCE THE VIABILITY OF PATHOGENS AND WEED SEEDS, AND STABILIZE THE CARBON SUCH THAT IT IS BENEFICIAL TO PLANT GROWTH;

C. PRODUCT SANITIZATION THROUGH THE GENERATION OF THERMOPHILIC HEAT SHALL MEET THE STANDARDS OF THE PROCESSES TO FURTHER REDUCE PATHOGENS (PFRP), AS DEFINED BY THE CODE OF FEDERAL REGULATIONS TITLE 40, PART 503, APPENDIX B, SECTION B;

D. PRODUCT SHALL BEAR LITTLE PHYSICAL RESEMBLANCE TO THE RAW MATERIAL FROM WHICH IT ORIGINATED;

E. PRODUCT SHALL BE AN ORGANIC MATTER SOURCE THAT HAS THE UNIQUE ABILITY TO IMPROVE THE CHEMICAL, PHYSICAL, AND BIOLOGICAL CHARACTERISTICS OF SOILS OR GROWING MEDIA.

6. LOAM SHALL HAVE A ORGANIC MATTER CONTENT OF 5% TO 7%.

**CITY OF PORTSMOUTH TOPSOIL SPECIFICATION** (2)
NOT TO SCALE

## CITY OF PORTSMOUTH PLANTING REQUIREMENTS

CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS THE BASE OF THE CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS IS THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPLANTING. ANSI A300 PART 6 LAYS OUT TERMS AND BASIC STANDARDS AS SET FORTH BY INDUSTRY BUT IT IS NOT THE "END ALL" FOR THE CITY OF PORTSMOUTH. THE FOLLOWING ARE THE CITY OF PORTSMOUTH, NH TREE PLANTING REQUIREMENTS THAT ARE IN ADDITION TO OR THAT GO BEYOND THE ANSI A300 PART 6.

1. ALL PLANTING HOLES SHALL BE DUG BY HAND– NO MACHINES. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING PITS, PLANTING BEDS WITH GRANITE CURBING, AND PLANTING SITES WITH SILVA CELLS ARE BEING CREATED. IF A MACHINE IS USED TO DIG IN ANY OF THESE SITUATIONS AND PLANTING DEPTH NEEDS TO BE RAISED THE MATERIAL IN THE BOTTOM OF THE PLANTING HOLE MUST BE FIRMED WITH MACHINE TO PREVENT SINKING OF THE ROOT BALL.
2. ALL WIRE AND BURLAP SHALL BE REMOVED FROM THE ROOT BALL AND PLANTING HOLE.
3. THE ROOT BALL OF THE TREE SHALL BE WORKED SO THAT THE ROOT COLLAR OF THE TREE IS VISIBLE AND NO GIRDLING ROOTS ARE PRESENT.
4. THE ROOT COLLAR OF THE TREE SHALL BE 2"–3" ABOVE GRADE OF PLANTING HOLE FOR FINISHED DEPTH. 5. ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED NO MORE THAN 20% WITH ORGANIC COMPOST. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE ENGINEERED SOIL IS BEING USED IN CONJUNCTION WITH SILVA CELLS AND WHERE NEW PLANTING BEDS ARE BEING CREATED.
6. ALL PLANTINGS SHALL BE BACKFILLED IN THREE LIFTS AND ALL LIFTS SHALL BE WATERED SO THE PLANTING WILL BE SET AND FREE OF AIR POCKETS– NO EXCEPTIONS.
7. AN EARTH BERM SHALL BE PLACED AROUND THE PERIMETER OF THE PLANTING HOLE EXCEPT WHERE CURBED PLANTING BEDS OR PITS ARE BEING USED.
8. 2"–3"OF MULCH SHALL BE PLACED OVER THE PLANTING AREA.
9. AT THE TIME THE PLANTING IS COMPLETE THE PLANTING SHALL RECEIVE ADDITIONAL WATER TO ENSURE COMPLETE HYDRATION OF THE ROOTS, BACKFILL MATERIAL AND MULCH LAYER.
10. STAKES AND GUYS SHALL BE USED WHERE APPROPRIATE AND/OR NECESSARY. GUY MATERIAL SHALL BE NONDAMAGING TO THE TREE.
11. ALL PLANTING STOCK SHALL BE SPECIMEN QUALITY, FREE OF DEFECTS, AND DISEASE OR INJURY. THE CITY OF PORTSMOUTH, NH RESERVES THE RIGHT TO REFUSE/REJECT ANY PLANT MATERIAL OR PLANTING ACTION THAT FAILS TO MEET THE STANDARDS SET FORTH IN THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPLANTING AND/OR THE CITY OF PORTSMOUTH, NH PLANTING REQUIREMENTS.

**CITY OF PORTSMOUTH PLANTING REQUIREMENTS** (3)
NOT TO SCALE

NOTE:

NOTES & DETAILS SHOWN HEREON APPLY TO WORK WITHIN THE PUBLIC RIGHTS–OF WAY ONLY.

LICENSED LANDSCAPE ARCHITECT · BETHANY C. DERMODY · 006 · STATE OF NEW HAMPSHIRE
11·10·23
PROFESSIONAL LANDSCAPE ARCHITECT FOR ALLEN & MAJOR ASSOCIATES, INC.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 10-20-23 |
| SCALE: | AS SHOWN | DWG. NAME: | L-3250-01.dwg |
| DESIGNED BY: | BCD | CHECKED BY: | RPC |

PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE:
RIGHT-OF-WAY LANDSCAPE NOTES & DETAILS

SHEET No.
L-502

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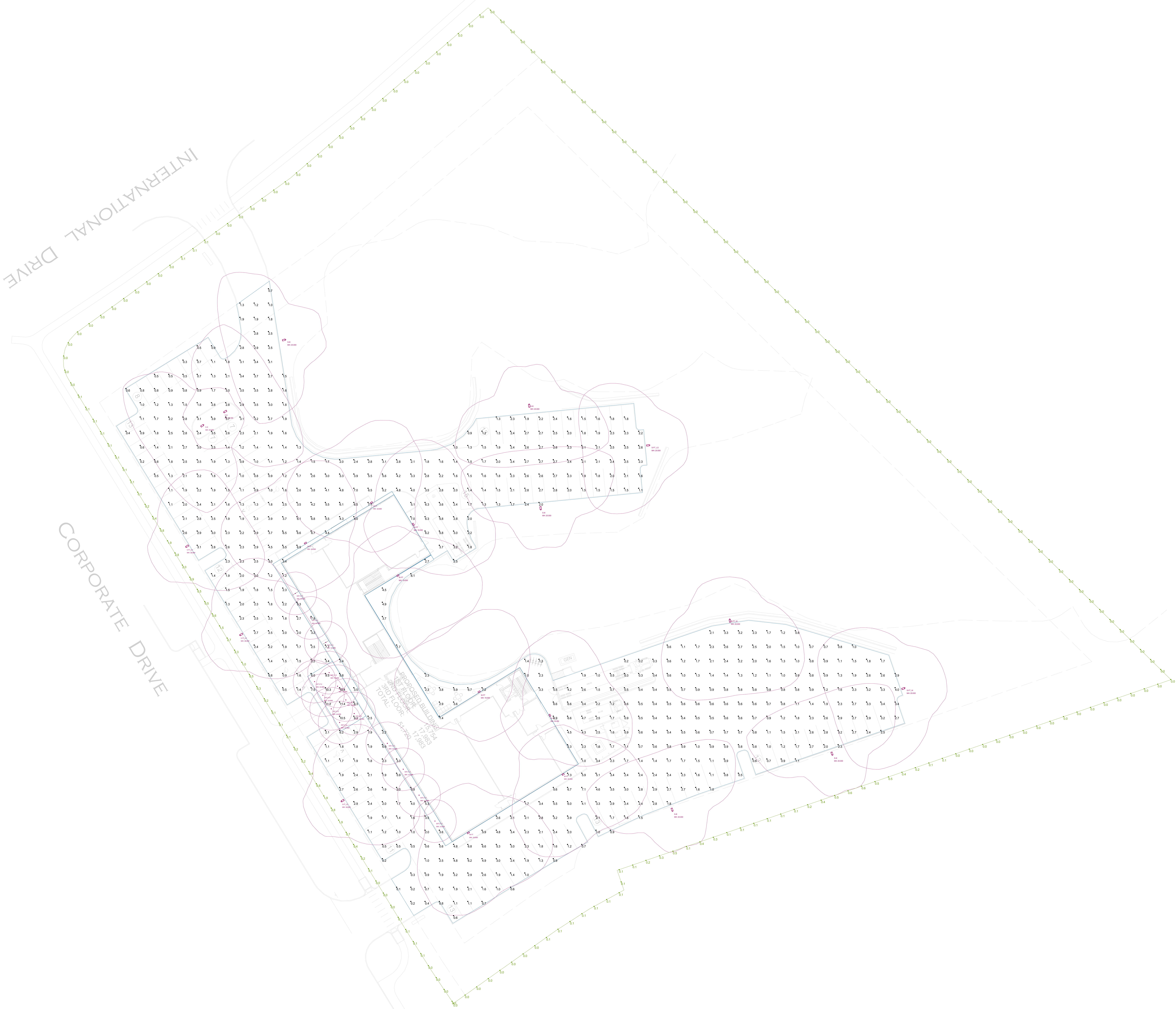
R: \PROJECTS\3250–01\CIVIL\DRAWINGS\CURRENT\L–3250–01_LANDSCAPE.DWG




A+M

Photometric calculations are being provided to the recipient per the following disclaimers. This light level analysis is an estimate only, and is based on standard interior reflectance values of 0.8 ceilings, 0.5 walls, and 0.2 floors, unless otherwise specified. Any variance from reflectance values, obstructions, light loss factors or dimensional data will affect the actual light levels obtained. This analysis is a mathematical model and can only be as accurate as is permitted by the third party software and the IES files provided by our manufacturers.

**Calculation by:**
Chris Collins
**Email:**
ccollins@amirep.com

**REVISIONS**

| # | DATE | COMMENTS |
|---|---|---|
| | | |

Luminaire Schedule

| Symbol | Qty | Tag | Mfer | Description | LLF | Luminaire Lumens | Luminaire Watts | Tot. Watts | BUG Rating | Dark Sky |
|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | EXT LT-2 | WILLIAMS | 4DR-TL-L30-840-DIM-UNV-LW-OF-WH-WETCC | 0.900 | 2042 | 27.8 | 417 | B2-U1-G0 | N |
| | 2 | S-FT_HI | LSI INDUSTRIES, INC. | MRM-LED-12L-SIL-FT-40-70CRI | 0.900 | 13138 | 85 | 170 | B2-U0-G3 | Y |
| | 4 | S-FT_LO | LSI INDUSTRIES, INC. | MRM-LED-09L-SIL-FT-40-70CRI | 0.900 | 9856 | 62 | 248 | B2-U0-G3 | Y |
| | 7 | S-III | LSI INDUSTRIES, INC. | MRM-LED-09L-SIL-3-40-70CRI | 0.900 | 9926 | 62 | 434 | B2-U0-G2 | Y |
| | 8 | W-FT | LSI INDUSTRIES, INC. | XWM-FT-LED-18L-40 | 0.900 | 17920 | 130 | 1040 | B3-U0-G3 | Y |

Calculation Summary

| Label | CalcType | Units | Avg | Max | Min | Max/Min |
|---|---|---|---|---|---|---|
| PARKING_SURFACE | Illuminance | Fc | 2.35 | 11.4 | 0.1 | 114.00 |
| PROPERTY LINE | Illuminance | Fc | 0.18 | 2.8 | 0.0 | N.A. |

**Calculation For:**
# Apex Design Build

**Project:**
## NEW HAMPSHIRE PROJECT

Date:8/9/2023

Scale: NTS

## PROJECT ENERGY CODE INFORMATION

CLIMATE ZONE ZONE 5A

DOES THE BUILDING INCLUDE GROUP R OCCUPANCY? NO

| OPAQUE ENVELOPE ITEM | REQUIRED R-VALUE | ACTUAL R-VALUE |
|---|---|---|
| ROOF (ATTIC AND OTHER) | R30ci | R30ci |
| WALLS ABOVE GRADE (WOOD FRAMED AND OTHER) | R13 + R7.5ci | R13+R10ci |
| WALLS BELOW GRADE | R7.5ci | R7.5ci |
| SLAB-ON-GRADE FLOORS (UNHEATED SLABS) | R10 FOR 24" BELOW | R10 FOR 24" BELOW |
| OPAQUE DOORS (NONSWINGING) | R4.75 | R8 |
| OPAQUE DOORS (SWINGING) | 0.37 U-VALUE | 0.37 U-VALUE |

| ENVELOPE FENESTRATION | REQUIRED | ACTUAL |
|---|---|---|
| FIXED FENESTRATION | 0.38 | 0.38 |
| OPERABLE FENESTRATION | 0.45 | 0.45 |
| ENTRANCE DOORS | 0.77 | 0.77 |
| SHGC - NORTH ORIENTATION (PF < 0.2) | 0.51 | 0.53 |
| SHGC - SEW ORIENTATION (PF < 0.2) | 0.38 | 0.38 |
| SKYLIGHTS U-FACTOR | 0.50 | N/A |
| SKYLIGHTS SHGC | 0.40 | N/A |

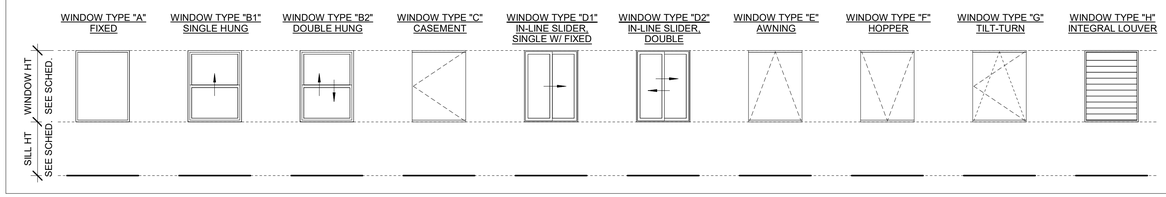
## STOREFRONT SCHEDULE

1. REFER TO APPROVED COMPONENT BOOK FOR MORE DETAILED WINDOW SPECIFICATION INFORMATION.

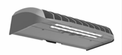
**TUBELITE: T14000 SERIES STOREFRONT 2" X 4 1/2", FINISH: DARK BRONZE, REFER TO A1-4.3, A1-4.5, AND A1-4.8 EXTERIOR ELEVATION.**

| TAG | WIDTH | HEIGHT | SILL HEIGHT | WINDOW TYPE | WINDOW MATERIAL | FRAME MATERIAL | REMARKS | Remarks |
|---|---|---|---|---|---|---|---|---|
| A | 3' - 11" | 7' - 6" | 3' - 0" | A | TEMPERED GLASS | HOLLOW METAL | TUBELITE: T14000 SERIES STOREFRONT 2" X 4 1/2", FINISH: DARK BRONZE | SEE EXT. ELEVATIONS FOR LOCATIONS. |
| B | 1' - 11" | 7' - 6" | 3' - 0" | A | TEMPERED GLASS | HOLLOW METAL | TUBELITE: T14000 SERIES STOREFRONT 2" X 4 1/2", FINISH: DARK BRONZE | SEE EXT. ELEVATIONS FOR LOCATIONS. |
| C | 4' - 4" | 7' - 6" | 3' - 0" | A | TEMPERED GLASS | HOLLOW METAL | TUBELITE: T14000 SERIES STOREFRONT 2" X 4 1/2", FINISH: DARK BRONZE | SEE EXT. ELEVATIONS FOR LOCATIONS. |
| E | 4' - 4" | 6' - 8" | 3' - 0" | A | TEMPERED GLASS | HOLLOW METAL | TUBELITE: T14000 SERIES STOREFRONT 2" X 4 1/2", FINISH: DARK BRONZE, DIMENSION: 4'-6" X 6'-8" | SEE EXT. ELEVATIONS FOR LOCATIONS. |
| F | 4' - 4" | 2' - 2" | 9' - 5" | A | SPANDREL PANEL | HOLLOW METAL | H&H METAL: INSULATED ALUMINUM COMPOSITE INFILL SPANDREL PANELS, 1/4" THICK FOR STOREFRONT INFILL, 2" X 4 1/2", FINISH: DARK BRONZE, DIMENSION: 4'-6" X 1'-10" | SEE EXT. ELEVATIONS FOR LOCATIONS. |
| J | 4' - 4" | 6' - 8" | 3' - 0" | A | TEMPERED GLASS | HOLLOW METAL | TUBELITE: T14000 SERIES STOREFRONT 2" X 4 1/2", FINISH: DARK BRONZE, DIMENSION: 4'-6" X 6'-8" | SEE EXT. ELEVATIONS FOR LOCATIONS. |

## WINDOW TYPES




## EXT LIGHT FIXTURE SCHEDULE

| TAG | DESCRIPTION | MANUFACTURER | MODEL | LAMP | WATTAGE | COLOR TEMPERATURE | QTY | IMAGE | REMARKS | LOCATION |
|---|---|---|---|---|---|---|---|---|---|---|
| EX. LT-1 | OUTDOOR WALL SCONCE | KUZCO LIGHTING | MFR ID: AT797-BK; FINISH: BLACK; HHEIGHT: 72" | LED BUILT IN | 92 W | 4000K | 2 | | SEE ELEVATIONS FOR LOCATION | |
| EX. LT-2 | LED OUTDOOR WALL LIGHT | LUMASCAPE | sQAD8-A ZDC DN BL, FINISH: BLACK | INTEGRATED LED | 11 W | 4000K | 3 | | SEE ELEVATIONS FOR LOCATION | |
| EX. LT-3 | OUTDOOR WALL SCONCE | KUZCO LIGHTING | MFR ID: AT7935-BK; FINISH: BLACK; HEIGHT: 35" | LED BUILT IN | 41 W | 4000K | 4 |  | SEE ELEVATIONS FOR LOCATION | |
| EX. LT-5 | WALLPACK LIGHT | LSI INDUSTRIES | XWM-FT-LED-18L-40, FINISH: DARK BRONZE | LED | 37 W | 4000K | 8 |  | SEE ELEVATIONS FOR LOCATION | |
| EX. LT-6 | 5" RECESSED CAN FIXTURE | SATCO | S11837 | LED BUILT IN | 9 W | 4000K | 12 | | TO BE INSTALLED WITH SATCO S9540 HOUSING; 840L | |
| EX. LT-7 | OUTDOOR LED AREA LIGHT | LSI INDUSTRIES | MRM-LED-12L-SIL-FT-40 -70CRI - BRZ | LED | | 4000CCT | 2 | | | SEE PHOTOMETRICS |
| EX. LT-8 | OUTDOOR LED AREA LIGHT | LSI INDUSTRIES | MRM-LED-09L-SIL-FT-40 -70CRI - BRZ | LED | | 4000CCT | 4 | | | SEE PHOTOMETRICS |
| EX. LT-9 | OUTDOOR LED AREA LIGHT | LSI INDUSTRIES | MRM-LED-09L-SIL-3-40-7 0CRI - BRZ | LED | | 4000CCT | 7 | | | SEE PHOTOMETRICS |
| EX. LT-10 | EXTERIOR RECESSED CAN | LOTUS LED LIGHTS | 6" AIR TIGHT RECESSED TRIM; BLACK FINISH | LED BUILT IN | 17 W | PROVIDE BATTERY BACKUP FOR CAN LIGHT. EQUAL PRODUCT W/ ARCHITECT APPROVAL ARE ACCEPTABLE. | 14 | | | |

## SUBCONTRACTOR NOTES

A. PROVIDE WEATHER BARRIER OVER ALL EXTERIOR SHEATHING PRIOR TO THE INSTALLATION OF ANY EXTERIOR FINISH MATERIAL.
B. INSTALL PER MANUFACTURER'S SPECIFICATIONS AND PROVIDE ALL MANUFACTURER'S ACCESSORIES TO FULLY FLASH AND COUNTER-FLASH AT ALL WINDOWS, DOORS, AND EXTERIOR PENETRATIONS.
C. PROVIDE A WEATHER TIGHT BARRIER AT ALL SURFACES.
D. COORDINATE FLASHING WITH WINDOW, DOOR, VENT, ETC. MANUFACTURER'S FOR A WEATHER TIGHT SEAL AT ALL OPENINGS.
E. TAPE FLASH AROUND ALL OPENINGS AND ON WALL JOINTS PER MANUFACTURER REQUIREMENTS.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9550 W.Higgins Rd. 170
Rosemont, IL 60018

ADTG, LLC
360 CORPORATE DR.
PORTSMOUTH , NH 03801

**ARCHITECT OF RECORD**
SUSAN L. SKIBELL, ARCHITECT 1360 N. SANDBURG TERRACE #1902 CHICAGO, IL. 60610
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| No. | Description | Date |
|---|---|---|
| 1 | TAC WORKSHOP REVIEW | 07/25/2023 |
| 2 | TAC PUBLIC HEARING | 08/21/2023 |
| 3 | PRICING SET | 10/13/2023 |
| 4 | TAC PUBLIC HEARING #2 | 10/20/2023 |

EXTERIOR SCHEDULES

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |
| | A1-2 |
| Scale | As indicated |

10/18/2023 12:06:28 PM


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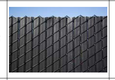
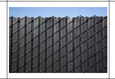
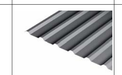
# EXTERIOR FINISH SCHEDULE 2

**1. EQUAL PRODUCTS ARE ACCPETABLE AFTER IT HAS BEEN SUBMITTED & APPROVED BY ARCHITECT.**

**2. ALL PRODUCTS TO BE INSTALLED PER MANUFACTURER REQUIREMENTS**

| TAG | MATERIAL | MFG. | SPECIFICATION / DESCRIPTION | IMAGE | LOCATION | REMARKS |
|---|---|---|---|---|---|---|
| EXT. AP-1 | ACM PANEL | STACBOND | ACM PANEL, SEE ELEVATIONS FOR DIMENSIONS, FINISH: UNBRA GRAY | | PER ELEVATIONS | SEE ELEVATIONS FOR DIMENISONS |
| EXT. AP-2 | ACM PANEL | STACBOND | ACM PANEL, SEE ELEVATIONS FOR DIMENSIONS, FINISH: DUSTY GRAY | | PER ELEVATIONS | SEE ELEVATIONS FOR DIMENISONS |
| EXT. BB-1 | BIKE RACK | GLOBAL INDUSTRIAL | GLOBAL INDUSTRIAL SARIS TWO BIKE U-RACK , SURFACE MOUNT, BLACK | | PER ELEVATIONS | SEE CIVIL |
| EXT. BR-1 | FACE BRICK | SPAULDING BRICK | BELGIAN GRAY WIRE CUT FACE BRICK; MORTAR COLOR: SM100 GRAY | | PER ELEVATIONS | SEE ELEVATIONS |
| EXT. CG-1 | PRIVACY LINK GATE | PRIVACY LINK | PRIVACY LINK 3-1/2" MESH CHAIN LINKS W/ CHAINLINK GATE HARDWARE: HARDWARE TO BE BLACK; FIN2000 SLATS FACTORY BLACK SLAT INSERTS; 6' HIGH; COLOR: BLACK, 12' CLEAR FENCE GATE; |  | PER ELEVATIONS | 12' DOUBLE |
| EXT. CG-2 | PRIVACY LINK GATE | PRIVACY LINK | PRIVACY LINK 3-1/2" MESH CHAIN LINKS W/ CHAINLINK GATE HARDWARE: HARDWARE TO BE BLACK; FIN2000 SLATS FACTORY BLACK SLAT INSERTS; 6' HIGH; COLOR: BLACK, 6' CLEAR FENCE GATE; |  | PER ELEVATIONS | 6' SINGLE |
| EXT. CL-1 | PRIVACY LINK | PRIVACY LINK | PRIVACY LINK 3-1/2" MESH CHAIN LINKS; FIN2000 SLATS FACTORY BLACK SLAT INSERTS; 6' HIGH; COLOR: BLACK | | PER ELEVATIONS | |
| EXT. CP-1 | METAL COPING | PAC-CLAD | PAC-TITE TAPERED COPING, FINISH: MUSKET GRAY | | PER ELEVATIONS | SEE ELEVATIONS FOR DIMENISONS |
| EXT. CP-2 | METAL COPING | PAC-CLAD | PAC-TITE TAPERED COPING, FINISH: SLATE GRAY | | PER ELEVATIONS | SEE ELEVATIONS FOR DIMENISONS |
| EXT. CS-1 | STONE SILL | ROCKCAST | BY READING ROCK SL100, FINISH: BUFFSTONE | | PER ELEVATIONS | |
| EXT. MP-1 | EXPOSED FASTNER METAL PANEL | PACCLAD | PACCLAD PETERSON M-36 WITH TRIMS, FINISH: SLATE GRAY |  | PER ELEVATIONS | |
| EXT. PC-2 | PREFAB. CANOPY | AWNEX | COLORADO SYSTEM, CANTILEVERED, 10" FLAT, OUTLET DRAINAGE, LED LIGHT WITH OUTRIGGER, FINISH: BLACK HORIZON | | PER ELEVATIONS | SEE ELEVATIONS AND RCP FOR DIMENISONS |
| EXT. PV-1 | PAVER | UNILOCK | UNILOCK PRECAST CONCRETE PAVER MODEL: HOLLAND PREMIERE SMOOTH, (4"X8"X2-3/8") OR SIMILR: FINISH - GRANITE | | SEE CIVIL AND LANDSCAPE PLANS | |
| EXT. R-1 | TPO ROOFING | HOLCIM | PROFILE: HOLCIM TPO SELF ADHERED MEMBRANE | | PER ROOF PLAN | |
| EXT. RR-1 | ALUMINUM RAILING | DIGGER SPECIALTIES INC. | WESTBURY ALUMINUM DECK RAILING, TUSCANY, SQUARE BALUSTER, CURVED PER A1-4.10 FENCE PLAN, FINISH: BLACK FINE TEXTURE | | PER PLAN AND ELEVATION | SEE ELEVATIONS FOR DIMENISONS; PROVIDE HANDRAIL FOR GURDRAIL ON STAIRS IN LOADING AREA |
| EXT. SF-1 | SOFFIT | STACBOND | ACM PANEL, SEE ELEVATIONS FOR DIMENSOINS, FINISH: DUSTY GREY | | PER RCP | SEE ELEVATIONS FOR DIMENISONS |
| EXT. SS-1 | STONE SILL | ROCKCAST | SL-100 5" STONE SILL, FINISH: LIGHT GRAY | | PER ELEVATIONS | SEE ELEVATIONS |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9550 W.Higgins Rd. 170
Rosemont, IL 60018

ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801

**ARCHITECT OF RECORD**
SUSAN L. SKIBELL, ARCHITECT 1360 N. SANDBURG TERRACE #1902 CHICAGO, IL. 60610
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| No. | Description | Date |
|---|---|---|
| 3 | PRICING SET | 10/13/2023 |
| 4 | TAC PUBLIC HEARING #2 | 10/20/2023 |

EXTERIOR SCHEDULES

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |
| | A1-2.1 |
| Scale | |

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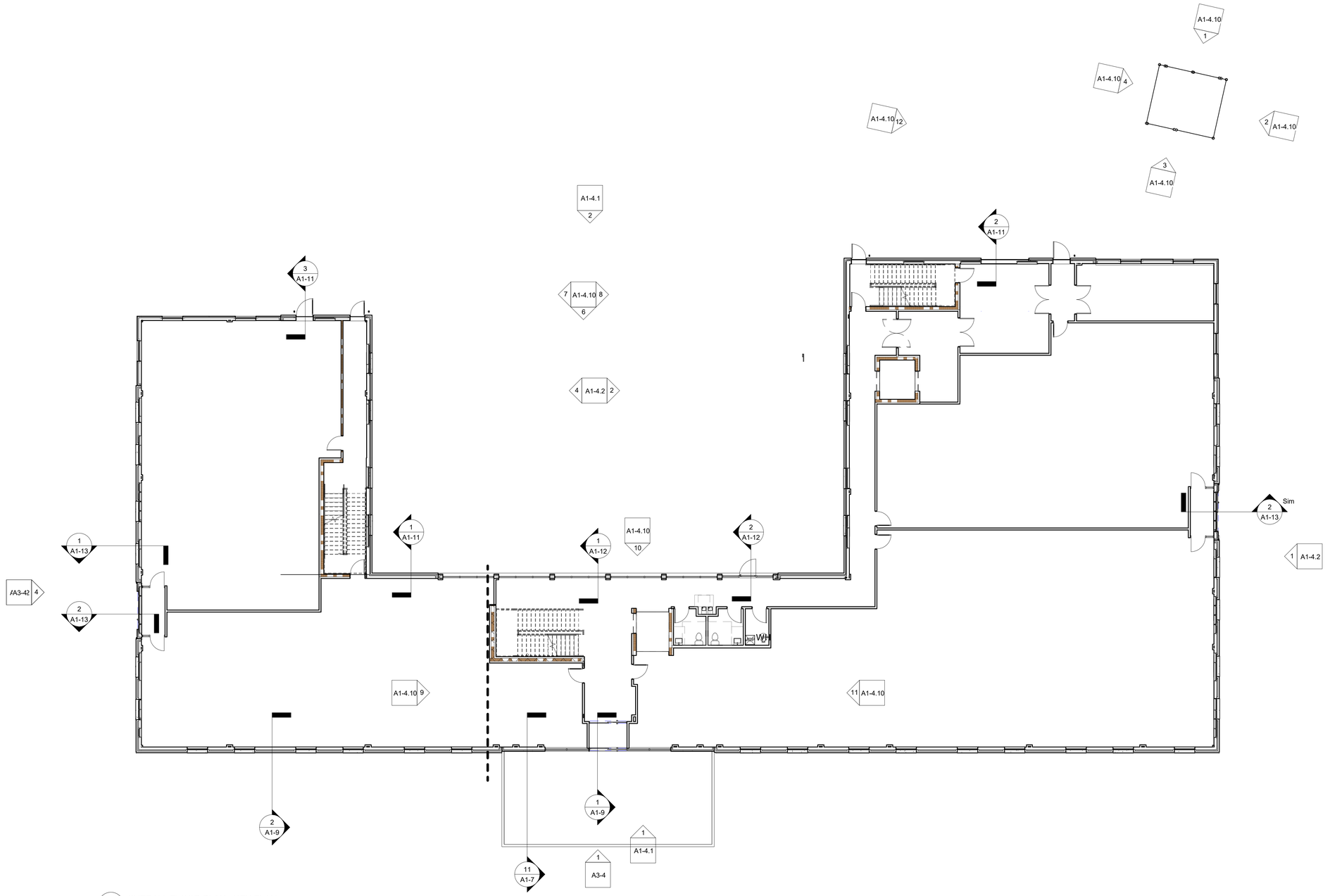


1 OVERALL FLOOR PLAN - KEY PLAN
3/32" = 1'-0"

0' 4' 8' 16' 32'

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Rosemont, IL 60018

ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801

**ARCHITECT OF RECORD**
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# EXTERIOR VIEWS KEY

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |

A1-3

Scale 3/32" = 1'-0"

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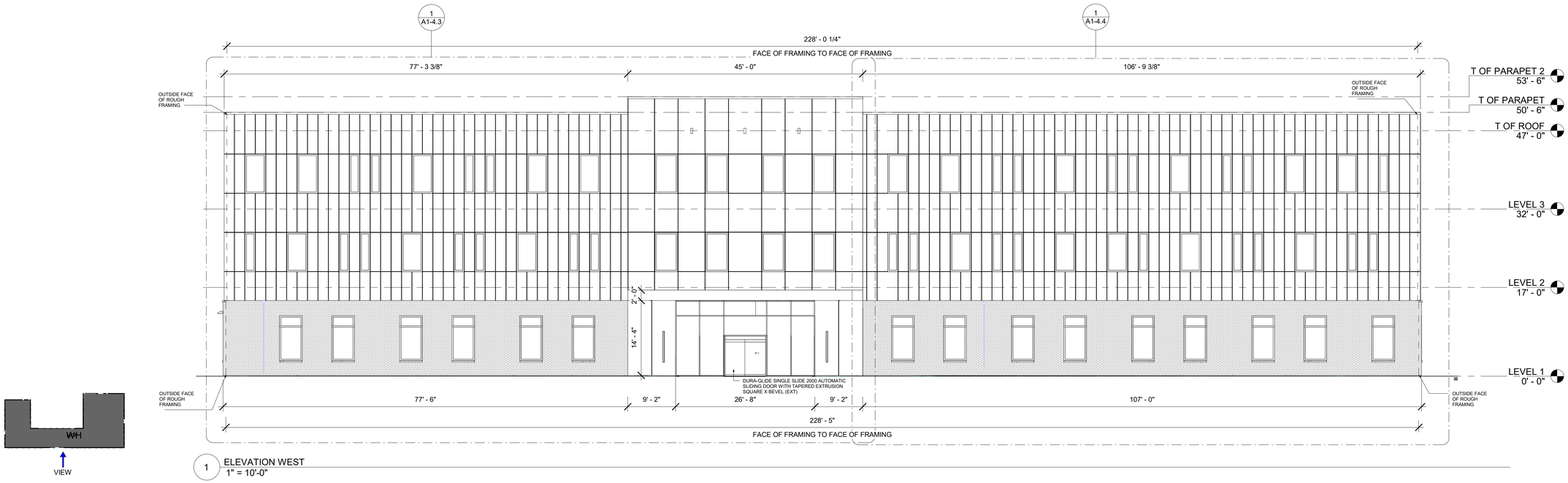
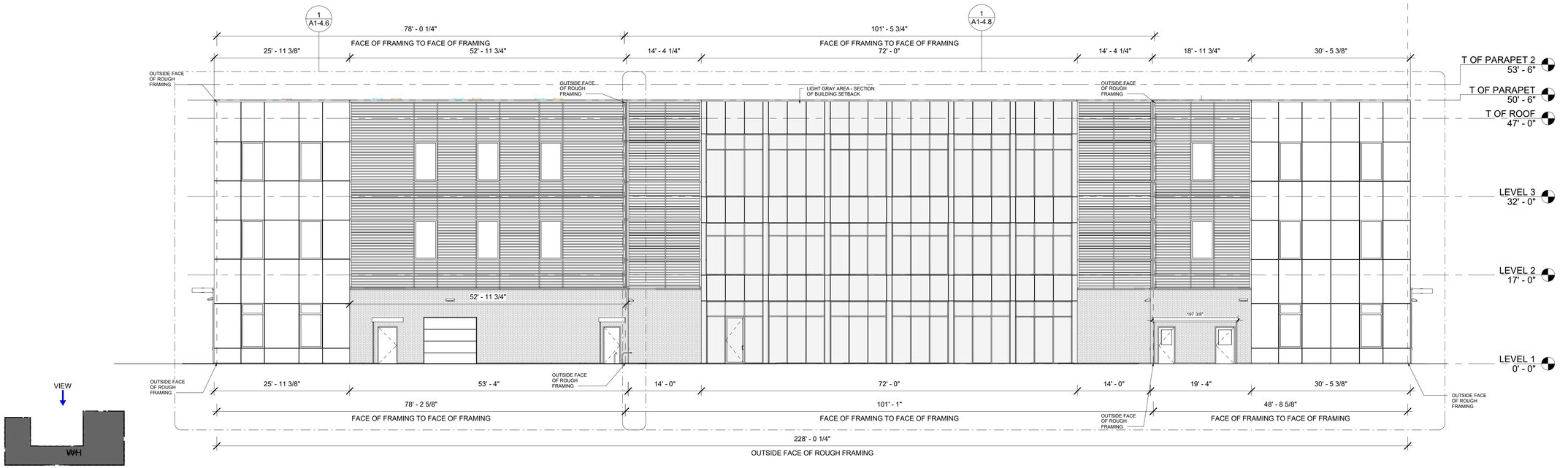



1 ELEVATION WEST
1" = 10'-0"




2 ELEVATION EAST
1" = 10'-0"

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PORTSMOUTH , NH 03801

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SUSAN L. SKIBELL, ARCHITECT 1360 N. SANDBURG TERRACE #1902 CHICAGO, IL. 60610
312.350.7161

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| No. | Description | Date |
|---|---|---|
| 1 | TAC WORKSHOP REVIEW | 07/25/2023 |
| 2 | TAC PUBLIC HEARING | 08/21/2023 |
| 3 | PRICING SET | 10/13/2023 |
| 4 | TAC PUBLIC HEARING #2 | 10/20/2023 |

# OVERALL EXTERIOR ELEVATIONS

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |
| | A1-4.1 |
| Scale | As indicated |

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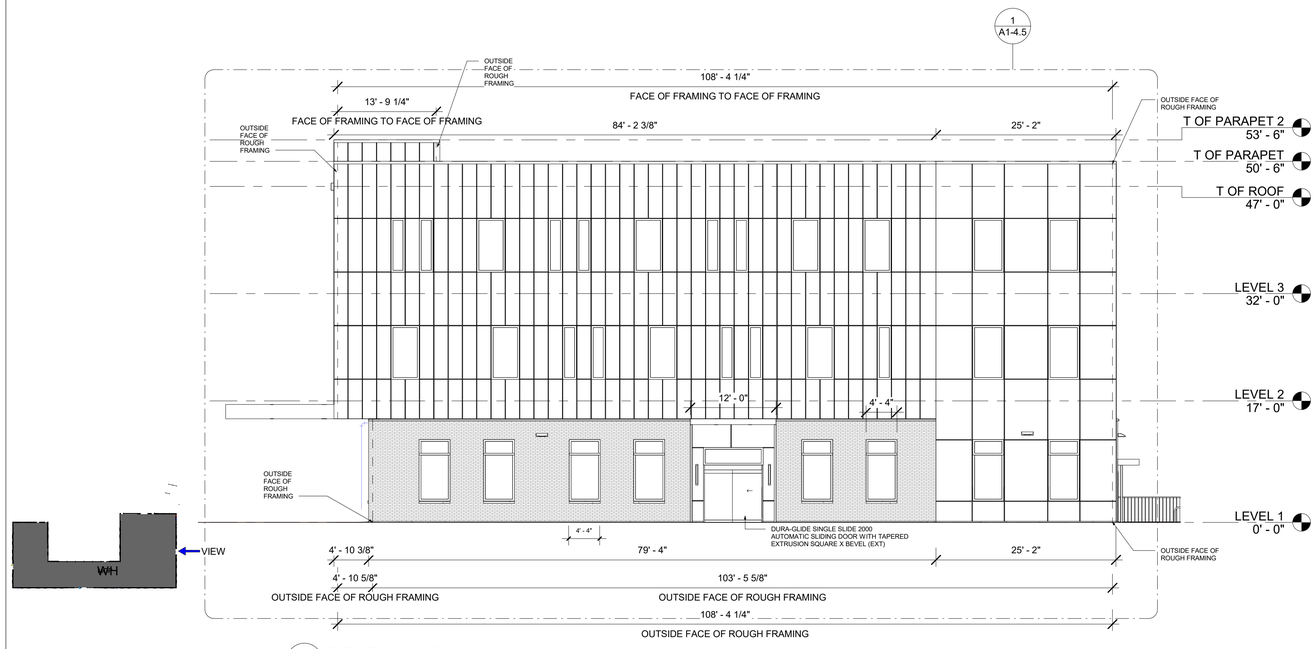
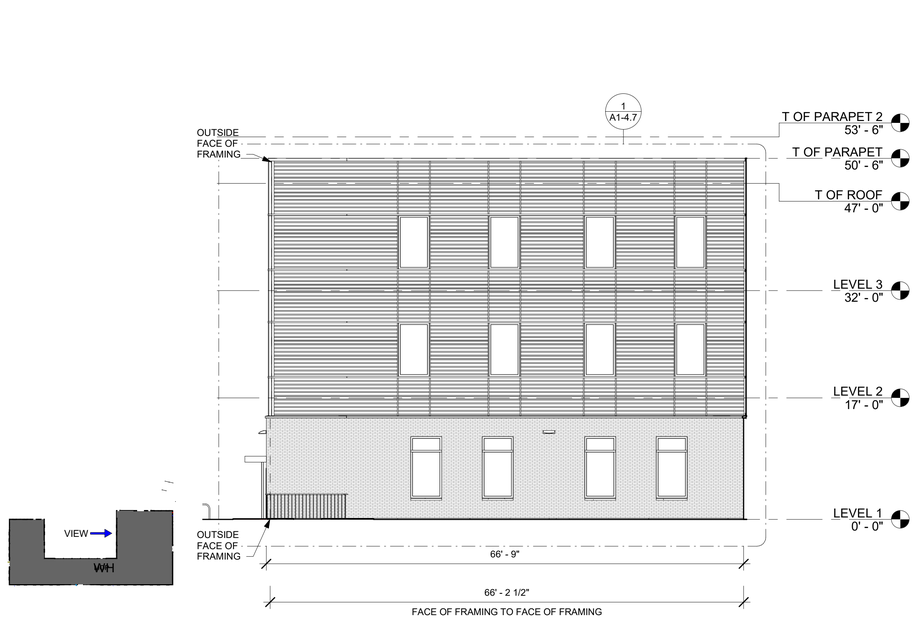
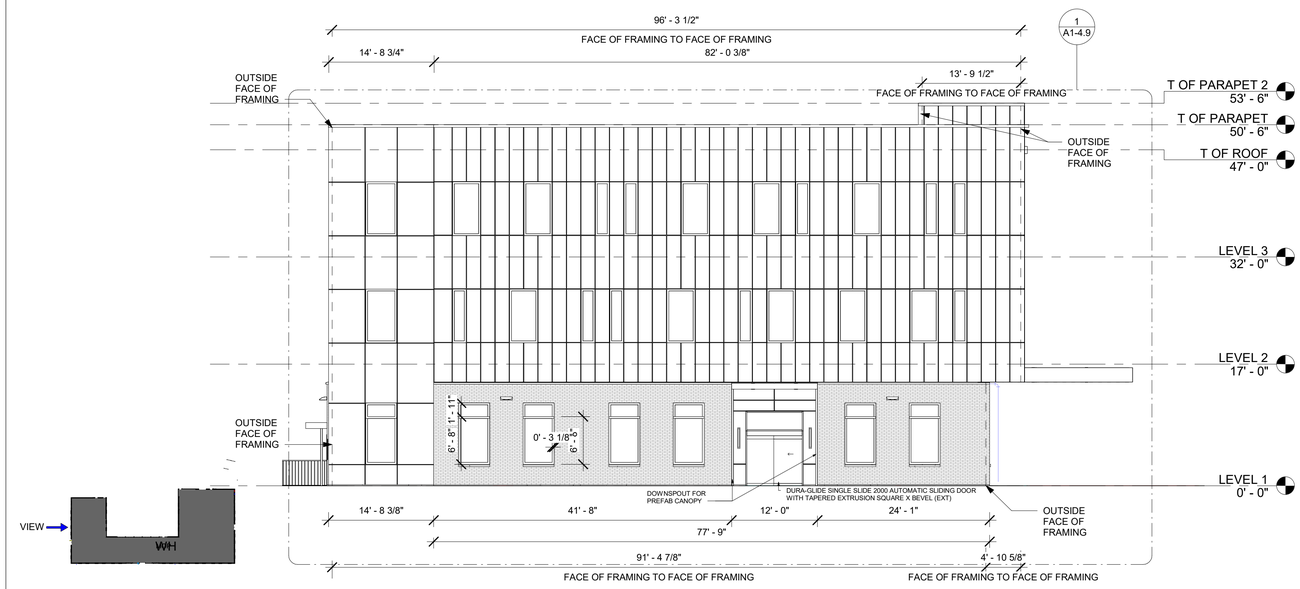



1 ELEVATION SOUTH
1" = 10'-0"




2 ELEVATIONS NORTH 2
1" = 10'-0"




3 ELEVATION NORTH
1" = 10'-0"

4 ELEVATIONS SOUTH 2
1" = 10'-0"

apex DESIGN › BUILD
9550 W.Higgins Rd. 170
Rosemont, IL 60018

ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801

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# OVERALL EXTERIOR ELEVATIONS

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|---|---|
| Project number | #10323 |
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A1-4.2

Scale: As indicated

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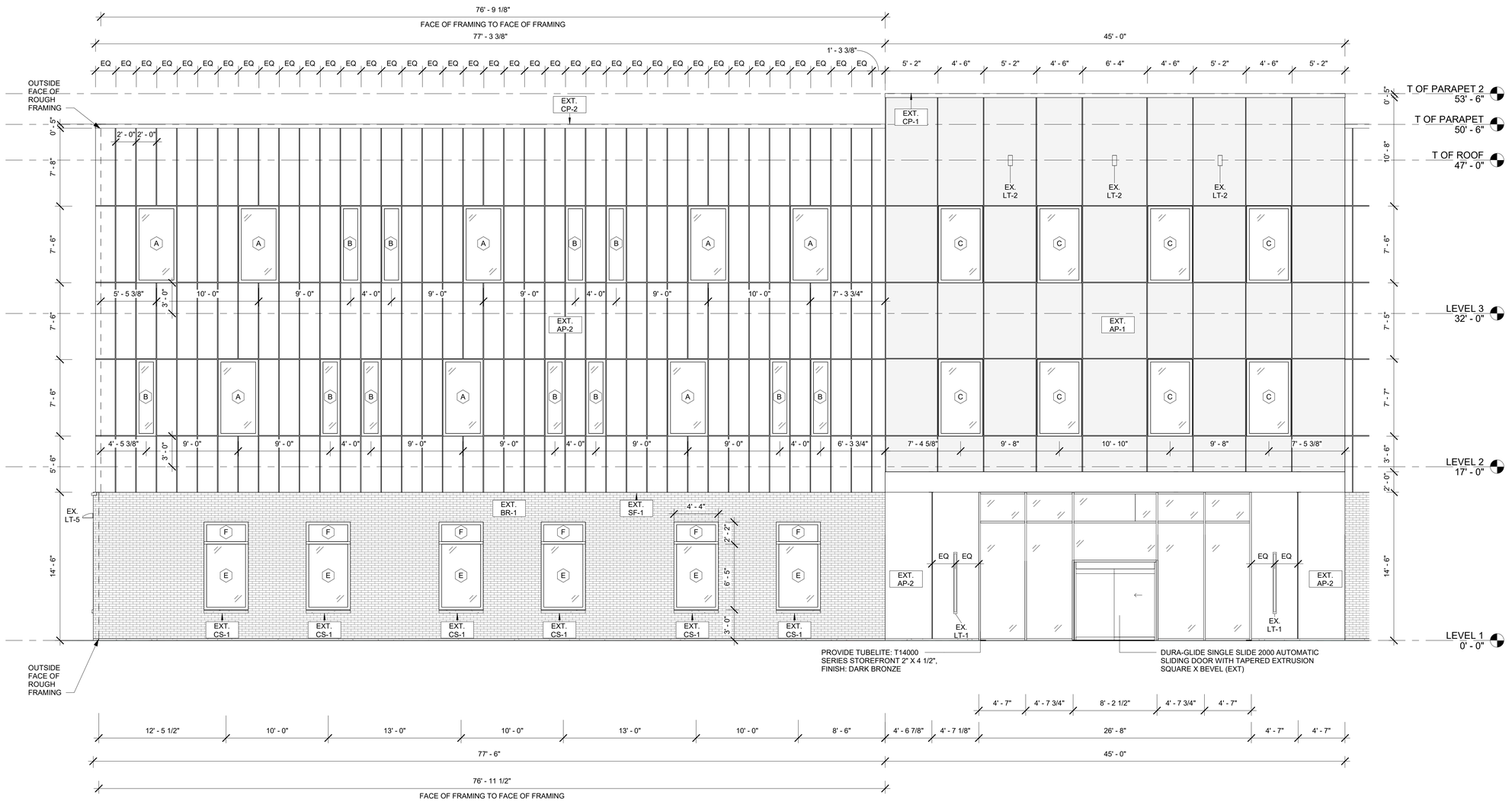


1 ENLARGED ELEVATION WEST 1
3/16" = 1'-0"

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Rosemont, IL 60018

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**ARCHITECT OF RECORD**
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|---|---|
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| Date | 10/10/2023 |
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A1-4.3

Scale 3/16" = 1'-0"

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1 ENLARGED ELEVATION WEST 2
3/16" = 1'-0"

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| Project number | #10323 |
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| Drawn by | JY |
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| | A1-4.4 |
| Scale | 3/16" = 1'-0" |

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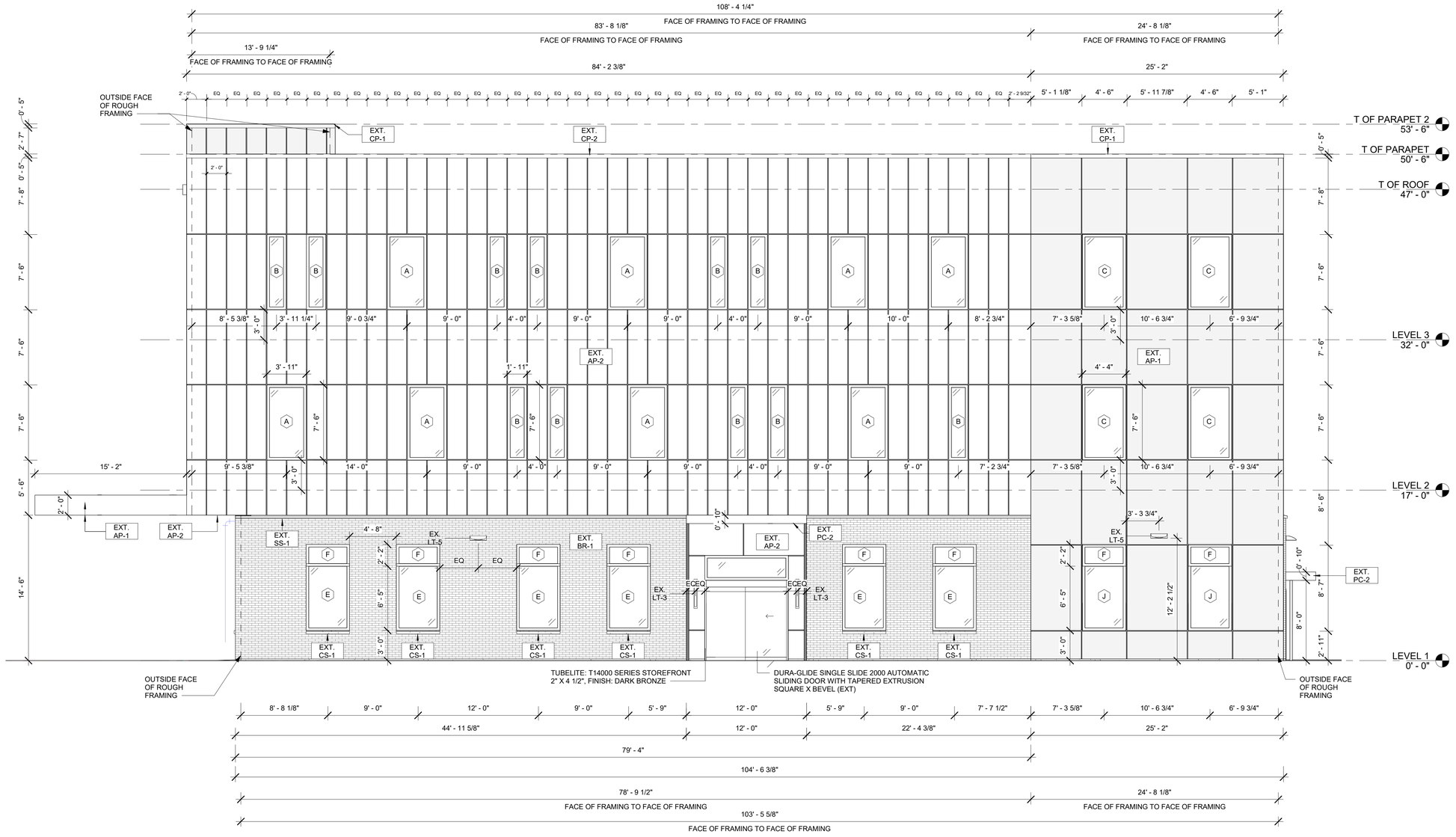


1 ENLARGED ELEVATION SOUTH 1
3/16" = 1'-0"

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A1-4.5

Scale 3/16" = 1'-0"

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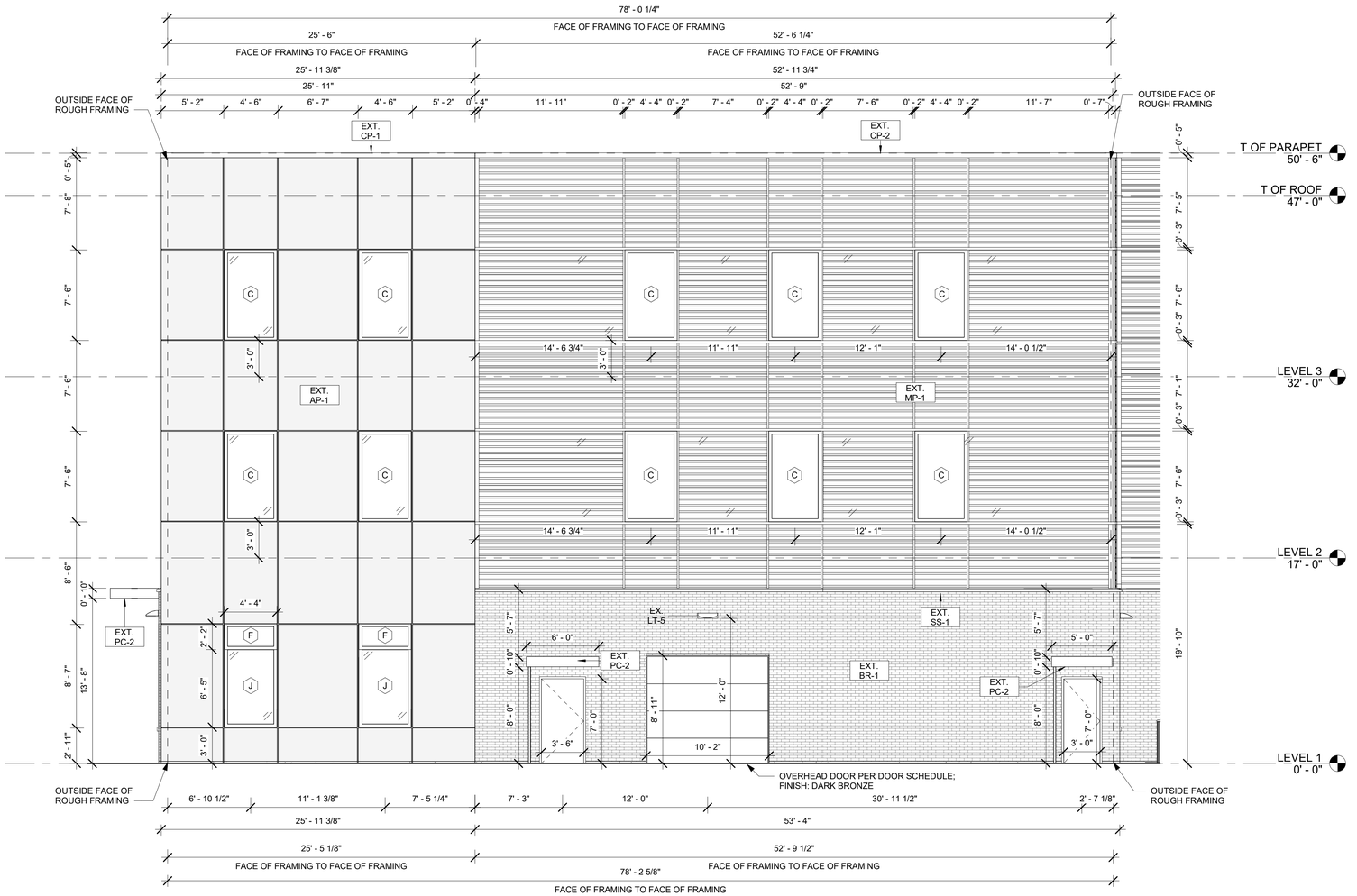


1 ENLARGED ELEVATION EAST 1
3/16" = 1'-0"

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Rosemont, IL 60018

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|---|---|
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Scale 3/16" = 1'-0"

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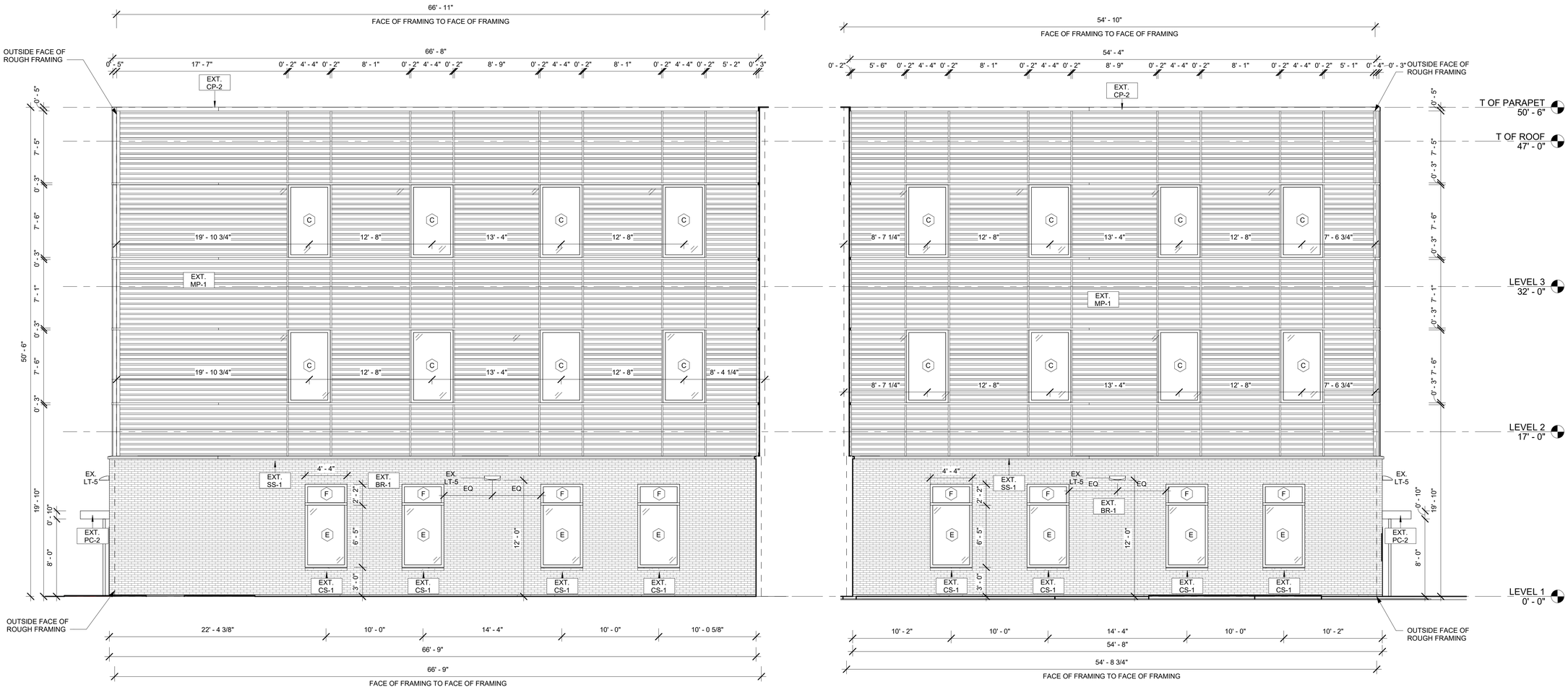


1 ENLARGED ELEVATION SOUTH 2
3/16" = 1'-0"

2 ENLARGED ELEVATION NORTH 2
3/16" = 1'-0"

apex DESIGN › BUILD
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Rosemont, IL 60018

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Scale 3/16" = 1'-0"

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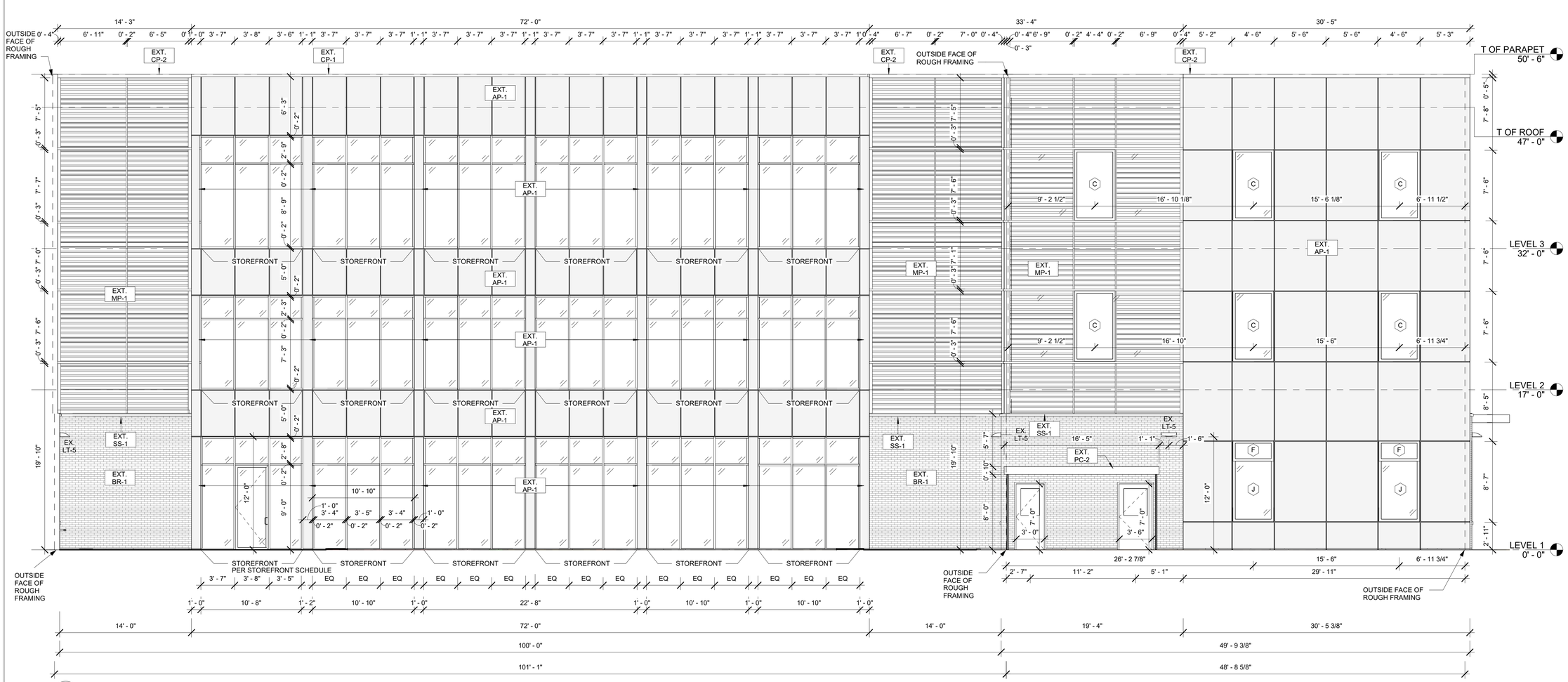


1 ENLARGED ELEVATION EAST
3/16" = 1'-0"

apex DESIGN › BUILD
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Scale 3/16" = 1'-0"

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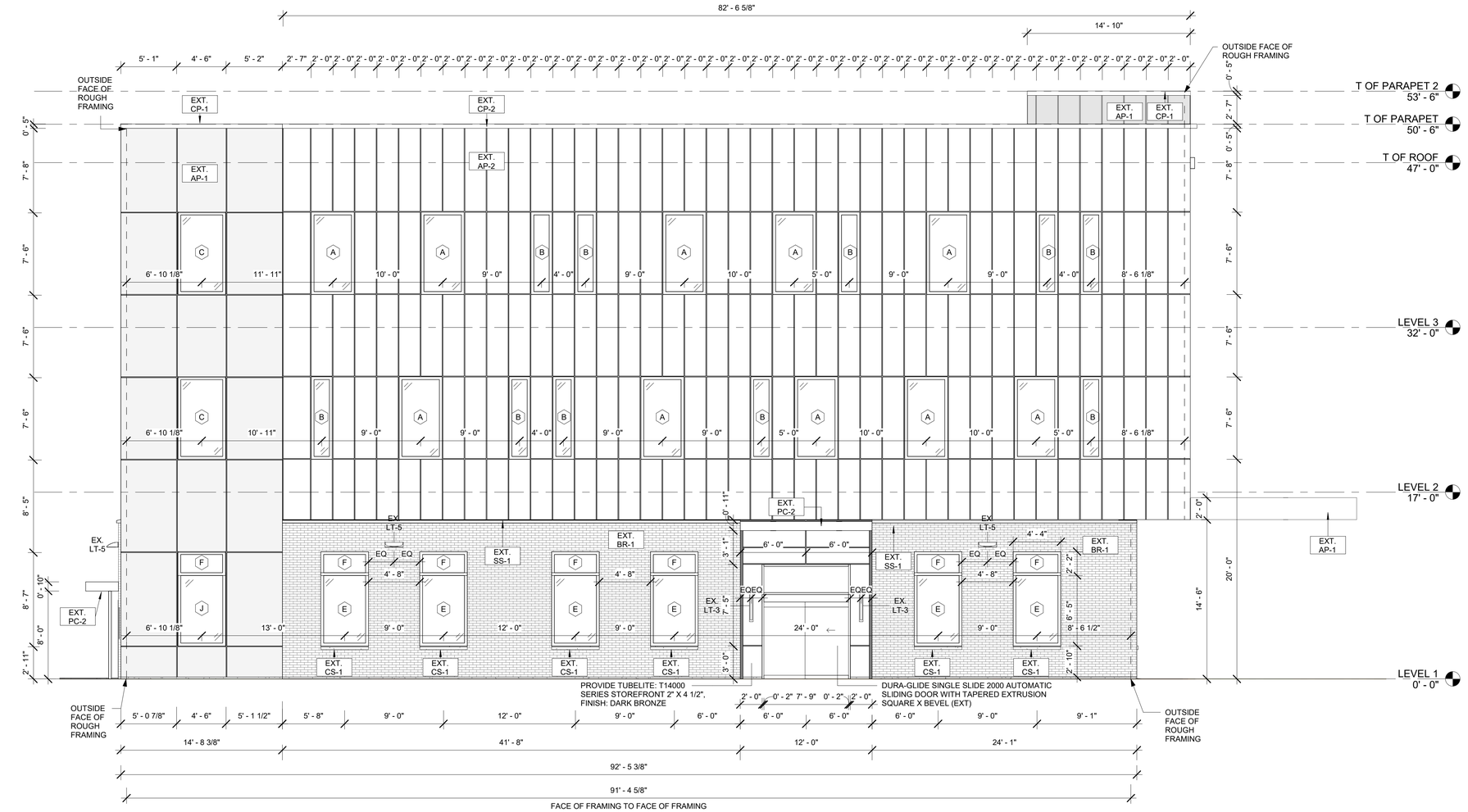


1 ENLARGED ELEVATION NORTH 1
3/16" = 1'-0"

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Rosemont, IL 60018

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Scale 3/16" = 1'-0"

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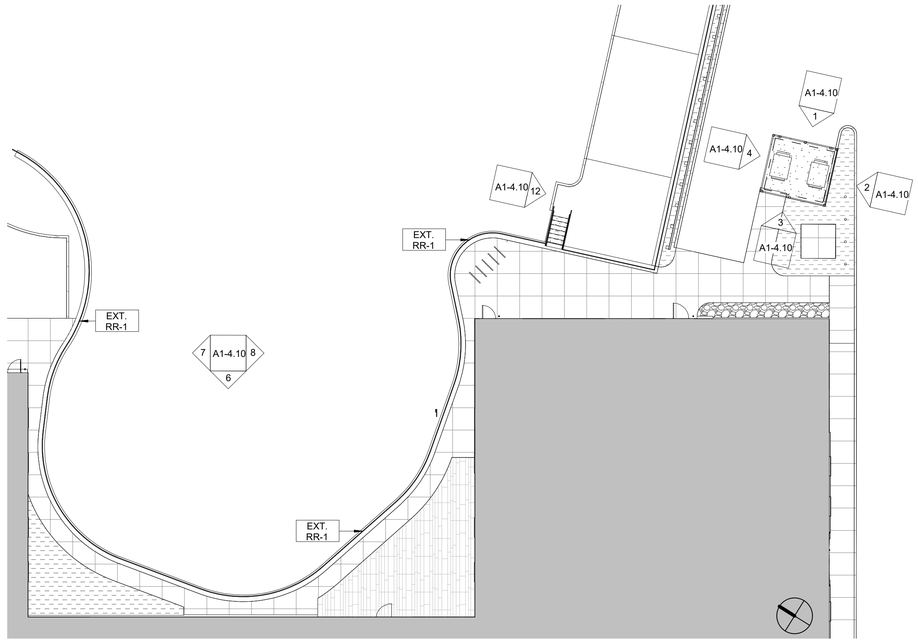
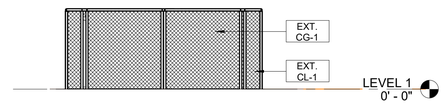
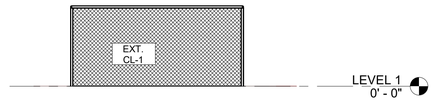


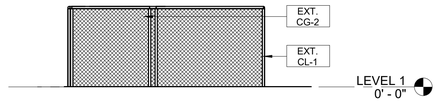

5 RAILING PLAN
1/16" = 1'-0"



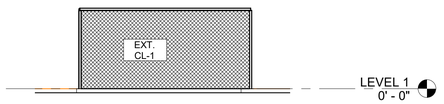

1 GARBAGE ENCLOSURE ELEVATION 1
3/16" = 1'-0"




2 GARBAGE ENCLOSURE ELEVATION 2
3/16" = 1'-0"




3 GARBAGE ENCLOSURE ELEVATION 3
3/16" = 1'-0"




4 GARBAGE ENCLOSURE ELEVATION 4
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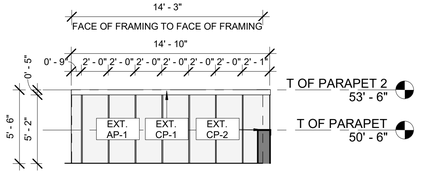
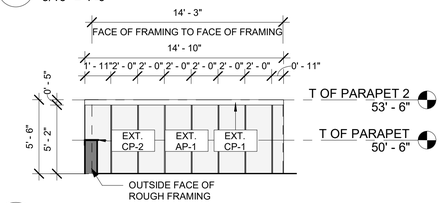
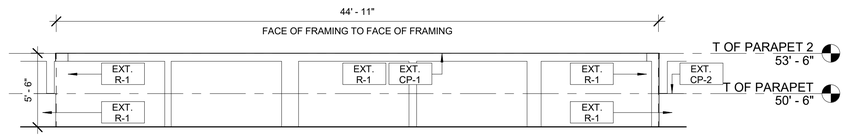


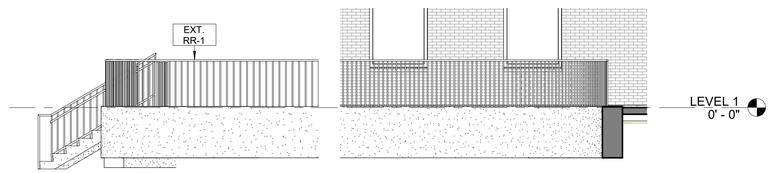

9 TOP WING WALL NORTH
3/16" = 1'-0"



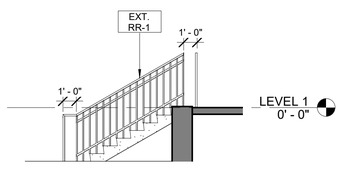

11 TOP WING WALL SOUTH
3/16" = 1'-0"



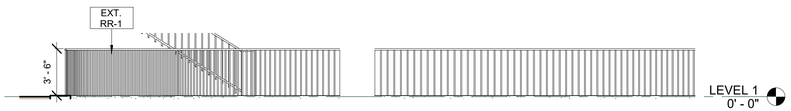

10 TOP WING WALL EAST
3/16" = 1'-0"




8 FENCE ELEVATION 1
3/16" = 1'-0"




12 EXTERIOR STAIR ELEVATION
3/16" = 1'-0"




7 FENCE ELEVAITON 2
3/16" = 1'-0"

6 FENCE ELEVATION 3
3/16" = 1'-0"

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FENCE ELEVATIONS

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |

A1-4.10

Scale As indicated

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# SUBCONTRACTOR NOTES

A. SUBCONTRACTORS TO VERIFY ALL EXISTING DIMENSIONS IN FIELD PRIOR TO CONSTRUCTION. NOTIFY ARCHITECT OF DISCREPANCIES PRIOR TO COMMENCEMENT OF DEMOLITION/ CONSTRUCTION.
B. IF EXISTING BUILDING ELEMENTS WHICH WOULD OBSTRUCT THE PROPER EXECUTION OF THE DESIGN INTENT ARE FOUND, BUT ARE NOT SPECIFIED IN THE CONSTRUCTION DOCUMENTS, CONTACT INTERIOR DESIGNER/ARCHITECT & WAIT FOR INSTRUCTION.
C. ALL BUILDING COMPONENTS & FINISHES WHICH ARE TO REMAIN IN PLACE SHALL BE PROTECTED FROM DAMAGE AND, IF DAMAGED, SHALL BE REPAIRED OR REPLACED AT NO COST TO THE OWNER.
D. DRYWALL CONSTRUCTION PARTITIONS, BULKHEADS, JOINTS, & HOLES TO BE TAPED & SANDED FOR FINISHING TO LIKE-NEW CONDITION.
E. ANY WOOD FRAMING, BLOCKING, & PLYWOOD SHALL BE FIRE RETARDANT TREATED WOOD.
F. SUBCONTRACTORS SHALL INSTALL EMERGENCY LIGHTING, SPRINKLERS, EXIT SIGNS, & FIRE EXTINGUISHERS AS REQUIRED BY THE LOCAL FIRE MARSHAL.
G. SUBCONTRACTORS SHALL REVIEW & UNDERSTAND PROJECT REQUIREMENTS & DRAWINGS FOR NEW CONSTRUCTION WORK & VISIT SITE TO DETERMINE EXTENT OF DEMOLITION PRIOR TO PERFORMING ANY WORK. SUBCONTRACTORS SHALL NOTIFY ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES.
H. SUBCONTRACTORS SHALL COORDINATE WITH THE BUILDING OWNER THE MEANS OF TRASH REMOVAL FOR DEMOLITION AS WELL AS DURING BUILD OUT. SUBCONTRACTORS WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED DEMOLITION & CONSTRUCTION PERMITS, INSPECTIONS, & APPROVALS & COMPLY WITH ALL STANDARDS OF CONSTRUCTION.
I. SUBCONTRACTORS SHALL NOTE THAT UPON INSPECTION OF SITE, EXISTING CONDITIONS, & ACCEPTANCE OF BID, SUBCONTRACTORS ACCEPT RESPONSIBILITY TO COMPLETE ALL WORK AS DETAILED IN THE CONSTRUCTION DOCUMENTS. CHANGE ORDERS FOR ADDITIONAL WORK WILL NOT BE PERMITTED UNLESS THE WORK IS NOT CALLED OUT IN THE DOCUMENTS OR A HIDDEN CONDITION EXISTS THAT PREVENTS EXECUTING THE WORK AS DETAILED IN THE DRAWINGS. APPROVAL OF ADDITIONAL COST & SCOPE OF WORK TO BE OBTAINED FROM PROJECT MANAGER PRIOR TO EXECUTING WORK.
J. ALL PENETRATIONS THROUGH FIRE RATED & SOUND RATED WALLS SHALL BE SEALED WITH FIRE CAULK MATERIAL.
K. SUBMITTALS ARE REQUIRED ON ALL SUBCONTRACTOR SUPPLIED ITEMS TO APEX.
L. ALL MATERIAL & LABOR SHALL BE WARRANTIED FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE CERTIFICATE OF OCCUPANCY.
M. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH APPLICABLE CODES AS INTERPRETED BY THE GOVERNING AUTHORITIES.
N. SUBCONTRACTORS SHALL PROVIDE SUFFICIENT ATTACHMENT & IN-WALL/HIDDEN BLOCKING REQUIRED FOR WALL-HUNG ITEMS, EQUIPMENT, & OTHER CONSTRUCTION.
O. SUBCONTRACTORS SHALL COORDINATE THEIR WORK WITH ANY OTHER SUBCONTRACTORS ON THE JOB SO AS TO PREVENT CONFLICTS DURING CONSTRUCTION. ADDITIONAL WORK CAUSED BY A LACK OF COORDINATION BETWEEN SUBCONTRACTORS SHALL BE AT THE SUBCONTRACTORS EXPENSE.
P. IF NOT ALREADY EXISTING, PROVIDE VAPOR BARRIERS AT ALL EXISTING & EXPOSED EXTERIOR WALLS OR ATTIC INSULATION, OR ANY OTHER AREA THAT NEEDS IT BY CODE/BEST PRACTICE. IF VAPOR BARRIERS ARE DAMAGED DURING CONSTRUCTION, IT SHOULD BE REPAIRED AT THE SUBCONTRACTORS EXPENSE.
Q. REFER TO THE AS SERIES SHEETS FOR FULL SCHEDULES.
R. IN SPRINKLED BUILDINGS THE CLEARANCE IS 18" FROM THE CEILING AND NON-SPRINKLED BUILDING THE CLEARANCE IS 24", NOTHING SHALL BE STORED/ SHELVING INSTALLED ABOVE THIS POINT.
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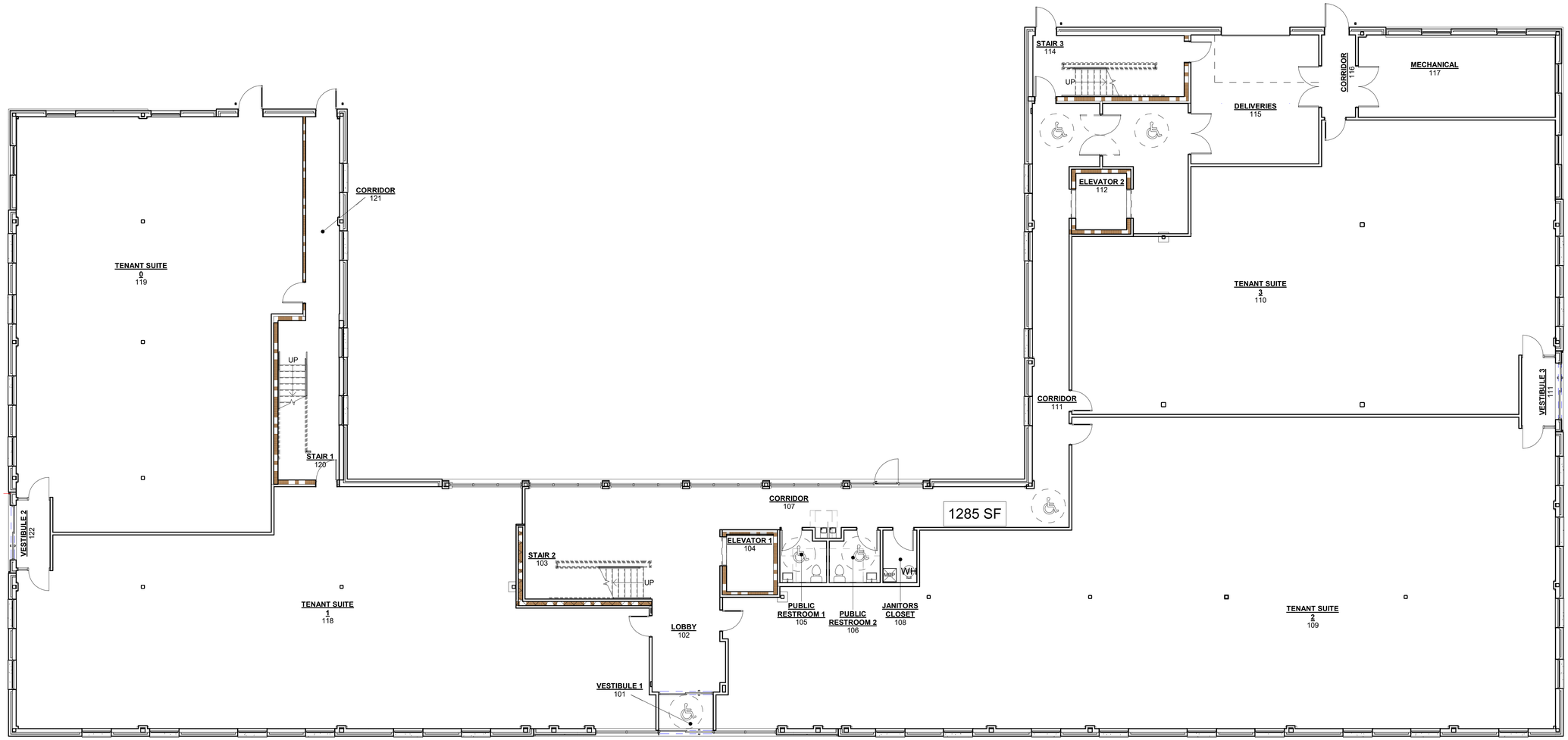


1 FLOOR PLAN - 1ST FLOOR OVERALL -TAGS
1/8" = 1'-0"


apex DESIGN › BUILD
9550 W.Higgins Rd. 170
Rosemont, IL 60018

ADTG, LLC

360 CORPORATE DR.
PORTSMOUTH , NH 03801

**ARCHITECT OF RECORD**
SUSAN L. SKIBELL, ARCHITECT 1360 N. SANDBURG TERRACE #1902 CHICAGO, IL. 60610
312.350.7161


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| 3 | PRICING SET | 10/13/2023 |
| 4 | TAC PUBLIC HEARING #2 | 10/20/2023 |

FLOOR PLAN - 1ST FLOOR OVERALL

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | NM |
| Checked by | MMS |

A2-3.1

Scale 1/8" = 1'-0"

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# SUBCONTRACTOR NOTES

A. SUBCONTRACTORS TO VERIFY ALL EXISTING DIMENSIONS IN FIELD PRIOR TO CONSTRUCTION. NOTIFY ARCHITECT OF DISCREPANCIES PRIOR TO COMMENCEMENT OF DEMOLITION/ CONSTRUCTION.
B. IF EXISTING BUILDING ELEMENTS WHICH WOULD OBSTRUCT THE PROPER EXECUTION OF THE DESIGN INTENT ARE FOUND, BUT ARE NOT SPECIFIED IN THE CONSTRUCTION DOCUMENTS, CONTACT INTERIOR DESIGNER/ARCHITECT & WAIT FOR INSTRUCTION.
C. ALL BUILDING COMPONENTS & FINISHES WHICH ARE TO REMAIN IN PLACE SHALL BE PROTECTED FROM DAMAGE AND, IF DAMAGED, SHALL BE REPAIRED OR REPLACED AT NO COST TO THE OWNER.
D. DRYWALL CONSTRUCTION PARTITIONS, BULKHEADS, JOINTS, & HOLES TO BE TAPED & SANDED FOR FINISHING TO LIKE-NEW CONDITION.
E. ANY WOOD FRAMING, BLOCKING, & PLYWOOD SHALL BE FIRE RETARDANT TREATED WOOD.
F. SUBCONTRACTORS SHALL INSTALL EMERGENCY LIGHTING, SPRINKLERS, EXIT SIGNS, & FIRE EXTINGUISHERS AS REQUIRED BY THE LOCAL FIRE MARSHAL.
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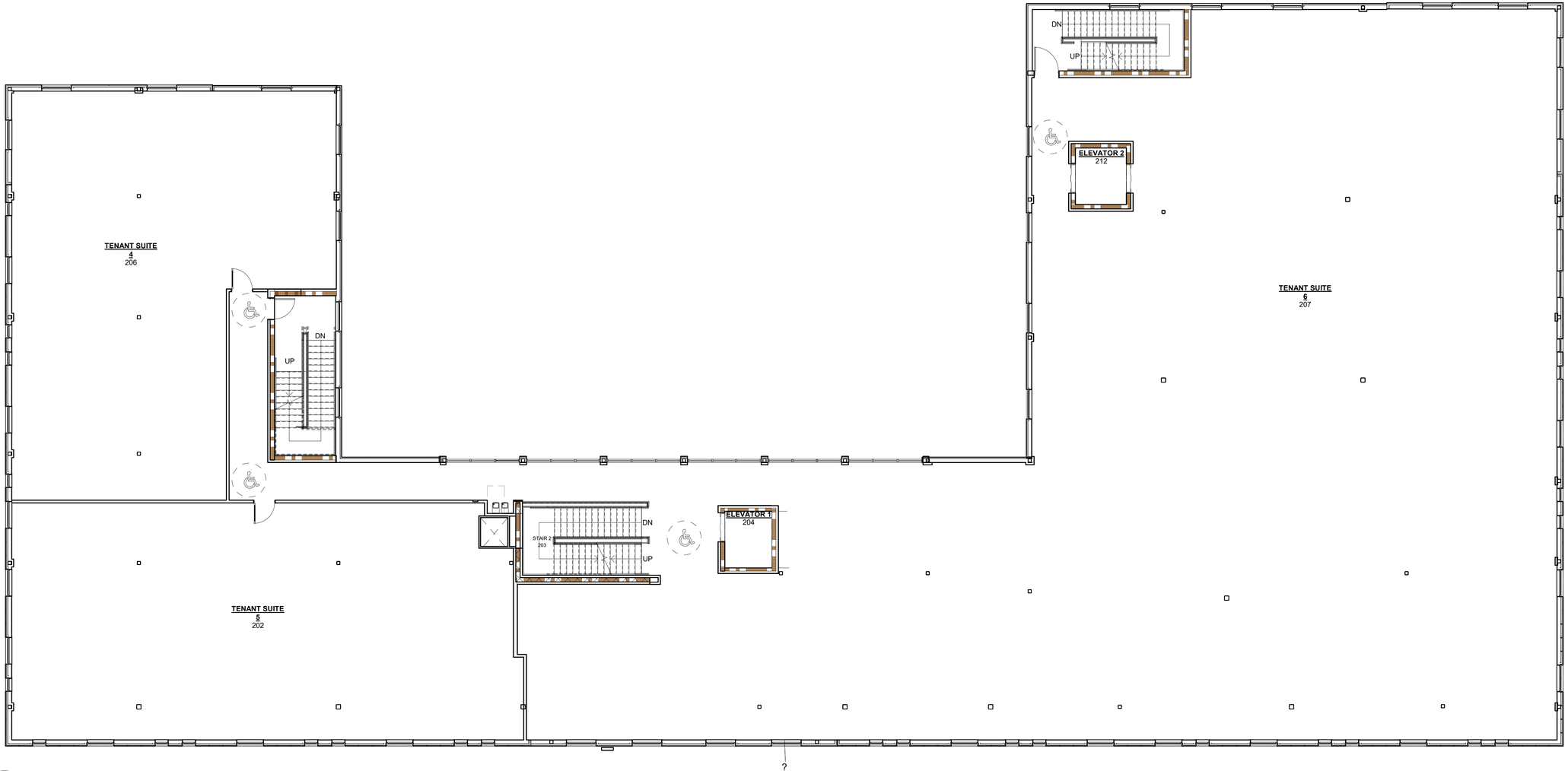


1 FLOOR PLAN - 2ND FLOOR OVERALL.
1/8" = 1'-0"

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| 4 | TAC PUBLIC HEARING #2 | 10/20/2023 |

FLOOR PLAN - 2ND FLOOR OVERALL

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|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | NM |
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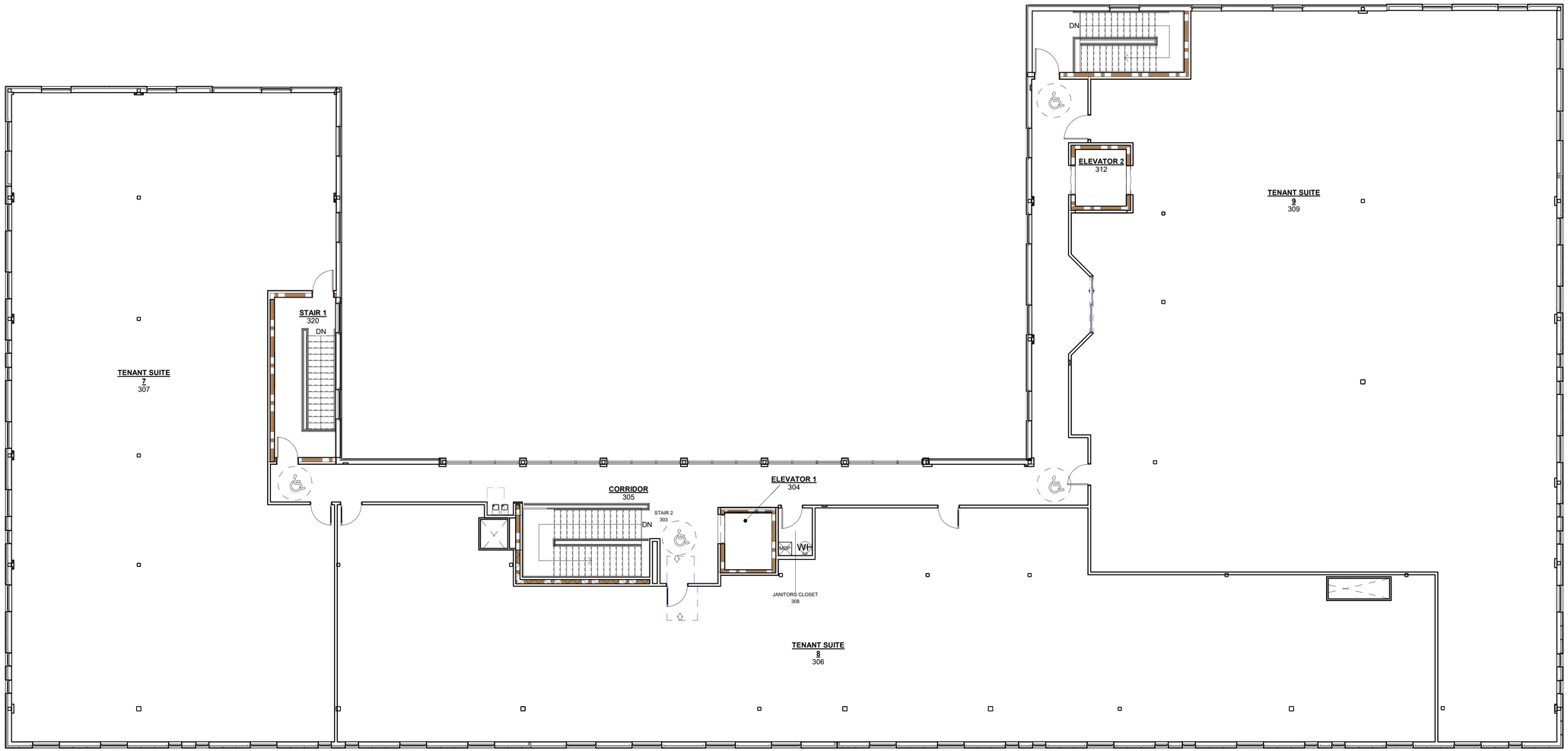


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FLOOR PLAN - 3RD FLOOR OVERALL

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | NM |
| Checked by | MMS |
| | A2-3.3 |
| Scale | 1/8" = 1'-0" |

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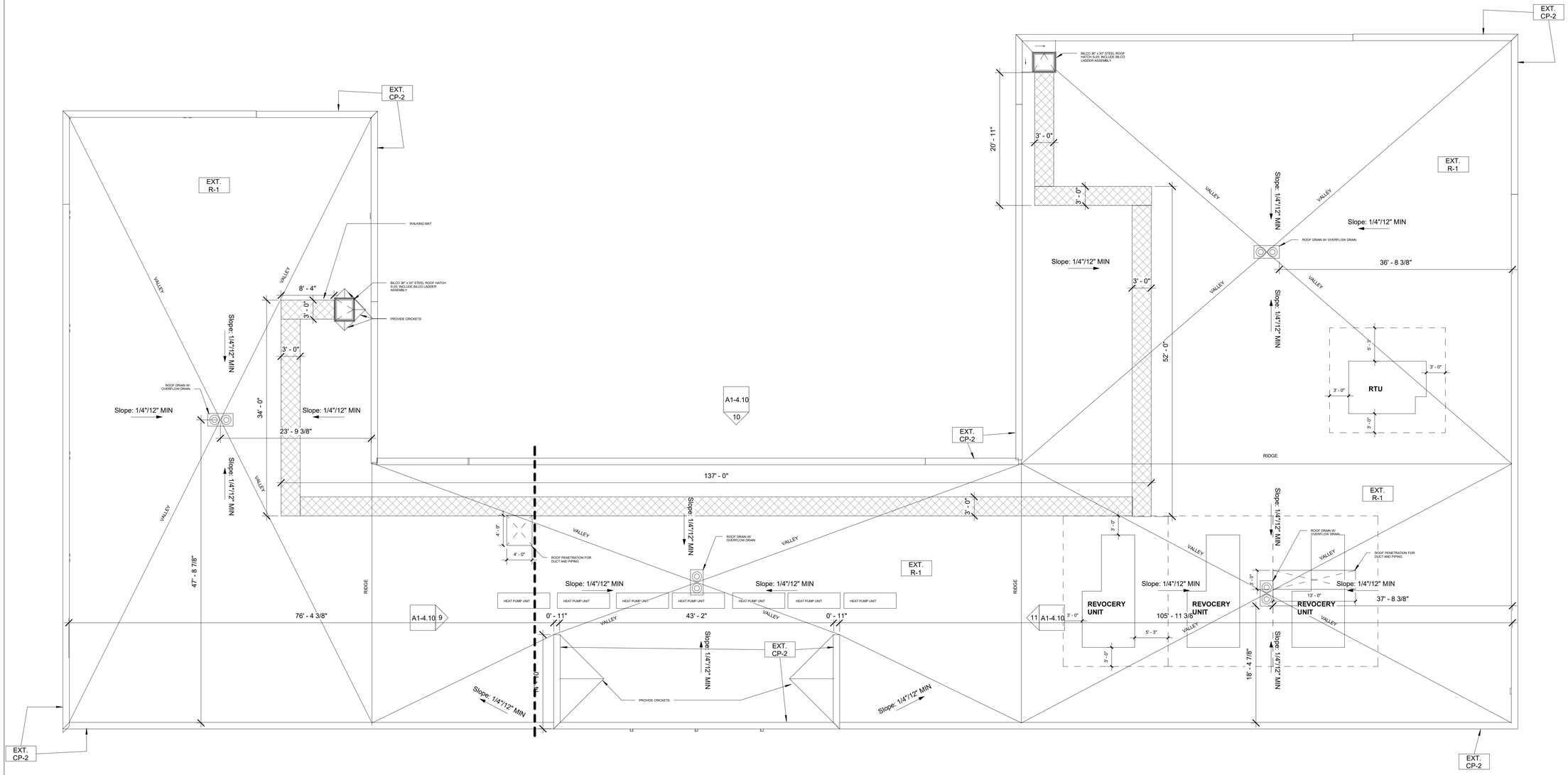
**GENERAL NOTES:**

- SEE EXTERIOR FINISH SCHEDULE FOR MATERIAL SPECIFICATIONS
- ARROW ON PLAN DENOTES DIRECTION OF SLOPE
- SEE SHEET A1-3 FOR ROOFING MATERIALS
- FLAT ROOFS TO HAVE A MIN. 1/4:12 SLOPE, SLOPE PER ARROWS ON PLAN
- PITCHED ROOFS TO FOLLOW SLOPE AND DIRECTION PER ROOF PLAN
- INSTALL ISULATION AT ROOF TO BE MIN R-30CI
- INSTALL 60 MIL OUTPOST TPO MEMBRANE FULLY ADHERED OVER THE ENTIRE ROOF THROUGHOUT
- INSTALL TPO FLASHING AROUND ALL OF THE ROOF PENETRATIONS: SKYLIGHTS, ROOF HATCH & FLUE PIPES
- PROVIDE CANTS AT ALL LOCATIONS WHERE ROOF MEETS PARAPET WALLS
- WRAP TPO UP PARAPET WALL BELOW COPING
- INSTALL TPO WALKWAY PADS AROUND THE ROOF HATCH & ROOF TOP UNITS.
- INSTALL COPING PER A1-4.0 AT TOP OF PARAPET WALLS
- INCLUDES ALL PROPER FLASHING AROUND PERTRUSION AND TERMINATIONS BAR AS NEEDED AND ALONG THE PERIMETER AND SEAL WITH 360-S SEALENT

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ROOF PLAN

| | |
|---|---|
| Project number | #10323 |
| Date | 10/10/2023 |
| Drawn by | JY |
| Checked by | JV |

A1-5

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# Authorization Form

I, Dr. Alexander Slocum, of ATDG, LLC, authorize Apex Design Build and Allen & Major Associates, Inc., to act as an agent on behalf of ATDG, LLC. I authorize Apex Design Build and Allen & Major Associates, Inc. to sign any permit related documents and speak on my behalf regarding the proposed Medical and Ambulatory Surgery Center Project at 360 Corporate Dr, Portsmouth, New Hampshire.

DocuSigned by:
3D12526EBF66412...

Signature

7/20/2023 | 5:49:32 AM CDT

Date

DocuSign Envelope ID: 37A33504-52C6-45BF-84A5-D5AEE5F41285

# City of Portsmouth, New Hampshire

## *Site Plan Application Checklist*

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

**Applicant Responsibilities (Section 2.5.2):** Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: ATDG, LLC (Contact: Dr. Alexander Slocum) Date Submitted: 08 / 21 / 2023

Application # (in City's online permitting): _____ 0315-0005-

Site Address: 360 Corporate Dr, Portsmouth, NH 03801 Map: 0000 Lot: 0005

| Application Requirements | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Complete application form submitted via the City's web-based permitting program (2.5.2.1(2.5.2.3A) | Application form to be submitted online. | N/A |
| ☐ | All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. (2.5.2.8) | Application documents to be submitted online. | N/A |

| Site Plan Review Application Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Statement that lists and describes "green" building components and systems. (2.5.3.1B) | See seperate attachment | |
| ☐ | Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. (2.5.3.1C) | Sheet G0-0 | N/A |
| ☐ | Tax map and lot number, and current zoning of all parcels under Site Plan Review. (2.5.3.1D) | Refer to Civil Sheets | N/A |

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| Site Plan Review Application Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)** | Sheet G0-0 | N/A |
| ☐ | Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)** | To be provided by Pease Development Authority | N/A |
| ☐ | Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)** | Sheet G0-0 | N/A |
| ☐ | List of reference plans. **(2.5.3.1H)** | Refer to Civil Sheets | N/A |
| ☐ | List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)** | Sheet G0-0 | N/A |

| Site Plan Specifications | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)** | 24 inches by 36 inches | Y |
| ☐ | Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)** | Noted | N/A |
| ☐ | GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)** | Refer to Civil Sheets | N/A |
| ☐ | Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)** | Refer to Civil Sheets | N/A |
| ☐ | Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)** | See all applicable sheets | N/A |
| ☐ | Title (name of development project), north point, scale, legend. **(2.5.4.2A)** | Sheet G0-0 | N/A |
| ☐ | Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)** | See revision schedule on all sheet | N/A |
| ☐ | Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)** | Noted | N/A |
| ☐ | Source and date of data displayed on the plan. **(2.5.4.2D)** | Refer to Civil Sheets | N/A |

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| Site Plan Specifications – Required Exhibits and Data | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | **1. Existing Conditions: (2.5.4.3A)**<br>• Surveyed plan of site showing existing natural and built features;<br>• Existing building footprints and gross floor area;<br>• Existing parking areas and number of parking spaces provided;<br>• Zoning district boundaries;<br>• Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre;<br>• Existing impervious and disturbed areas;<br>• Limits and type of existing vegetation;<br>• Wetland delineation, wetland function and value assessment (including vernal pools);<br>• SFHA, 100-year flood elevation line and BFE data, as required. | Refer to Civil Sheets | |
| ☐ | **2. Buildings and Structures: (2.5.4.3B)**<br>• Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;<br>• Elevations: Height, massing, placement, materials, lighting, façade treatments;<br>• Total Floor Area;<br>• Number of Usable Floors;<br>• Gross floor area by floor and use. | See A-Sheets | |
| ☐ | **3. Access and Circulation: (2.5.4.3C)**<br>• Location/width of access ways within site;<br>• Location of curbing, right of ways, edge of pavement and sidewalks;<br>• Location, type, size and design of traffic signing (pavement markings);<br>• Names/layout of existing abutting streets;<br>• Driveway curb cuts for abutting prop. and public roads;<br>• If subdivision; Names of all roads, right of way lines and easements noted;<br>• AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC). | Refer to Civil Sheets | |
| ☐ | **4. Parking and Loading: (2.5.4.3D)**<br>• Location of off street parking/loading areas, landscaped areas/buffers;<br>• Parking Calculations (# required and the # provided). | Refer to Civil Sheets | |
| ☐ | **5. Water Infrastructure: (2.5.4.3E)**<br>• Size, type and location of water mains, shut-offs, hydrants & Engineering data;<br>• Location of wells and monitoring wells (include protective radii). | Refer to Civil Sheets | |
| ☐ | **6. Sewer Infrastructure: (2.5.4.3F)**<br>• Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period. | Refer to Civil Sheets | |

| | | | |
|---|---|---|---|
| ☐ | **7. Utilities: (2.5.4.3G)**<br>• The size, type and location of all above & below ground utilities;<br>• Size type and location of generator pads, transformers and other fixtures. | Refer to Civil Sheets | |
| ☐ | **8. Solid Waste Facilities: (2.5.4.3H)** | N/A | |
| | • The size, type and location of solid waste facilities. | N/A | |
| ☐ | **9. Storm water Management: (2.5.4.3I)**<br>• The location, elevation and layout of all storm-water drainage.<br>• The location of onsite snow storage areas and/or proposed off-site snow removal provisions.<br>• Location and containment measures for any salt storage facilities<br>• Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures. | Refer to Civil Sheets | |
| ☐ | **10. Outdoor Lighting: (2.5.4.3J)**<br>• Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan. | See Photometric Plan | |
| ☐ | **11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)** | See Photometric Plan | |
| ☐ | **12. Landscaping: (2.5.4.3K)**<br>• Identify all undisturbed area, existing vegetation and that which is to be retained;<br>• Location of any irrigation system and water source. | Refer to Lanscaping Plans | |
| ☐ | **13. Contours and Elevation: (2.5.4.3L)**<br>• Existing/Proposed contours (2 foot minimum) and finished grade elevations. | Refer to Civil Sheets | |
| ☐ | **14. Open Space: (2.5.4.3M)**<br>• Type, extent and location of all existing/proposed open space. | Refer to Civil Sheets | |
| ☐ | **15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)** | Refer to Civil Sheets | |
| ☐ | **16. Character/Civic District (All following information shall be included): (2.5.4.3P)**<br>• Applicable Building Height (10.5A21.20 & 10.5A43.30);<br>• Applicable Special Requirements (10.5A21.30);<br>• Proposed building form/type (10.5A43);<br>• Proposed community space (10.5A46). | Refer to Civil Sheets | |
| ☐ | **17. Special Flood Hazard Areas (2.5.4.3Q)**<br>• The proposed development is consistent with the need to minimize flood damage;<br>• All public utilities and facilities are located and construction to minimize or eliminate flood damage;<br>• Adequate drainage is provided so as to reduce exposure to flood hazards. | Refer to Civil Sheets | |

| Other Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)** | See separate attachment | |
| ☐ | Indicate where Low Impact Development Design practices have been incorporated. **(7.1)** | Refer to Civil Sheets | |
| ☐ | Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)** | N/A | |
| ☐ | Stormwater Management and Erosion Control Plan. **(7.4)** | Refer to Civil Sheets | |
| ☐ | Inspection and Maintenance Plan **(7.6.5)** | Refer to Civil Sheets | |

| Final Site Plan Approval Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | All local approvals, permits, easements and licenses required, including but not limited to:<br>• Waivers;<br>• Driveway permits;<br>• Special exceptions;<br>• Variances granted;<br>• Easements;<br>• Licenses.<br>**(2.5.3.2A)** | | |
| ☐ | Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to:<br>• Calculations relating to stormwater runoff;<br>• Information on composition and quantity of water demand and wastewater generated;<br>• Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls;<br>• Estimates of traffic generation and counts pre- and post-construction;<br>• Estimates of noise generation;<br>• A Stormwater Management and Erosion Control Plan;<br>• Endangered species and archaeological / historical studies;<br>• Wetland and water body (coastal and inland) delineations;<br>• Environmental impact studies.<br>**(2.5.3.2B)** | | |
| ☐ | A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site.<br>**(2.5.3.2D)** | | |

| Final Site Plan Approval Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)** | | |
| ☐ | A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)** | Refer to Civil Sheets | N/A |
| ☐ | For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)** | N/A | |
| ☐ | Plan sheets submitted for recording shall include the following notes:<br>a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds."<br>b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)** | | N/A |

**Applicant's Signature:** DocuSigned by: Alexander H Slocum Jr Date: 8/18/2023 | 9:49:26 AM CDT

DocuSign Envelope ID: 3C847FDC-84E0-4F29-A41E-5D923C475129

# Pease Development Authority
55 International Drive, Portsmouth, NH 03801, (603) 433-6088

## Application for Site Review

| For PDA Use Only | | | |
|---|---|---|---|
| Date Submitted: | Municipal Review: | Fee: | |
| Application Complete: | Date Forwarded: | Paid: | Check #: |

### Applicant Information

| | |
|---|---|
| Applicant: ATDG, LLC - Contact: Dr. Alexander Slocum | Agent: Raquelle Kemnitz, Apex Design Build |
| Address: 1 Merrill Crossing, Bow, NH 03304 | Address: 9550 W Higgins Rd, Ste 170, Rosemont, IL 60018 |
| Business Phone: 603-777-6506 | Business Phone: 847-288-0100 |
| Mobile Phone: 603-777-6506 | Mobile Phone: 708-610-5000 |
| Fax: n/a | Fax: n/a |

### Site Information

| | | |
|---|---|---|
| Portsmouth Tax Map: 0315-0005-0000 | Lot #: 0005 | Zone: ABC |
| Site Address / Location : 360 Corporate Dr, Portsmouth, NH 03801 | | |
| Site Address / Location : n/a | | Area of On-site Wetlands: 41, 526 SF |

Area of On-site Wetlands + Wetlands Buffer Area: 86, 044 SF

### Activity Information

Change of Use: Yes [ ] No [X] Existing Use: 9010

Proposed Use: n/a

Description of Project: // Please see attachment //

***All above information shall be shown on a site plan submitted with this application. Provide 3 full size hard copies and one PDF copy of all application materials as well as one half-size set of drawings to PDA. Applicant shall supply additional copies as may be required by applicable municipality. Refer to Chapter 400 of PDA land Use Controls for additional information.***

### Certification

I hereby certify under the penalties of perjury that the foregoing information and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I hereby apply for Site Review and acknowledge I will comply with all regulations and any conditions established by the Review Committee(s) and PDA Board in the development and construction of this project.

DocuSigned by: Alexander H Slocum Jr
3D12526E... Signature of Applicant

8/16/2023 | 2:06:01 PM CDT
Date

Dr. Alexander Slocum
Printed Name

N:\Engineer\ ApplicationforSiteReview.xlsx

# Application for Site Review Cont.

**Portsmouth Tax Map:** 0315-0005-0000
**Lot #:** 0005
**Site Address:** 360 Corporate Dr, Portsmouth, NH 03801

**Description of Project**
The proposed development will be located at 360 Corporate Drive in Portsmouth, NH on a 6.12 acre lease lot created from existing Map Lot 0315-0005-0000. The project includes a three-story Healthcare Complex which will feature approximately 52,000 GSF. As proposed, the building and parking abide by all PDA setbacks and no variances are being sought. The design includes (125) vehicle parking spaces with a total of (2) loading docks. There will be a singular below grade loading dock at the eastern extent of the building (back), which will be appropriately accommodating of a WB-62 truck configuration, as well as a loading dock at grade (parallel and separated by a retaining wall) to the below grade loading dock. This area will feature a concrete sidewalk which properly allows for unloading/loading of all delivery trucks, as well as an additional area for bicycle parking. Along the same extent of the building, the emergency backup generator will be located parallel to the recessed loading dock and the primary electrical transformer will be located parallel to the at-grade loading dock. The refuse area also resides parallel to the at-grade loading dock for easy maneuverability as well as efficient proximity to the building for staff utilization.

Site access will be provided by two new driveways; one located along International Drive and the other located along Corporate Drive. Existing sidewalks are comprised of concrete with sections of asphalt; all existing asphalt sidewalks will be appropriately removed and replaced along with the proposed site development. The aforementioned site access provides adequate flow for both deliveries as well as patient/staff accessibility across the site. The International Drive entrance provides accessibility for a WB-62, and proper sizing for maneuvers in order to deliver/pickup a mobile MRI Trailer for intermittent usage at the future Imaging Practice.

Vanasse & Associates inc
Transportation Engineers & Planners

35 New England Business Center Drive
Suite 140
Andover, MA 01810

Ref: 9694

August 11, 2023

Mr. Jeff Kilbury
Apex Design Build
9550 West Higgins Road
Suite 170
Rosemont, IL 60018

Re: Trip Generation for Medical Office Building
360 Corporate Drive
Portsmouth, New Hampshire

Dear Mr. Kilbury:

Vanasse & Associates, Inc. (VAI) has identified the traffic generation associated with the proposed Medical Office Building (hereinafter, the "Project") to be located at 360 Corporate Drive in Portsmouth, New Hampshire. The Project site is bordered by International Drive to the north, areas of open and wooden space to the east and south, and Corporate Drive to the east. The Project site was previously an office building with two curb cuts; one onto International Drive, and one onto Corporate Drive.

The Project involves the construction of a three-story medical office building where 10,000 square feet (sf) of the building is a ambulatory surgery center and 42,000 sf is medical office space. A total of 125 parking spaces are proposed. Access to the site via the Corporate Drive curb cut is expected to be for patients and medical supply vehicles, while the International Drive curb cut is expected to be for employee vehicles.

In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published by the Institute of Transportation Engineers (ITE)[1] for Land Use Code (LUC) 650, "Free-Standing Emergency Room" and LUC 720, "Medical-Dental Office Building" were used. Table 1 summarizes the anticipated trip generation from the proposed development.

[1] *Trip Generation,* 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

**Table 1**
**PROJECT TRIP GENERATION**

| Time Period | Office Space Trips[a] (A) | Surgery Center Trips[b] (B) | Total Trips (C=A+B) |
|---|---|---|---|
| *Weekday Daily* | 1,698 | 250 | 1,948 |
| *Weekday Morning Peak Hour:* | | | |
| Entering | 87 | 6 | 93 |
| Exiting | 23 | 5 | 28 |
| Total | 110 | 11 | 121 |
| *Weekday Evening Peak Hour:* | | | |
| Entering | 50 | 7 | 57 |
| Exiting | 118 | 8 | 126 |
| Total | 168 | 15 | 183 |

[a]Based on ITE LUC 720, Medical-Dental Offic Building; 42,000 sf.
[b]Based on ITE LUC 650, Free-Standing Emergency Room; 10,000sf.

A comparison of previous and future trip generation of the site was conducted. Although the site is currently vacant, aerial images indicate that an office building was on site circa 2012. Estimates of the building size were obtained from aerial imagery. In order to develop the traffic characteristics of the previous site, trip-generation statistics published by the ITE for LUC 710, "General Office Building" was used. Table 2 summarizes the anticipated change in trip generation from the previous site to the proposed development.

**Table 2**
**PROJECT TRIP GENERATION COMPARISON**

| Time Period | Previous Vehicle Trips[a] | Proposed Vehicle Trips[b] | Change (Trips) |
|---|---|---|---|
| *Weekday Daily* | 262 | 1,948 | +1,686 |
| *Weekday Morning Peak Hour:* | | | |
| Entering | 24 | 93 | +69 |
| Exiting | 3 | 28 | +25 |
| Total | 27 | 121 | +94 |
| *Weekday Evening Peak Hour:* | | | |
| Entering | 4 | 57 | +53 |
| Exiting | 22 | 126 | +104 |
| Total | 26 | 183 | +157 |

[a]Based on ITE LUC 710, General Office Building; 18,000 sf.
[b]Based on Table 1.

As shown in Table 1, the project is expected to generate 1,686 more vehicle trips (approximately 843 vehicles entering and exiting) on an average weekday (two-way, 24-hour volume), with 94 more vehicle trips (69 entering and 25 exiting) expected during the weekday morning peak hour and 157 more trips (53 entering and 104 exiting) during the weekday evening peak hour.

If you have any questions on the conclusions reached herein, feel free to contact us at sthornton@rdva.com thannon@rdva.com.

Sincerely,

VANASSE & ASSOCIATES, INC.

Scott W. Thornton, P.E.
Principal

Thomas J. Hannon, EIT
Transportation Engineer

cc: File

Attachment: Trip Calculations

## TECHNICAL APPENDIX

# Free-Standing Emergency Room
(650)

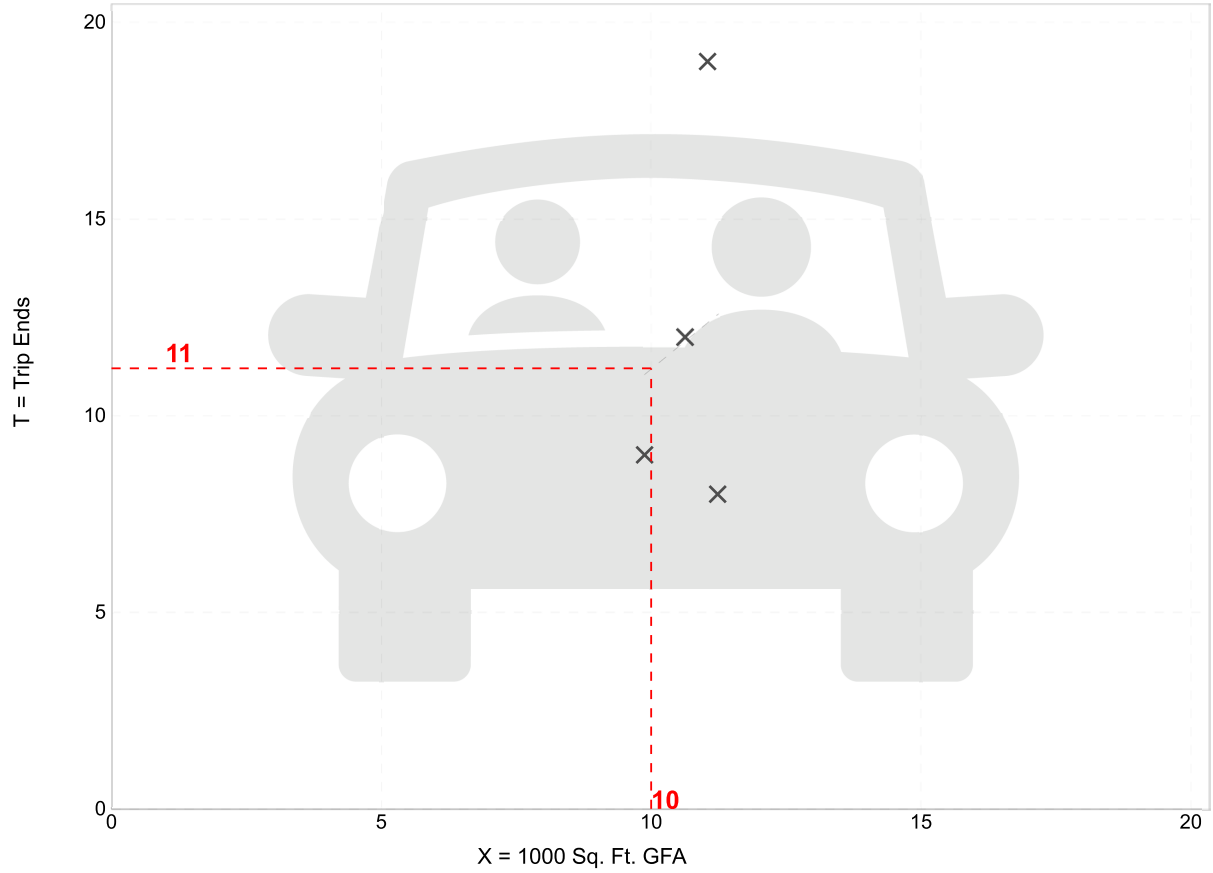
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 4
Avg. 1000 Sq. Ft. GFA: 11
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.12 | 0.71 - 1.72 | 0.44 |

## Data Plot and Equation

***Caution – Small Sample Size***




**Fitted Curve Equation: Not Given**

**$R^2$= ****

*Trip Gen Manual,* 11th Edition ● Institute of Transportation Engineers

# Free-Standing Emergency Room
(650)

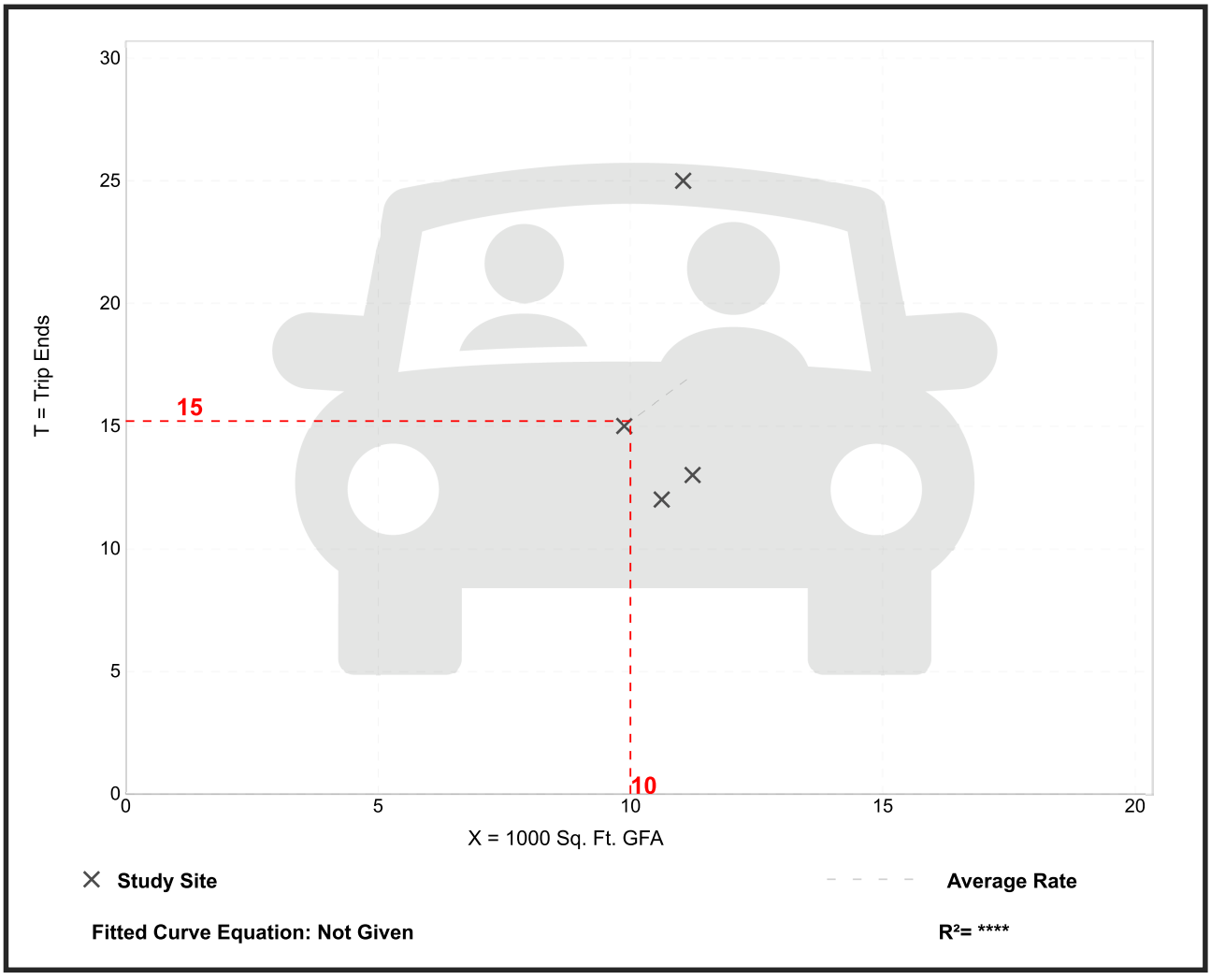
| | |
|---|---|
| **Vehicle Trip Ends vs:** | **1000 Sq. Ft. GFA** |
| **On a:** | **Weekday,** |
| | **Peak Hour of Adjacent Street Traffic,** |
| | **One Hour Between 4 and 6 p.m.** |
| **Setting/Location:** | **General Urban/Suburban** |
| Number of Studies: | 4 |
| Avg. 1000 Sq. Ft. GFA: | 11 |
| Directional Distribution: | 46% entering, 54% exiting |

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.52 | 1.13 - 2.26 | 0.54 |

## Data Plot and Equation

***Caution – Small Sample Size***




**Fitted Curve Equation: Not Given**

**$R^2$= ******

# Free-Standing Emergency Room
(650)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

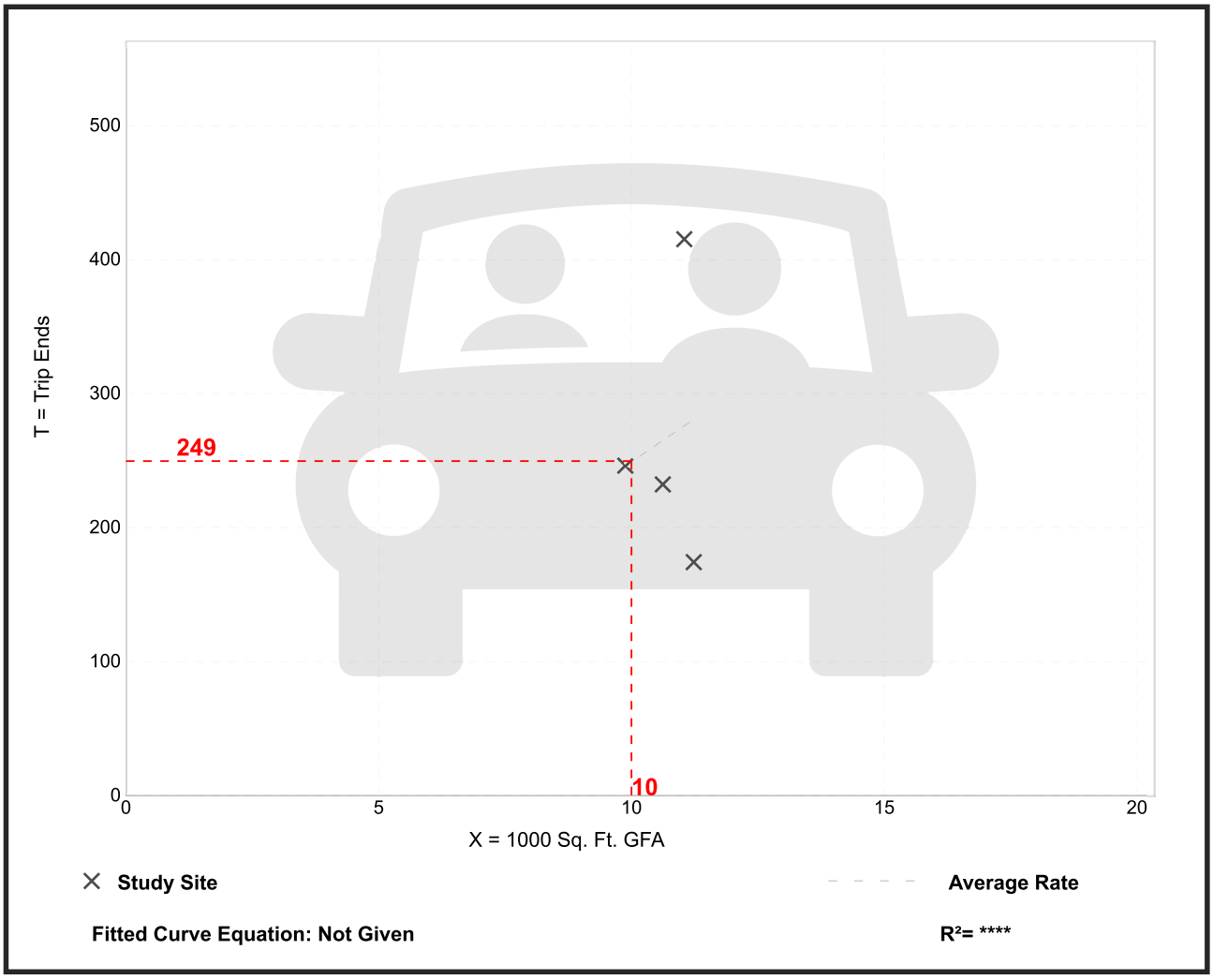
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 4
Avg. 1000 Sq. Ft. GFA: 11
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 24.94 | 15.49 - 37.57 | 9.45 |

## Data Plot and Equation

***Caution – Small Sample Size***




**Fitted Curve Equation: Not Given**

**$R^2$= ******

*Trip Gen Manual,* 11th Edition • Institute of Transportation Engineers

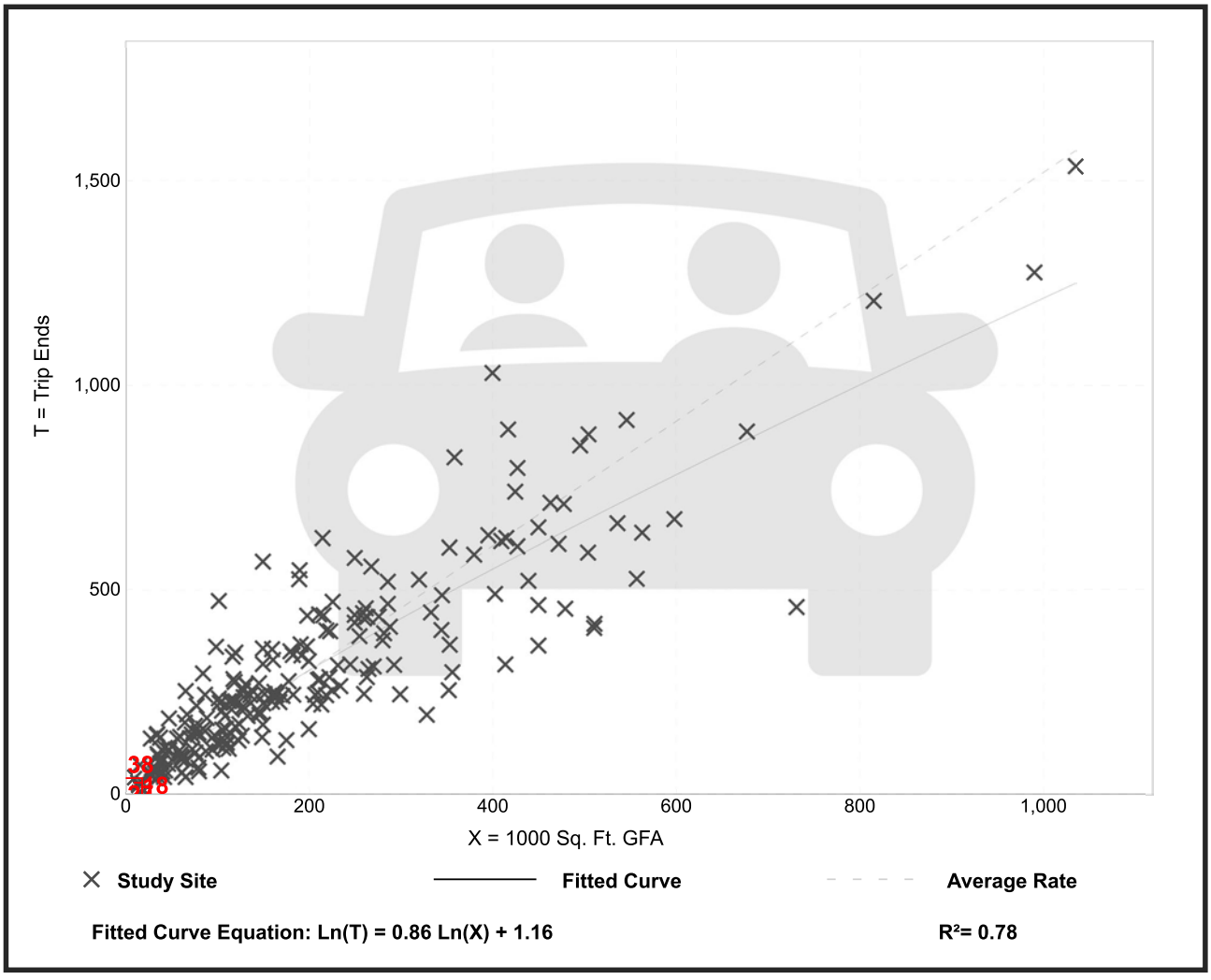
# General Office Building
(710)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 221
Avg. 1000 Sq. Ft. GFA: 201
Directional Distribution: 88% entering, 12% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.52 | 0.32 - 4.93 | 0.58 |

## Data Plot and Equation



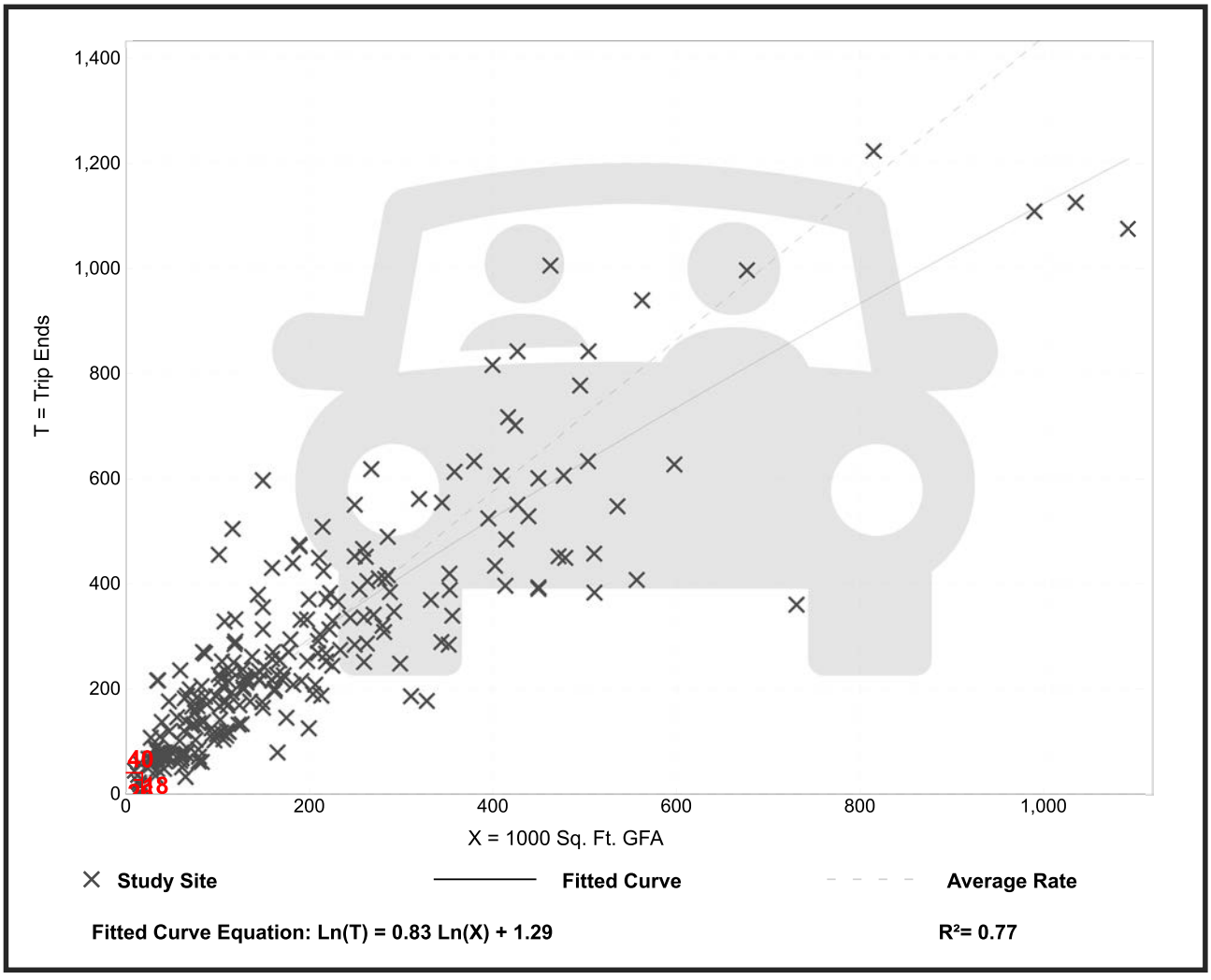
# General Office Building
(710)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 232
Avg. 1000 Sq. Ft. GFA: 199
Directional Distribution: 17% entering, 83% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.44 | 0.26 - 6.20 | 0.60 |

## Data Plot and Equation



# General Office Building
(710)

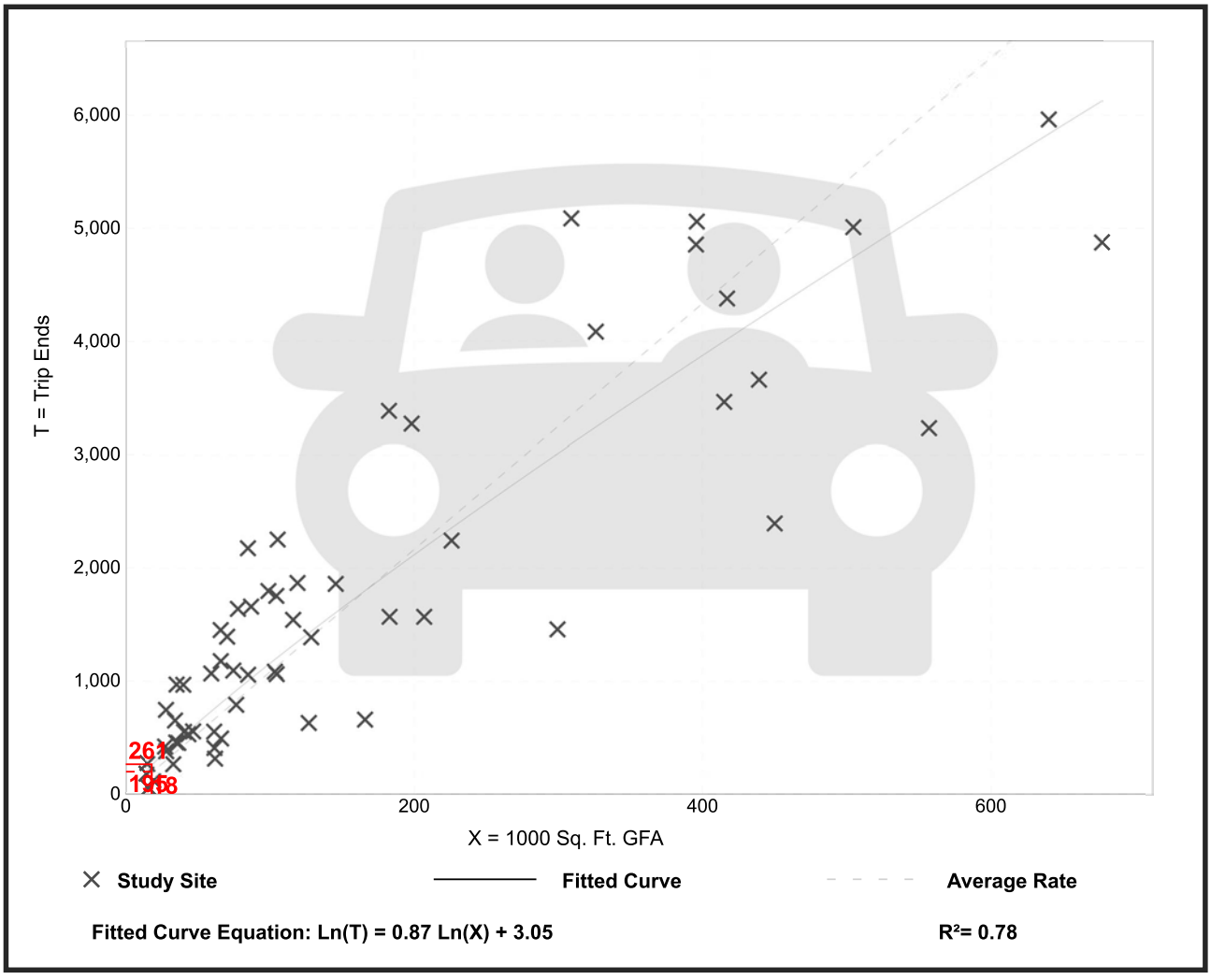
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 59
Avg. 1000 Sq. Ft. GFA: 163
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 10.84 | 3.27 - 27.56 | 4.76 |

## Data Plot and Equation



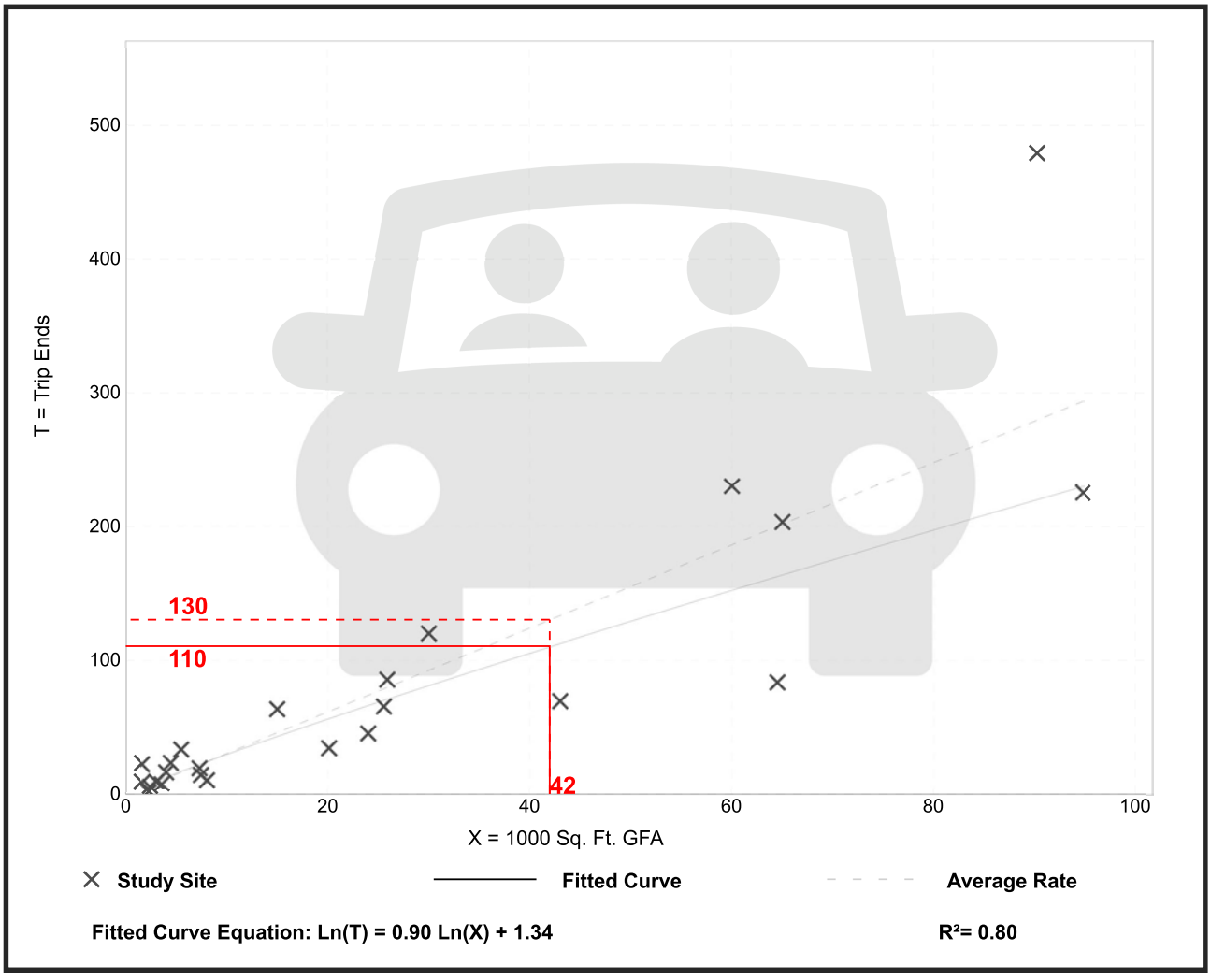
# Medical-Dental Office Building - Stand-Alone
(720)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 24
Avg. 1000 Sq. Ft. GFA: 25
Directional Distribution: 79% entering, 21% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 3.10 | 0.87 - 14.30 | 1.49 |

## Data Plot and Equation




**Fitted Curve Equation: Ln(T) = 0.90 Ln(X) + 1.34** **$R^2$= 0.80**

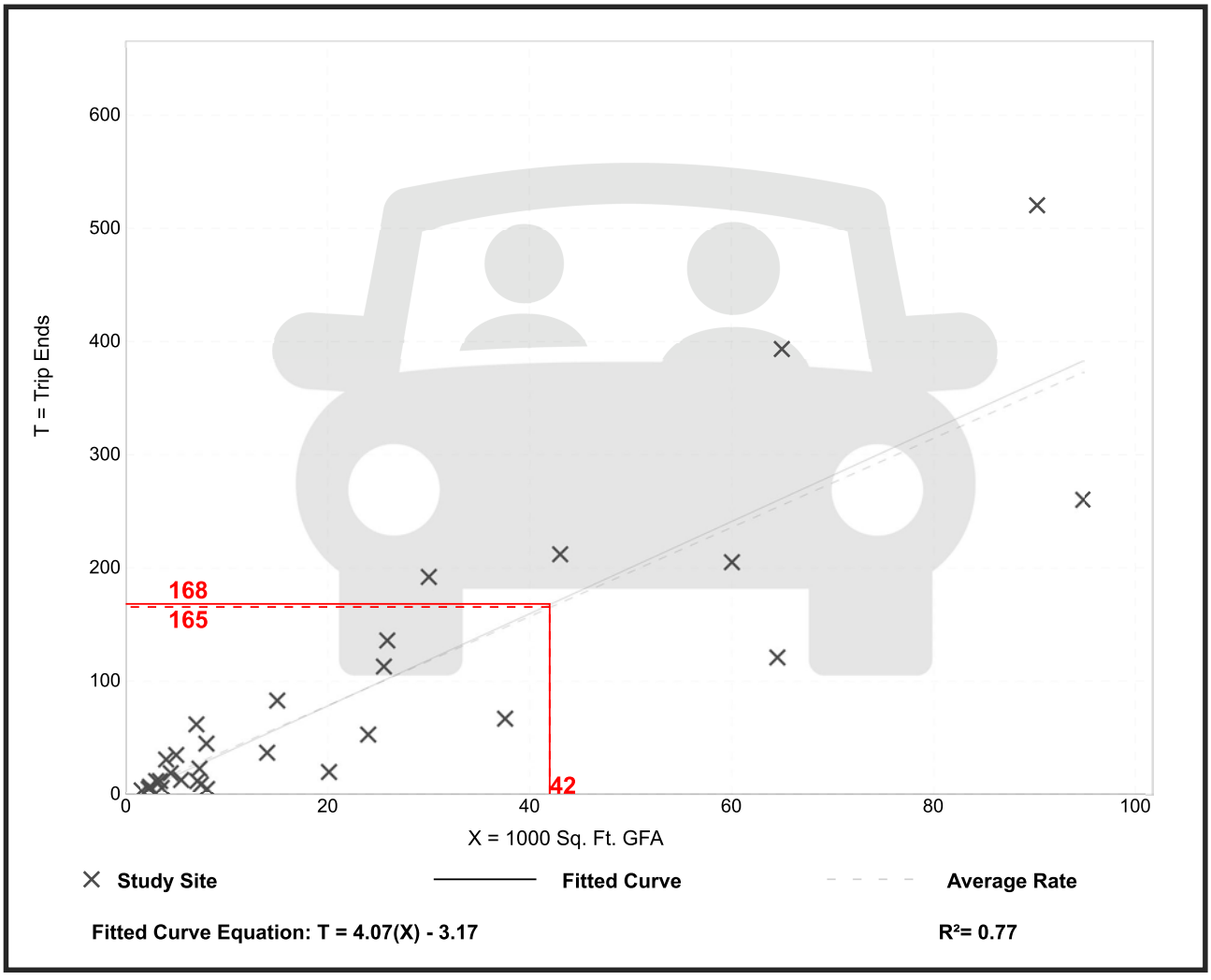
# Medical-Dental Office Building - Stand-Alone
(720)

| | |
|---|---|
| **Vehicle Trip Ends vs:** | **1000 Sq. Ft. GFA** |
| **On a:** | **Weekday,** |
| | **Peak Hour of Adjacent Street Traffic,** |
| | **One Hour Between 4 and 6 p.m.** |
| **Setting/Location:** | **General Urban/Suburban** |
| Number of Studies: | 30 |
| Avg. 1000 Sq. Ft. GFA: | 23 |
| Directional Distribution: | 30% entering, 70% exiting |

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 3.93 | 0.62 - 8.86 | 1.86 |

## Data Plot and Equation



# Medical-Dental Office Building - Stand-Alone
(720)

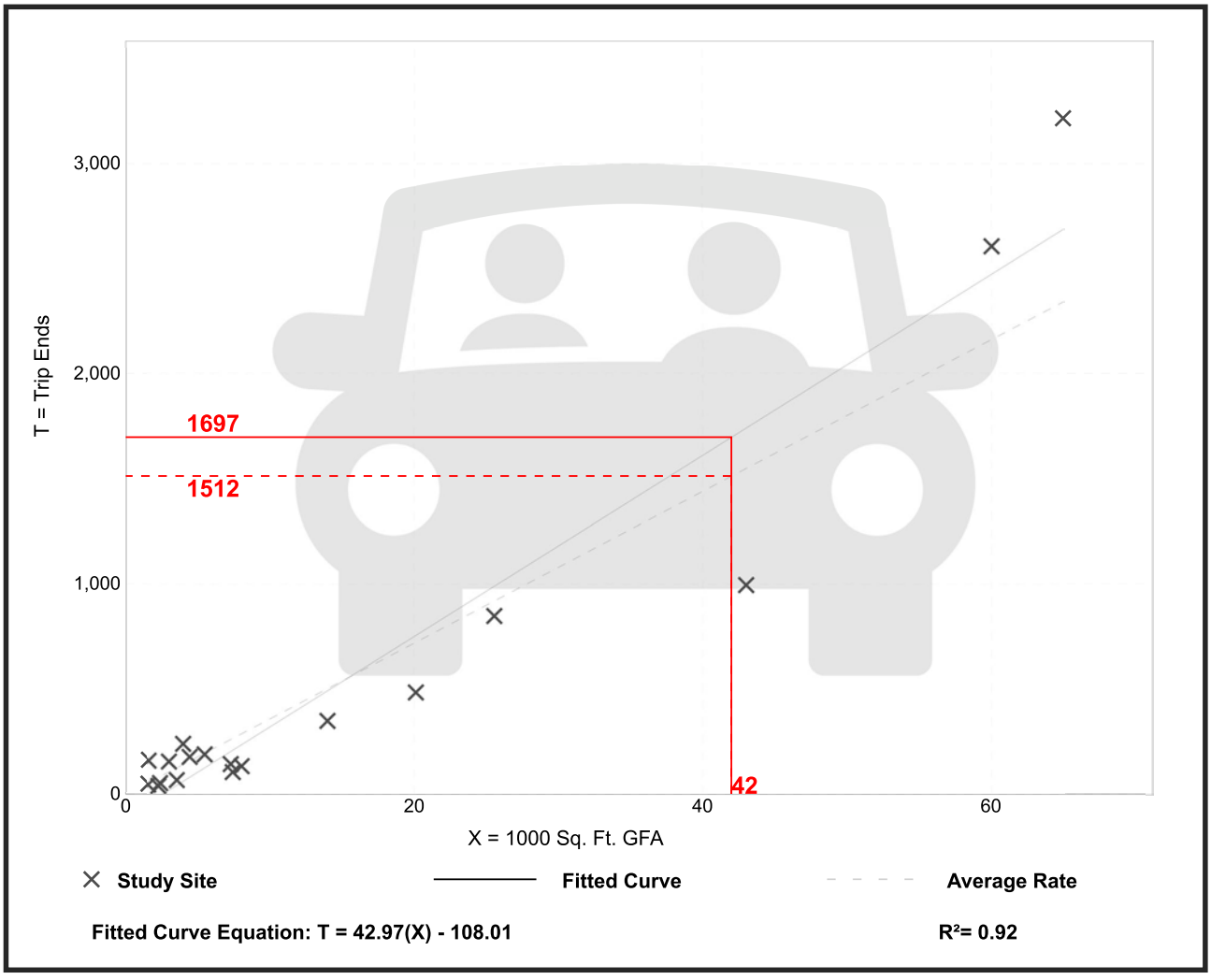
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

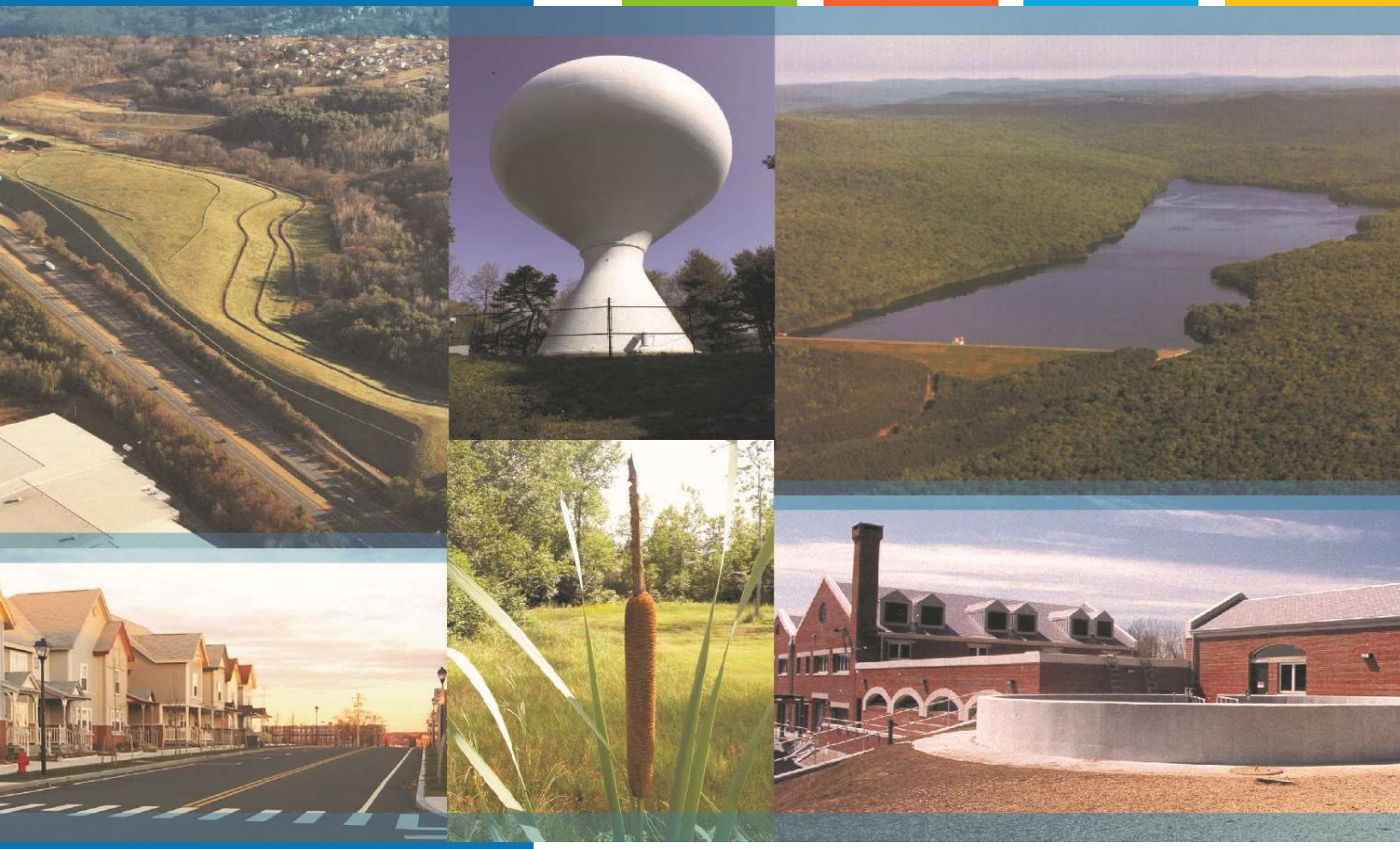
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 18
Avg. 1000 Sq. Ft. GFA: 15
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 36.00 | 14.52 - 100.75 | 13.38 |

## Data Plot and Equation





Lonza Biologics Industrial Development

# TRAFFIC IMPACT ASSESSMENT

Lonza Biologics

June 1, 2023
Last Revised: July 17, 2023

Tighe&Bond

100% Recyclable

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B. NHDOT Historical Traffic Volumes, Seasonal Adjustment Factors & Historical Growth Rates
C. Traffic Volume Adjustment Calculation
D. Background Development Traffic Volumes
E. Reassigned Traffic Volumes
F. Collision History Summary
G. Capacity Analysis Methodology
H. Capacity Analysis Worksheets
I. Site Development Plan
J. Traffic Control Signal Plans
K. COAST Bus Schedule & Map
L. Lonza Employee Residential Zip Code Based Trip Distribution Analysis

J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Report_Evaluations\Traffic Study\Lonza Traffic Impact Study 20230717.docx

# Section 1
# Introduction

This Traffic Impact Assessment (TIA) evaluates the potential traffic impact of the proposed Lonza Biologics industrial development, located along Corporate Drive and Goose Bay Drive within the Pease International Tradeport in Portsmouth, NH. The TIA is based in part on the previous *Lonza Biologics Proposed Industrial Development Traffic Evaluation*, dated April 3, 2018, completed by Tighe & Bond. This updated TIA addresses the City of Portsmouth Planning Department Site Plan Application Conditions of Approval, dated January 18, 2019, to expand the Traffic Analysis study area as stated in Condition 2.10 for subsequent phases of development for the Lonza site. This revised TIA has been prepared in accordance with NHDOT and industry standards. The Project Site is bounded by Corporate Drive to the north, and Goose Bay Drive to the west, south and east. The site is surrounded by industrial, manufacturing, medical, and office land uses, consistent with the Tradeport as a whole. The Site location is shown in Figure 1.

The existing Lonza facility currently includes 900,000+/- square feet (SF) of building space including manufacturing, research and development, office, and ancillary services with 780+/- parking spaces. The Applicant plans to construct three buildings totaling approximately 800,000+/- square foot (SF) of industrial space with 700 additional parking spaces contained in one garage. The proposed buildings will be located on currently vacant land on the north side of Goose Bay Drive. Primary access to the site will be provided via a new driveway on Goose Bay Drive opposite the existing parking garage entrance. A new curb cut is also proposed on Corporate Drive, approximately 400 feet east of Redhook Way; however, this driveway will be gated in the near-term, but is expected to be used for deliveries to the proposed Building 3 once the full build-out is complete. Roadway improvements as part of the project include the closure of Goose Bay Drive to through traffic approximately 125 feet southwest of the Corporate Center driveway, and conversion of a portion of Goose Bay Drive from a public road to be merged with the Lonza parcel. The proposed Site Plan Layout is enclosed in Appendix I. Proposed Building 1 is expected to be complete and occupied in 2025; however, for the purposes of this study, the full build-out of the site is assumed to be in 2025.

Based on the analyses conducted herein, it is the professional opinion of Tighe & Bond that while the adjustment of collected volumes to an assumed pre-pandemic condition and the addition of background growth on a 12-year horizon to the 2035 design year results in undesirable LOS at some area intersections, the traffic expected to be generated by the proposed industrial development has a negligible effect on traffic operations within the study area.

# Section 2
# Existing Conditions

The Project Site is bounded by Corporate Drive to north and east, and Goose Bay Drive to the south and west. The following sections describe the roadways and intersections included within the study area.

## 2.1 Roadways

### 2.1.1 Corporate Drive

Corporate Drive is a local road maintained by the City of Portsmouth. The roadway runs between International Drive and loops back around to Durham Street/ International Drive to the south. The roadway is generally 28 feet wide with a two-lane cross section and narrow shoulders. Beginning at the intersection with International Drive, the roadway cross section is four lanes with westbound dedicated left, through, and right lanes, and a single eastbound travel lane. An eastbound left-turn lane is provided at Redhook Way. Narrow 2-foot striped shoulders are present between International Drive and approximately 500 feet east of Redhook Way. The shoulders to the east of this section are not striped, providing a wide approximately 14-foot travel lane. The roadway transitions to a three-lane cross section in the vicinity of Grafton Road where an eastbound dedicated left-turn lane and westbound dedicated right-turn lane are provided.

A 5-foot sidewalk is provided on both sides of the roadway between International Drive and Redhook Way. Sidewalk is provided along at least one side of the roadway except for a short 350-foot gap between Redhook Way and the Wentworth-Douglas Hospital Outpatient Center driveway and a second 300-foot gap between Ashland Road and the 273 Corporate Drive north driveway. The posted speed limit on Corporate Drive is 35 mph.

### 2.1.2 Goose Bay Drive

Goose Bay Drive is a local road maintained by the City of Portsmouth. The roadway intersects International Drive 180 feet west of Redhook Way at the west end and 775 feet west of Rye Street at the east end. One travel lane is provided in each direction along the entire roadway. No sidewalks are provided except for a short 200-foot section along the south side of the roadway along the Lonza property. There is no posted speed on the roadway.

### 2.1.3 International Drive

International Drive is a major collector road and is maintained by the City of Portsmouth. The roadway runs north to south between Pease Boulevard and New Hampshire Avenue/ Corporate Drive. A two-lane cross section is provided between New Hampshire Avenue/ Corporate Drive and Manchester Square/ Corporate Drive. At the intersection with Manchester Square/ Corporate Drive, the roadway opens to a four-lane cross section with northbound dedicated left turn lane, through lane, and shared through/ right lane and a single southbound travel lane. A five-lane cross section (three northbound, two southbound) is provided north of Corporate Drive approaching Pease Boulevard. The posted speed is 35 mph in both directions.

Sidewalk is provided on both sides of the roadway between Pease Boulevard and Corporate Drive and the west side of the roadway only between Corporate Drive and New Hampshire Avenue.

### 2.1.4 Pease Boulevard

Pease Boulevard is classified as an urban major collector and is maintained by the City of Portsmouth. The roadway is located north of the site location and runs primarily in the east-west direction connecting US Route 4 On/Off Ramps to the east and Pease Air National Guard Base to the west. Between Arboretum Drive/New Hampshire Avenue and International Drive, the Pease Boulevard cross section varies. Pease Boulevard at Arboretum/New Hampshire Avenue starts as a three-lane roadway (two westbound, one eastbound) with 11-foot travel lanes and narrow shoulders. The single eastbound travel lane widens to two lanes approaching International Drive, with two 11-foot travel lanes in each direction and narrow shoulders, a dedicated eastbound left turn lane, and two westbound left turn lanes. Pease Boulevard widens to a five-lane section eastbound with four 11-foot wide through lanes and a right-turn lane to the US Route 4 southbound on-ramp, with the four travel lanes aligning with two left turn lanes and two through lanes at the US Route 4 northbound ramps. Four 11-foot travel lanes are also carried westbound under the US Route 4 overpass, with two left turn lanes to the southbound on-ramp and two through lanes. The roadway continues west of US Route 4 as Gosling Road.

A five-foot sidewalk is provided on both sides of Pease Boulevard between Arboretum Drive/New Hampshire Avenue and International Drive, with a 10-foot buffered multi-use path provided on the north side of the roadway between International Drive and the US Route 4 southbound off-ramp. A 6-foot sidewalk is provided on the north side of Pease Boulevard between the US Route 4 ramps. The speed limit is posted at 35 mph in both directions.

### 2.1.5 Grafton Road

Grafton Road is classified as an urban major collector and maintained by the City of Portsmouth. The roadway runs in a northeast to southwest alignment connecting Corporate Drive to the northeast and Route 33 (Greenland Road) to the southwest. Grafton Road is typically a two-lane roadway with 12-foot travel lanes, widening to provide a two-lane approach with separate left and right turn lanes at its northeastern termini at Corporate Drive and its southern termini at Route 33. Shoulder lane widths vary along the roadway. Narrow shoulder widths are found near the Aviation Avenue intersection which gradually increases to 3-foot shoulders on the west side of the roadway and 5-foot shoulder on the east side of the roadway. Near Pease Golf Course Driveway/Park & Ride Driveway, the shoulder lane width increases to 10 feet on the east side of the roadway. Between Pease Golf Course Driveway/Park & Ride Driveway and Route 33, the shoulder width on both sides of the roadway is 10 feet which reduces to 3 feet on the west side of the roadway with no marked shoulder on the east at Route 33 intersection. A 10-foot buffered multi-use path is provided on the northwest side of the roadway. The speed limit is posted at 35 mph in both directions.

### 2.1.6 Route 33 (Greenland Road)

Route 33 (Greenland Road) is classified as an urban minor arterial and maintained by the State of New Hampshire. The roadway runs primarily in the east to west direction connecting Route 151 (Portsmouth Avenue) and the Town of Greenland to the west of the study area and US Route 1 (Lafayette Road) to the east of the study area. Between the I-

95 Southbound ramps and Grafton Road, Route 33 is a four-lane divided roadway with 11-foot travel lanes and 8-foot-wide shoulders on both sides of the roadway. Route 33 continues as an undivided four-lane roadway east of Grafton Road, with 11-foot travel lanes and 8-foot shoulders. Shoulder widths are narrower were dedicated turn lanes are provided at Grafton Road and at the I-95 Northbound ramps. No pedestrian accommodations are provided east of Grafton Road, with a speed limit of 35 mph.

## 2.2 Study Area Intersections

### 2.2.1 Gosling Road at US Route 4 Northbound Ramps

Gosling Road intersects the US Route 4 Northbound Ramps to the east of the US Route 4 (Spaulding Turnpike) overpass at a signalized intersection, with the Northbound off-ramp approaching from the south and the Northbound on-ramp departing to the north. The Gosling Road eastbound approach provides four lanes, with two left-turn lanes and two through travel lanes. The Gosling Road westbound approach consists of three lanes, with two through lanes and one shared through/right-turn lane. The left-most westbound through lane aligns with a left-turn lane at the downstream southbound ramp intersection. The northbound off-ramp approach provides four lanes, with two left-turn lanes and two right-turn lanes. Left turn movements from Gosling Road eastbound and from the northbound off-ramp are controlled with exclusive signal phases. The northbound on-ramp provides two lanes departing the intersection. As previously described, a sidewalk is provided on the north side of Gosling Road through the intersection, with a crosswalk across the northbound on-ramp. A concurrent pedestrian traffic signal phase is provided for this crosswalk. Marked edge lines are provided on all approaches with a 1-to-2-foot offset from the curb or edge of roadway.

### 2.2.2 Pease Boulevard at US Route 4 Southbound Ramps

Pease Boulevard intersects the US Route 4 Southbound Ramps to the west of the US Route 4 (Spaulding Turnpike) overpass at a signalized intersection, with the Southbound off-ramp approaching from the north and the Southbound on-ramp departing to the south. The Pease Boulevard westbound approach provides four lanes, with two left-turn lanes and two through travel lanes. The Pease Boulevard eastbound approach consists of five lanes, with four through lanes and one exclusive right-turn lane. The two left-most eastbound through lanes align with the left-turn lanes at the downstream northbound ramp intersection. The southbound off-ramp approach provides four lanes, with two left-turn lanes and two right-turn lanes. Left turn movements from Pease Boulevard westbound and from the southbound off-ramp are controlled with exclusive signal phases. The southbound on-ramp provides two lanes departing the intersection. As previously described, a sidewalk is provided on the north side of Pease Boulevard through the intersection, with a crosswalk across the southbound off-ramp. A concurrent pedestrian traffic signal phase is provided for this crosswalk. Marked edge lines are provided on all approaches with a 1-to-2-foot offset from the curb or edge of roadway.

### 2.2.3 Pease Boulevard at International Drive

International Drive intersects Pease Boulevard from the north and south to form a 4-way, signalized intersection. Pease Boulevard is median divided, with the eastbound approach providing an exclusive left-turn lane and two through travel lanes, while the westbound approach provides two left-turn lanes and two through lanes. The north leg of International Drive is median divided and provides a wide, unmarked southbound approach, which is of adequate width to accommodate two vehicles side-by-side.

International Drive northbound provides one shared left/through lane and two channelized right turn lanes under signal control. Sidewalks are provided on both sides of Pease Boulevard west of the intersection, on both sides of International Drive to the south, on the west side of International Drive to the north, and on the north side of Pease Boulevard to the east. Crosswalks are provided across all four approaches and across the channelized northbound right-turn lanes, and concurrent pedestrian traffic signal phases are provided. Marked edge lines are provided on Pease Boulevard, with a 1-to-2-foot offset from the curb or edge of roadway. Variable width shoulders are provided on International Drive south of the intersection, ranging from 2 to 8 feet.

### 2.2.4 International Drive at Corporate Drive and Manchester Square

Corporate Drive and Manchester Square intersect International Drive from the east and west, respectively to form a 4-way unsignalized intersection under all-way stop control. The northbound approach provides a dedicated left-turn lane, through lane, and shared through/ right lane while the southbound approach provides dedicated left-turn, through, and right-turn lane. The westbound approach provides a dedicated left-turn, through, and right-turn lane, while the eastbound approach provides a dedicated left-turn lane and through/ right lane. Edge lines are present on the north, east, and west legs of the intersection. Crosswalks are provided across all four legs of the intersection.

### 2.2.5 Corporate Drive at Goose Bay Drive (West JCT)

Goose Bay Drive intersects Corporate Drive from the south to form a 3-way, T-intersection. Goose Bay Drive provides a single general purpose travel lane. A single dedicated eastbound left-turn from Corporate Drive begins west of Goose Bay Drive, which provides access to the Residence Inn just east of the intersection and to Cisco Brewers via Red Hook Way. Edge lines are provided on all approaches. A crosswalk is provided across Goose Bay Drive.

### 2.2.6 Corporate Drive at Redhook Way

Redhook Way intersects Corporate Drive from the north to form a 3-way, T-intersection. A dedicated left-turn lane and through lane are provided on the eastbound approach while a single general-purpose lane is provided on the westbound and southbound approaches. A crosswalk is provided on the west leg of the intersection. Edge lines are provided on the east and west approaches.

### 2.2.7 Corporate Drive at Goose Bay Drive (East JCT)

Goose Bay Drive intersects Corporate Drive from the west to form a 3-way, T-intersection. A single general-purpose travel lane is provided on all approaches. There are no marked shoulders on the intersection approaches. A crosswalk is provided across the south leg of the intersection, which provides connection between sidewalk segments on the east side of Corporate Drive north of the intersection and on the west side of Corporate Drive south of the intersection.

### 2.2.8 New Hampshire Avenue and Corporate Drive at Durham Street and International Drive

New Hampshire Avenue and Corporate Drive form the north and south legs, respectively, of a 4-way unsignalized intersection, with Durham Street approaching from the west and International Drive approaching from the east under stop control. All approaches provide single general-purpose lanes, with no marked shoulders. Sidewalks are provided on the north side of Durham Street and International Drive, on the east side of New Hampshire

Avenue, and on both sides of Corporate Drive. Crosswalks are provided across the north and west legs of the intersection.

### 2.2.9 Corporate Drive at Grafton Road

Grafton Road intersects Corporate Drive from the southwest under stop control at a 3-way, T-intersection. Corporate Drive southbound provides a through travel lane and a right-turn lane, while Corporate Drive northbound provides a left-turn lane and a through lane. Grafton Road widens at its approach to Corporate Drive to provide separate left and right turn lanes. No shoulders or edge lines are present. Sidewalks are provided on the south side of Grafton Road and on the east side of Corporate Drive, with a crosswalk across the south leg of the intersection.

### 2.2.10 Grafton Road at I-95 Southbound Off-Ramp

I-95 Southbound Exit 3A includes a direct off-ramp to Grafton Road. Grafton Road is median divided in the vicinity of the off-ramp, prohibiting left turns to Grafton Road southbound. The ramp provides a single-lane approach under stop control, while Grafton Road provides a single lane northbound through the intersection.

### 2.2.11 Grafton Road at Route 33 (Greenland Road)

Grafton Road intersects Route 33 (Greenland Road) from the north to form a 3-way, T-type, signalized intersection. Grafton Road southbound has a two-lane approach with exclusive left and right turn lanes. Route 33 eastbound provides an exclusive left-turn lane and two through lanes, while the westbound approach provides two through lanes and a right-turn lane. The north and west legs of the intersection are median divided. The multi-use path along the west side of Grafton Road continues adjacent to the intersection, turning towards the west and continuing on the north side of Route 33; however, no connection to the intersection is provided and no crosswalks or other pedestrian accommodations are provided. A narrow 2-foot shoulder is provided on the Grafton Road approach, with 7-to-10-foot shoulders provided on Route 33.

### 2.2.12 Minor Driveway Intersections

There are six additional intersections at minor driveways that are included in the study area:

- International Drive at Pease Development Authority Driveway (south location)
- International Drive at Lonza Biologics Driveway (north location)
- International Drive at Lonza Biologics Driveway (south location)
- Goose Bay Drive at Lonza Biologics Parking Garage Entrance
- Goose Bay Drive at Lonza Biologics Driveway (south location)
- Goose Bay Drive at Corporate Center Driveway

Each of these intersections provides a single general-purpose lane on all approaches. No crosswalks are provided except for the International Drive at Lonza Biologics driveway which provides a crosswalk on the north leg of the intersection.

## 2.3 Traffic Volumes

Turning movement counts (TMC) were collected at the study area intersections on both February 17, 2022 and March 7, 2023 during the weekday morning (7:00 AM to 9:00 AM) and weekday afternoon peak periods (4:00 PM to 6:00 PM). Automatic traffic recorder (ATR) data was collected on Pease Boulevard, just west of the US Route 4 southbound ramps during a 48-hour period from Tuesday thru Wednesday in March 2023. The ATR location was strategically chosen to align with the NHDOT Count Station (LOC ID 82379024) to serve as a basis for comparison of existing traffic volumes to recent NHDOT traffic volumes and to traffic counts collected in 2022 to determine if adjustments to traffic volumes should be made. The historical traffic volumes on Pease Boulevard at this location are presented below in Table 1 below.

**TABLE 1**

Pease Boulevard Historical Traffic Volumes

| | | Peak Hour Traffic Volumes | | |
|---|---|---|---|---|
| **Year** | **AADT** | **AM Peak** | **PM Peak** | **Source** |
| 2015 | 21,000 | 2,160 | 2,272 | NHDOT (October)[1] |
| 2016 | 21,420 | Not Available | | NHDOT Growth Estimate[2] |
| 2017 | 21,848 | Not Available | | NHDOT Growth Estimate[2] |
| 2018 | 20,100 | 1,835 | 2,052 | NHDOT July[3] |
| 2019 | 20,341 | Not Available | | NHDOT Growth Estimate[2] |
| 2020 | 17,168 | Not Available | | NHDOT Growth Estimate[2] |
| 2021 | 15,807 | 1,212 | 1,558 | NHDOT (August) |
| 2022 | 17,175 | 1,211 | 1,428 | Tighe & Bond February 2022 ATR[4] |
| 2023 | 18,485 | 1,551 | 1,783 | Tighe & Bond March 2023 ATR[4] |

[1]Peak Hour Traffic Volumes Adjusted based on 2017 Seasonal Adjustment Factor to Peak
[2]Based on NHDOT Yearly Growth Rates
[3]Peak Hour Traffic Volumes Adjusted based on 2018 Seasonal Adjustment Factor to Peak
[4]Total Daily Traffic and Peak Hour Traffic Volumes Adjusted based on 2019 Seasonal Adjustment Factor to Peak

The variance in volumes over time, and specifically the decrease in volume between 2019 and 2022, represent the impact of the COVID-19 pandemic on work schedules and commuting patterns. Traffic volume trends nation- and region-wide confirm that traffic volumes have generally returned to pre-pandemic levels in 2023; however, current NHDOT guidance requests that 2022 and 2023 traffic volumes should be adjusted upward to assume a return to 2019 pre-pandemic volumes. This likely represents a conversative analysis but cannot be adequately confirmed as such until multiple years of data can confirm current trends in post-pandemic traffic volumes.

Based on a review of the collected traffic volumes and comparison to the 2019 traffic volumes, it was determined the 2022 existing peak hour traffic volumes should be adjusted by a factor of 53% during the weekday morning peak period, and 45% during the weekday afternoon peak period and the 2023 existing peak hour traffic volumes should be adjusted by a factor of 37% during the weekday morning peak period, and 16% during the weekday afternoon peak period. These adjustment factors were determined by reviewing the historical NHDOT traffic volume data during the peak hour time periods and comparing it to the 2022 and 2023 peak hour volumes. Because the 2019, 2022, and

2023 peak hour time periods do not align due to changes in travel patterns, the higher peak hour traffic volume for each year was used as a basis for comparison. NHDOT seasonal adjustment factors were applied to both the historical volumes and existing traffic volumes per NHDOT guidelines.

While the application of these adjustment factors aligns with NHDOT guidance on review and adjustment of post-pandemic traffic volumes, it should be understood that application of adjustment factors based on ATR data from Pease Boulevard across all turning movements within the study area may artificially inflate turning movements and overstate calculated operational delay and resultant capacity analysis results.

The raw TMC and ATR data are provided in Appendix A. The NHDOT historical traffic volumes on Pease Boulevard, seasonal adjustment factors, and historical growth rates are enclosed in Appendix B. The Traffic Volume Adjustment Factor calculation is provided in Appendix C. Adjusted 2023 Existing Peak Hour Traffic Volumes are provided in Figure 2.

## 2.4 Capacity and Queue Analyses - Existing Conditions

Capacity and queue analyses were performed for the study intersections for the 2023 Existing Conditions during the weekday morning and weekday afternoon peak hours. Analyses were conducted using Trafficware Synchro Studio 11 software, which conducts the analysis based on *Highway Capacity Manual (HCM)* methodology. Consistent with NHDOT guidelines, analyses for signalized intersections were conducted using methods of the 2000 HCM, while analysis for unsignalized intersections utilized the HCM 6$^{th}$ Edition methodology. The analysis results are categorized in terms of Level of Service (LOS), which describes the qualitative intersection operational conditions based on the calculated average delay per vehicle. A summary of the HCM capacity analysis methodology and a detailed definition of LOS is provided in Appendix G. The queue analysis results are summarized based upon the length of vehicle queueing on an intersection approach. For unsignalized intersections, queues are quantified for 95$^{th}$ percentile (design queues). For signalized intersections, queues are quantified by 95$^{th}$ percentile (design) and 50$^{th}$ percentile (average) queues. Tables 4 and 5 in Section 7 summarize the capacity and queue analyses results, respectively. Capacity analysis worksheets with full inputs, settings, and results are provided in Appendix H.

As shown in Table 4, the conservative application of COVID adjustment factors to represent a pre-pandemic condition creates an assumed pre-pandemic Existing condition which predicts notable operational delay throughout the study area. While many intersections and individual intersection approaches operate at LOS D or better during the peak hours, the following predict unfavorable and failing operations:

- **Pease Boulevard at International Drive:**
  - The intersection operates at overall LOS F with failing operations on the northbound right turn movement during the weekday afternoon peak hour.
- **Pease Boulevard at US Route 4 Southbound Ramps:**
  - The intersection operates at overall LOS F during the weekday morning peak hour with failing operations on the southbound right turn movement.
  - The westbound left movement operates at LOS E during the weekday afternoon peak hour.

- **Pease Boulevard at US Route 4 Northbound Ramps:**
  - The intersection operates at overall LOS E, with failing operations on the northbound left turn movement during the weekday morning peak hour.
  - Predicted 95th percentile queues exceed the available storage on the northbound left movement during the weekday morning peak hour.
- **Route 33 (Greenland Road) at Grafton Road:**
  - The intersection operates at overall LOS F during the weekday morning peak and afternoon peak hours.
  - The eastbound left and through movements operate at LOS F during the weekday morning peak hour.
  - The eastbound left, westbound through, and southbound right movements operate at LOS F during the weekday afternoon peak hour.
  - Predicted 95th percentile queues exceed the available storage on the eastbound left movement during the weekday morning peak hour.
- **Corporate Drive at International Drive:**
  - The intersection operates at overall LOS F during the weekday morning peak and afternoon peak hours.
  - The southbound left and through movements operate at LOS F during the weekday morning peak hour.
  - The westbound right and northbound through movements operate at LOS F during the weekday afternoon peak hour.
  - Predicted 95th percentile queues exceed the available storage on the southbound left movement during the weekday morning peak hour and westbound right movement during the weekday afternoon peak hour.
- **New Hampshire Avenue/Corporate Drive at International Drive/Durham Street:**
  - The stop-controlled International Drive approach operates at LOS F during the weekday morning and weekday afternoon peak hours.
- **Corporate Drive at Goose Bay Drive (West):**
  - The northbound movement operates at LOS F during the weekday afternoon peak hour.
- **Corporate Drive at Grafton Road:**
  - The eastbound left movement on Grafton Road operates at LOS F during the weekday morning and weekday afternoon peak hours.
- **Grafton Road at I-95 Southbound Off-ramp:**
  - The ramp approach operates at LOS F during the weekday morning peak hour.

## 2.5 Collision History

Collision data was collected from police reports from the City of Portsmouth Police Department for the most recent three-year period between January 2020 and December 2022 for the study area intersections. Table 2 on the following page provides a summary of the collisions within the study area. Appendix F includes detailed collision summaries for each of the study intersections.

As shown in Table 2, there were 42 motor vehicle collisions reported in the study area during the three-year period analyzed. Collisions occurred most frequently at the intersections of Corporate Drive at International Drive and Gosling Road at US Route 4 Northbound ramps. Both intersections experienced 11 collisions, accounting for about half of the reported total. The intersection of Pease Boulevard at US Route 4 Southbound ramps experienced the third highest number of collisions with 7, or about 17% of the reported total. The New Hampshire Avenue at International Drive intersection experienced 6 collisions, equating to approximately 14% of the total. The intersection of Route 33 (Greenland Road) at Grafton Road experienced 5 collisions, or 12% of the reported total. Finally, the intersections of Pease Boulevard at International Drive and Corporate Drive at Grafton Road each experienced one collision. The remaining study intersections did not have any reported collisions based on data provided by the City of Portsmouth.

**TABLE 2**

Study Area Collision History Summary

| | 2019 | 2020 | 2021 | Total | Percent |
|---|---|---|---|---|---|
| Corporate Drive at International Drive | 7 | 2 | 2 | **11** | **26.2%** |
| Gosling Road at US Route 4 NB Ramps | 0 | 3 | 8 | **11** | **26.2%** |
| Pease Boulevard at US Route 4 SB Ramps | 3 | 3 | 1 | **7** | **16.7%** |
| New Hampshire Avenue at International Drive | 3 | 1 | 2 | **6** | **14.3%** |
| Route 33 (Greenland Road) at Graton Road | 1 | 2 | 2 | **5** | **11.9%** |
| Pease Boulevard at International Drive | 0 | 0 | 1 | **1** | **2.4%** |
| Corporate Drive at Grafton Road | 1 | 0 | 0 | **1** | **2.4%** |
| **TOTAL** | **15** | **11** | **16** | **42** | **100%** |

More detailed collision history summary data is provided in Appendix F. The most frequent types of collision were angle and rear-end, accounting for about 45% and 31% of the total collisions within the study area, respectively. The next most frequent collision type was sideswipe – same direction, which made up about 14% of the total collisions. The remaining collisions were fixed object, overturn/ rollover, or unknown, each of which accounting for less than 3% of the total collisions.

About 76% of collisions occurred on weekdays, spread throughout the day, with the remaining 24% occurring on weekends. Eight out of the 42 reported collisions in the study area occurred when the weather was clear, one occurred in snowy conditions, and the weather was unknown for the remaining 33 collisions. Similarly, eight of the 42 reported collisions occurred when the road surface was dry, one with snow on the roadway, and an unknown road surface condition for the remaining 33 collisions.

The collision data indicates no reported fatalities. One reported serious injury was reported for an angle collision at the intersection of New Hampshire Avenue at International Drive. The remaining 41 collisions resulted in minor injuries or property damage only. There were no pedestrian or cyclist collisions reported in the three-year period.

## 2.6 Public Transportation

The Cooperative Alliance for Seacoast Transportation (COAST) provides transit service within the study area. Bus Route 42 is the primary bus route in the study area with stops along Corporate Drive, including at the intersection of Corporate Drive at Redhook Way which is the closest existing stop to the site. Bus Route 42 also has stops along Grafton Road to the Portsmouth Transportation Center/Park & Ride and provides service to downtown Portsmouth. The route operates from 6:43AM to 6:34PM Monday through Friday. Bus Route 40 also operates in the study area with a bus stop at the Portsmouth Transportation Center and provides access to downtown Portsmouth. The route operates from 7:24 AM to 7:46 PM Monday through Friday. Bus Route 42 and 40 map and schedule are included in Appendix K.

# Section 3
# No Build Conditions

The No-Build Condition represents the projection of traffic volumes and operating conditions without the anticipated additional site generated traffic. Consistent with NHDOT guidelines, the study area is analyzed for an Opening Year (2025) and Design Year (2035). This section describes the growth and development considerations included in the 2025 and 2035 No-Build traffic volumes.

## 3.1 Traffic Growth

To develop the traffic volumes for the 2025 and 2035 No-Build Conditions, the 2023 Existing traffic volumes were grown by one percent per year to represent the general growth of traffic on the study area roadways. This growth rate is consistent with the average growth rate in NHDOT Region E - Southeast, the region in which Portsmouth is located. Background NHDOT growth data is included in Appendix B.

NHDOT and the Pease Development Authority (PDA) were contacted about other planned/approved developments in the area that may add new traffic to the study area prior to 2025. The following developments were identified:

- Pease Surface Transportation Master Plan: Traffic volumes for the full occupancy of existing buildings and projects that are planned or under construction are included in the 2025 and 2035 No-Build Condition.

- 100 New Hampshire Avenue: Traffic volumes for the approximately 209,750 square foot advanced manufacturing facility in the Pease Tradeport area are included in the 2025 and 2035 No-Build Conditions.

Traffic volumes for these projects were obtained from record studies and assigned to the study area intersections in the No-Build Conditions. Data for background development projects are included in Appendix D. It is assumed that other smaller developments or small vacancies in existing developments are captured by the background traffic growth rate.

The 2025 and 2035 No-Build traffic volumes for the weekday morning and weekday evening peak hours are shown in Figures 3 and 4, respectively.

## 3.2 Planned Roadway Improvements

Information obtained by NHDOT was used to identify roadway improvement projects in the area that may affect future traffic operations. A traffic signal project is proposed at the intersection of International Drive at Corporate Drive/ Manchester Square as identified in the NHDOT Ten-Year Plan (NHDOT Project No. 42612) and was considered when developing the 2035 No-Build Conditions analysis. The project is partially funded with preliminary design scheduled for 2027 and construction currently scheduled for 2030. The improvement was included in the 2035 No-Build and 2035 Build Conditions analyses.

## 3.3 Capacity and Queue Analyses - No-Build Conditions

Capacity and queue analyses were conducted for the 2025 and 2035 No-Build Conditions traffic volumes for both peak periods using the methodology described in Section 2.4. Tables 4 and 5 in Section 7 summarize the capacity and queue results, respectively. Capacity analysis worksheets with full inputs, settings, and results are provided in Appendix H.

The increase in expected future traffic based on the one percent per year compounded growth rate and the site-specific development added to the future No-Build Conditions result in some degradation of operations when compared to existing conditions. As described in Section 3.2, the proposed traffic signal at the intersection of International Drive at Corporate Drive/ Manchester Square is included in the 2035 No-Build Condition. In the 2025 No-Build Condition, most overall intersections and individual intersection approaches operate a similar LOS to the Existing Condition, which includes adjustment to an assumed pre-pandemic traffic level. The 2035 No-Build Condition includes some additional degradation of LOS based on the addition of ten years of compounded annual growth. The following identifies intersections and approaches which predict a degradation of LOS or increased delay exceeding available storage between the 2022 Existing and 2025 No-Build Condition, and/or between the 2025 and 2035 No-Build Condition:

- **Pease Boulevard at US Route 4 Southbound Ramps:**
  - The intersection continues to operate at overall LOS F during the weekday morning peak hour with failing operations on the southbound right movement. Both 50$^{th}$ and 95$^{th}$ percentile queues also exceed available storage in the 2035 weekday morning peak hour.
  - The westbound left movement degrades to LOS F in the 2035 weekday afternoon peak hour. The southbound left movement degrades to LOS E in the 2035 weekday morning peak hour.
- **Pease Boulevard at US Route 4 Northbound Ramps:**
  - The intersection continues to operate at overall LOS E in the 2025 No-Build Condition but degrades to LOS F in the 2035 No-Build Condition during the weekday morning peak hour.
  - In the 2035 No-build Condition, the eastbound left turn movement degrades to LOS E during the weekday afternoon peak hour.
  - The northbound left movement experiences design queues that exceed available storage in both No-Build years during the weekday morning peak hour.
- **Route 33 (Greenland Road) at Grafton Road:**
  - The intersection continues to operate at LOS F during the weekday morning and weekday afternoon peak hours.
  - The eastbound through movement degrades to LOS E in the 2025 No-Build Condition and to LOS F in the 2035 No-Build Condition during the weekday afternoon peak hour.
  - The southbound left turn movement design queues exceed available storage in 2035 during the weekday afternoon peak hour.

- **Corporate Drive at International Drive:**
  - The intersection continues to operate at overall LOS F in the 2025 No-Build Condition during the weekday morning peak and afternoon peak hours.
  - Overall intersection operations improve to LOS B and LOS C during the weekday morning and weekday afternoon peak hours, respectively, in the 2035 No-Build Condition following the proposed signalization of the intersection.
- **Corporate Drive at Lonza North Driveway:**
  - The Lonza North driveway approach degrades to LOS F in the 2035 No-Build Condition during the weekday afternoon peak hour.
- **New Hampshire Avenue/Corporate Drive at International Drive/Durham Street:**
  - The stop-controlled Durham Street approach degrades to LOS E during the weekday morning peak hour and to LOS F during the weekday afternoon peak hour in the 2035 No-Build Condition.
- **Corporate Drive at Grafton Road:**
  - The eastbound left movement continues to operate at LOS F in the 2025 and 2035 No-Build Condition during both peak periods. 95$^{th}$ percentile queues are estimated to continue to exceed available storage as well in 2025 and 2035.
- **Grafton Road at I-95 Southbound Off-Ramp:**
  - The westbound right turn movement continues to operate at LOS F in both No-Build years during the weekday morning peak hour.

# Section 4
# Proposed Conditions

The proposed 800,000+/- SF industrial facility will include approximately 700 parking spaces located in one proposed garage. The proposed development is expected to be complete and occupied in 2025. The Site Layout Plan is presented in Appendix I.

## 4.1 Site Access

Access to the Site will be provided via one full access, unsignalized driveway on Goose Bay Drive. The proposed driveway is located directly opposite the one-way existing Lonza garage entrance. All employees will utilize this driveway on Goose Bay Drive to access the site. A gated driveway is proposed on Corporate Drive, east of Redhook Way. This driveway will only be utilized for occasional deliveries to Building 3 following completion of the full build-out.

Based on the reconfiguration of Goose Bay Drive as shown in the proposed Site Layout Plan, intersection sight distance was not reviewed. There will be no conflicting through traffic with vehicles exiting the proposed driveway due to the roadway reconfiguration.

## 4.2 Multi-Modal Accommodations

Multi-modal access is provided in the general vicinity of the proposed development. Site improvements include a sidewalk along the eastern side of the Goose Bay Drive and a sidewalk along the southern side of Corporate Drive between the two Goose Bay Drive intersections. Improvements also include a crosswalk across Corporate Drive at the Wentworth Douglass driveway and on Goose Bay Drive at Corporate Drive to provide a continuous sidewalk network on the southern side of Corporate Drive. Additionally, internal sidewalks and crosswalks are proposed on site to accommodate pedestrians. Existing sidewalks adjacent to the site connect to a multi-use path along Grafton Road and Route 33 (Greenland Road). These facilities may encourage cycling and walking to the development.

In addition, the previously mentioned COAST bus stop is located at the intersection of Corporate Drive at Redhook Way with bus connection at the Portsmouth Transportation Center to downtown Portsmouth. The proposed sidewalk infrastructure coupled with the existing infrastructure in place create a robust pedestrian network in the Tradeport Area.

## 4.3 Trip Generation

Site generated traffic volumes were estimated using site-specific data based on existing facility operating characteristics and the proposed development program. Because the existing facility is currently operating on a hybrid schedule, turning movement counts collected in 2018 were used as a basis for the existing trip generation estimate.

The proposed site generated traffic volumes were calculated based on both the number of proposed full-time employees and the proposed building size. The 2018 turning movement counts serve as the basis for each estimate. The existing 1,139 full-time employees and the proposed 1,020 employees serve as a basis for the estimate based on the number of

employees. The existing building size of 898,000 square feet, and the proposed building size of 800,000 square feet serve as the basis for the estimate based on building size. Trip generation is based on the peak hour of the generator (site). Table 3 summarizes the trip generation estimates.

**TABLE 3**

Site-Generated Traffic Summary

| **Existing - 1,139 Employees (Site Peak Hour)** | | | |
|---|---|---|---|
| **Peak Hour Period** | **Enter** | **Exit** | **Total** |
| Weekday Morning | 154 | 76 | 230 |
| Weekday Afternoon | 15 | 160 | 175 |

| **Proposed - Based on Proposed 1,020 FTE Employees** | | | |
|---|---|---|---|
| **Peak Hour Period** | **Enter** | **Exit** | **Total** |
| Weekday Morning | 138 | 68 | 206 |
| Weekday Afternoon | 13 | 144 | 157 |

| **Proposed - Based on Proposed 800,000 SF Building** | | | |
|---|---|---|---|
| **Peak Hour Period** | **Enter** | **Exit** | **Total** |
| Weekday Morning | 137 | 68 | 205 |
| Weekday Afternoon | 13 | 144 | 157 |

Based on employees, the project is projected to generate 206 trips during the weekday morning peak hour (138 entering, 68 exiting) and 157 trips during the weekday afternoon peak hour (13 entering, 144 exiting). Based on building size, the project is expected to generate 205 trips during the weekday morning peak hour (137 entering, 68 exiting) and 157 vehicles (13 entering, 144 exiting) during the weekday afternoon peak hour. It was determined to use the higher number of trips based on proposed employees in order to present a conservative estimate of predicted trips.

As noted previously, Lonza is currently working under a hybrid work policy, currently averaging approximately 50% of employees working in the office on a typical day. However, for the purposes of this TIA, no trip reduction credit was taken for future employees working from home. Therefore, the trip generation estimate including all full-time employees is considered conservative and assumes a return to in-person work for all employees. As noted above, trip generation is based on the peak hour of the generator and applied to the peak hour of the study area network, which also results in a conservative approach.

While the nearby COAST bus stop and sidewalk facilities in the area may provide additional options for employees to travel to the proposed development, no credit was taken for mode share trips.

## 4.4 Arrival and Departure Distribution

The distribution of the proposed site generated traffic entering and exiting the Site was applied to the roadway network based on zip code data for current Lonza employees' place of residence.

Arrival and departure distribution patterns are shown in Figure 5, and are as follows:

- 40% Northwest to/from US Route 4
- 25% South to/from I-95
    - 15% via Route 33
    - 10% via US Route 4
- 10% Northeast to/from I-95 (via Route 33)
- 10% West (Local) to/from Route 33
- 5% East to/from Pease Boulevard/Gosling Road
- 5% East (Local) to/from Route 33
- 5% (Local)to/ from US Route 1 / US Route 1 Bypass (via US Route 4)

Figure 6 shows the proposed site generated traffic distributed to the study area roadways for the weekday morning and afternoon peak hours. Trip distribution based on employee zip code is included in Appendix L.

## 4.5 Goose Bay Drive Realignment

A portion of Goose Bay Drive is proposed to be reconfigured as part of the project. Approximately 1,700 feet of the roadway beginning at the west end of Goose Bay Drive at the intersection with Corporate Drive will be converted to a private driveway for the Lonza site. Employee-only access gates will be installed along the private roadway. The portion of Goose Bay Drive running north to south to the east of the Lonza development will remain a public road, maintaining access to Corporate Center at Pease. A gate is proposed at the southern extent of Goose Bay Drive, approximately 150 feet south of the Corporate Center driveway to restrict through traffic. A cul-de-sac is proposed at the southern extent of Goose Bay Drive to provide vehicles with a means to turn around if necessary. Existing traffic volumes on Goose Bay Drive were reassigned and incorporated into the 2025 and 2035 Build Conditions traffic volumes and analyses. The reassigned Goose Bay Drive traffic volumes are shown in Appendix E.

# Section 5
# Build Conditions

The anticipated site generated traffic volumes associated with the proposed development were added to the 2025 and 2035 No-Build Conditions traffic volumes to develop the 2025 and 2035 Build Conditions traffic volumes, which are presented in Figure 7 and 8, respectively, for the weekday morning and afternoon peaks.

## 5.1 Capacity and Queue Analyses – Build Conditions

Capacity and queue analyses were conducted for the 2025 and 2035 Build Conditions for the peak hours using the methodology described in Section 2.4. Tables 4 and 5 in Section 7 summarize the capacity and queue results, respectively. Capacity analysis worksheets with full inputs, settings, and results are provided in Appendix H.

Many of the study area intersections and individual intersection approaches continue to operate at acceptable LOS D or better during the peak hours in the 2025 and 2035 Build Conditions. Study area intersections that were identified in Section 2.4 and 3.3 to operate at LOS E or LOS F in the No-Build Conditions continue to operate at the same LOS under Build Conditions, except for the following:

- **Pease Boulevard at International Drive:**
    - The intersection continues to operate at overall LOS F with failing operations on the northbound right turn movement during the weekday afternoon peak hour.
    - The westbound left movement degrades to LOS E in the 2035 Build Condition during the weekday morning peak hour.
- **Pease Boulevard at US Route 4 Northbound Ramps:**
    - The eastbound left movement degrades to LOS E in the 2025 Build Condition and to LOS F in the 2035 Build Condition during the weekday afternoon peak hour.
    - 95$^{th}$ percentile queues exceed available storage on the eastbound left and through movements in the 2035 Build Condition during the weekday afternoon peak hour.
- **Corporate Drive at Goose Bay Drive (West):**
    - The Goose Bay Drive northbound approach degrades to LOS F in the 2025 and 2035 Build Condition during the weekday morning peak hour. The northbound approach continues to operate at LOS F in the 2025 and 2035 Build Conditions.
    - 95$^{th}$ percentile queues exceed available storage on the northbound approach in the 2025 and 2035 Build Condition during the weekday afternoon peak hour.

A review of calculated queue lengths in Table 5 reveals that the majority of queues are unchanged between the No-Build and Build Conditions for both 2025 and 2035 or increase by approximately 1-2 car lengths or fewer. However, the following increases in queues were noted:

- The westbound left movement at the intersection of Pease Boulevard at International Drive experiences an increase in predicted 95$^{th}$ percentile queues of two and five car lengths in 2025 and 2035, respectively, during the weekday morning peak hour.
- The northbound right movement at the intersection of Pease Boulevard at International Drive sees an increase in predicted 95$^{th}$ percentile queues of approximately three car lengths in the 2025 and 2035 Build Condition during the afternoon peak hour. This movement does experience failing operations.
- Large increases in queues in 2025 and 2035 are projected on the Goose Bay Drive (West) northbound approach at the intersection with Corporate Drive due to the increase in site traffic exiting the site during the weekday afternoon peak hour.
- Large increases in design queues are estimated on the southbound left movement from International Drive to Corporate Drive during the weekday morning peak period and westbound right movement from Corporate Drive to International Drive in the 2025 Build Condition, however the queueing deficiency is mitigated with the proposed traffic signal in 2035.

# Section 6
# Conclusions & Recommendations

1. Lonza Biologics proposes to construct a 800,000+/- square foot industrial development within three buildings on portions of the vacant lot between Goose Bay Drive and Corporate Drive in the Pease Tradeport area in Portsmouth, NH. The development will provide approximately 700 parking spaces in one proposed parking garage to accommodate employee parking. The first phase of the proposed development is expected to be complete and occupied by 2025.

2. Employee access to the Site will be provided via one full access, unsignalized driveway opposite the existing Lonza parking garage entrance. Access will be controlled with proposed gates on the existing Goose Bay Drive in advance of the proposed site driveway. A proposed driveway on Corporate Drive will be restricted with a gate and be accessed for infrequent deliveries to Building 3 following completion of later project phases.

3. The proposed land use for the project site is industrial, which will support current biotech and pharmaceutical uses for Lonza. Site-specific data including traffic counts, existing and proposed number of employees, and existing and proposed building area were used as a basis for the estimate. The estimate assumed all employees are working on site. This likely represents a conservative estimate as Lonza is currently operating under a hybrid policy, averaging approximately 50% of employees in the facility each day.

4. Based on the trip generation estimate, the project is expected to generate 206 trips during the weekday morning peak hour (138 entering, 68 exiting) and 157 trips during the weekday afternoon peak hour (13 entering, 144 exiting). Trip generation is estimated based on the peak hour of the generator (site) and applied to the peak hour of the study area network, also representing a conservative approach.

5. The project proposes internal and adjacent roadway sidewalk connections, creating and promoting connections to a robust existing sidewalk network along study area roadways.

6. Vehicle collision history, compiled from local police and historic reports, do not indicate a significant or notable pattern of collisions in the study area.

7. Consistent with NHDOT guidelines, existing traffic volumes have been adjusted based on a comparison between 2022, 2023 and 2019 data to represent a pre-pandemic condition. Application of adjustment factors based on ATR data from Pease Boulevard across all turning movements within the study area may artificially inflate turning movements and overstate calculated operational delay and resultant capacity analysis results. Existing traffic volumes adjusted to an assumed pre-pandemic condition predict notable operational delay throughout the study area.

8. The capacity analyses show that the study area intersections will continue to operate at the same LOS under Build Conditions as in No-Build Conditions for both the 2025 opening year and 2035 design year, with the following exceptions:

a. The westbound left and northbound right movements at the intersection of Pease Boulevard at International Drive degrade from LOS D to LOS E in the weekday morning peak hour between the 2035 No-Build and Build Condition.

b. The eastbound left movement at the intersection of Pease Boulevard at US Route 4 Northbound Ramps degrades from LOS D to LOS E in the 2025 Build Condition and from LOS E to LOS F in the 2035 Build Condition during the weekday afternoon peak hour.

c. The Goose Bay Drive northbound approach Corporate Drive at Goose Bay Drive (West) degrades to LOS F in the 2025 and 2035 Build Condition during the weekday morning peak hour.

9. Based on the results of the foregoing analysis, it is the professional opinion of Tighe & Bond that while the adjustment of collected volumes to an assumed pre-pandemic condition and the addition of background growth on a 12-year horizon to the 2035 design year results in undesirable LOS at some area intersections, the addition of site-generated traffic is expected to have a negligible effect on traffic operations within the study area.

# Section 7
# Additional Tables

**TABLE 4**
Intersection Operation Summary - Capacity

| | Lane Use | Weekday Morning Peak Hour | | | | | | | | | | | | | | | | Weekday Afternoon Peak Hour | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2023 Existing | | | 2025 No Build | | | 2025 Build | | | 2035 No Build | | | 2035 Build | | | 2023 Existing | | | 2025 No Build | | | 2025 Build | | | 2035 No Build | | | 2035 Build | | |
| | | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C |
| **Traffic Signal - Pease Boulevard at International Drive** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Overall** | | **C** | **21.9** | **0.83** | **C** | **22.4** | **0.83** | **C** | **25.5** | **0.88** | **C** | **33.4** | **0.98** | **D** | **47.9** | **1.06** | **F** | **144.3** | **1.48** | **F** | **157.7** | **1.55** | **F** | **195.7** | **1.69** | **F** | **233.6** | **1.89** | **F** | **276.0** | **2.04** |
| Pease Boulevard | EBL | D | 39.8 | 0.04 | D | 40.9 | 0.04 | D | 43.5 | 0.04 | D | 44.1 | 0.04 | D | 44.6 | 0.04 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 |
| | EBTR | C | 34.6 | 0.22 | D | 35.9 | 0.26 | D | 39.0 | 0.28 | D | 39.7 | 0.30 | D | 40.2 | 0.31 | C | 23.9 | 0.62 | C | 24.4 | 0.65 | C | 24.4 | 0.65 | C | 26.8 | 0.68 | C | 27.0 | 0.68 |
| | WBL | C | 23.2 | 0.83 | C | 23.7 | 0.83 | C | 26.8 | 0.88 | D | 40.5 | 0.98 | E | 64.6 | 1.06 | C | 23.9 | 0.48 | C | 24.5 | 0.49 | C | 24.6 | 0.50 | C | 26.5 | 0.62 | C | 26.6 | 0.62 |
| | WBTR | B | 10.2 | 0.36 | B | 10.5 | 0.39 | B | 11.0 | 0.39 | B | 12.0 | 0.43 | B | 12.6 | 0.44 | A | 8.6 | 0.11 | A | 8.4 | 0.12 | A | 8.4 | 0.12 | A | 7.8 | 0.12 | A | 7.7 | 0.12 |
| | NBLT | C | 31.2 | 0.05 | C | 32.4 | 0.06 | C | 33.6 | 0.05 | C | 33.4 | 0.06 | C | 33.0 | 0.05 | B | 15.0 | 0.03 | B | 15.8 | 0.03 | B | 15.9 | 0.03 | B | 18.7 | 0.04 | B | 18.9 | 0.04 |
| International Drive | NBR | D | 38.5 | 0.67 | D | 40.5 | 0.69 | D | 45.7 | 0.77 | D | 48.0 | 0.81 | D | 53.4 | 0.87 | F | 245.5 | 1.48 | F | 276.9 | 1.55 | F | 337.5 | 1.69 | F | 432.8 | 1.89 | F | 500.3 | 2.04 |
| | SB | C | 31.2 | 0.04 | C | 32.3 | 0.04 | C | 33.5 | 0.04 | C | 33.3 | 0.04 | C | 32.9 | 0.04 | B | 15.9 | 0.18 | B | 16.7 | 0.19 | B | 16.9 | 0.19 | B | 20.0 | 0.23 | C | 20.2 | 0.23 |
| **Traffic Signal - Pease Boulevard at US Route 4 SB On/Off Ramps** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Overall** | | **F** | **80.7** | **1.36** | **F** | **94.1** | **1.46** | **F** | **111.5** | **1.59** | **F** | **136.4** | **1.76** | **F** | **152.5** | **1.87** | **C** | **33.6** | **0.90** | **C** | **34.3** | **0.92** | **C** | **35.0** | **0.92** | **D** | **39.6** | **1.02** | **D** | **41.5** | **1.02** |
| Pease Boulevard | EBT | C | 24.3 | 0.16 | C | 24.3 | 0.17 | C | 24.4 | 0.19 | C | 24.4 | 0.21 | C | 24.5 | 0.23 | C | 28.6 | 0.62 | C | 29.5 | 0.66 | C | 30.2 | 0.69 | C | 31.3 | 0.73 | C | 32.4 | 0.77 |
| | EBR | C | 23.9 | 0.10 | C | 23.8 | 0.10 | C | 23.9 | 0.12 | C | 23.8 | 0.13 | C | 23.9 | 0.14 | C | 30.6 | 0.61 | C | 31.6 | 0.64 | C | 34.9 | 0.72 | D | 39.7 | 0.79 | D | 48.0 | 0.88 |
| | WBL | C | 26.8 | 0.27 | C | 27.7 | 0.27 | C | 27.5 | 0.27 | C | 28.6 | 0.31 | C | 28.4 | 0.31 | E | 61.0 | 0.90 | E | 62.6 | 0.92 | E | 62.0 | 0.92 | F | 80.3 | 1.02 | F | 81.1 | 1.02 |
| | WBT | B | 17.2 | 0.55 | B | 17.2 | 0.58 | B | 17.7 | 0.60 | B | 18.2 | 0.66 | B | 18.8 | 0.69 | B | 10.2 | 0.23 | B | 10.9 | 0.24 | B | 11.4 | 0.25 | A | 9.8 | 0.25 | A | 9.9 | 0.25 |
| US Route 4 SB On/ Off | SBL | D | 45.7 | 0.86 | D | 48.2 | 0.88 | D | 48.5 | 0.89 | E | 66.0 | 0.99 | E | 66.7 | 0.99 | D | 35.1 | 0.52 | D | 35.2 | 0.52 | D | 35.2 | 0.52 | D | 35.8 | 0.57 | D | 35.7 | 0.57 |
| Ramps | SBR | F | 210.6 | 1.36 | F | 254.2 | 1.46 | F | 308.9 | 1.59 | F | 387.9 | 1.76 | F | 437.3 | 1.87 | C | 30.3 | 0.05 | C | 30.3 | 0.06 | C | 30.3 | 0.06 | C | 30.2 | 0.07 | C | 30.2 | 0.07 |
| **Traffic Signal - Pease Boulevard at US Route 4 NB On/Off Ramps** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Overall** | | **E** | **57.9** | **1.13** | **E** | **61.2** | **1.16** | **E** | **69.0** | **1.22** | **F** | **86.8** | **1.34** | **F** | **95.4** | **1.40** | **C** | **32.8** | **0.86** | **C** | **34.3** | **0.89** | **D** | **36.4** | **0.94** | **D** | **41.1** | **0.96** | **D** | **45.4** | **1.03** |
| Pease Boulevard | EBL | B | 15.7 | 0.13 | B | 15.4 | 0.14 | B | 15.4 | 0.17 | B | 14.8 | 0.18 | B | 14.8 | 0.22 | D | 51.5 | 0.86 | D | 54.6 | 0.89 | E | 61.2 | 0.94 | E | 64.5 | 0.96 | F | 82.5 | 1.03 |
| | EBT | D | 41.5 | 0.72 | D | 41.2 | 0.73 | D | 40.1 | 0.74 | D | 41.9 | 0.81 | D | 41.0 | 0.81 | C | 20.1 | 0.79 | C | 20.9 | 0.83 | C | 21.2 | 0.84 | C | 27.5 | 0.92 | C | 28.5 | 0.93 |
| | WBTR | C | 20.0 | 0.25 | C | 20.1 | 0.27 | C | 20.1 | 0.27 | C | 20.3 | 0.31 | C | 20.3 | 0.31 | C | 31.8 | 0.78 | C | 33.6 | 0.82 | C | 34.8 | 0.83 | D | 43.0 | 0.93 | D | 43.3 | 0.94 |
| US Route 4 NB On/ Off | NBL | F | 111.1 | 1.13 | F | 122.9 | 1.16 | F | 146.0 | 1.22 | F | 199.5 | 1.34 | F | 224.0 | 1.40 | C | 32.5 | 0.29 | C | 32.5 | 0.30 | C | 32.6 | 0.30 | C | 32.7 | 0.32 | C | 32.6 | 0.33 |
| Ramps | NBR | C | 29.9 | 0.17 | C | 30.3 | 0.17 | C | 30.6 | 0.19 | C | 31.7 | 0.26 | C | 32.0 | 0.28 | C | 32.0 | 0.23 | C | 32.0 | 0.24 | C | 32.0 | 0.24 | C | 32.1 | 0.26 | C | 32.0 | 0.26 |
| **Traffic Signal - Greenland Road (Route 33) at Grafton Road** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Overall** | | **F** | **148.3** | **2.36** | **F** | **164.2** | **2.51** | **F** | **170.7** | **2.60** | **F** | **229.6** | **3.00** | **F** | **236.9** | **3.09** | **F** | **153.2** | **2.28** | **F** | **168.7** | **2.32** | **F** | **177.2** | **2.33** | **F** | **225.7** | **2.57** | **F** | **234.3** | **2.58** |
| Greenland Road (State | EBL | F | 648.9 | 2.36 | F | 715.5 | 2.51 | F | 752.7 | 2.60 | F | 933.5 | 3.00 | F | 976.2 | 3.09 | F | 622.7 | 2.28 | F | 643.3 | 2.32 | F | 646.2 | 2.33 | F | 752.3 | 2.57 | F | 755.2 | 2.58 |
| Route 33) | EBT | F | 90.8 | 1.16 | F | 107.1 | 1.20 | F | 108.7 | 1.20 | F | 174.8 | 1.35 | F | 176.7 | 1.36 | D | 54.0 | 1.06 | E | 61.7 | 1.08 | E | 61.7 | 1.08 | F | 107.7 | 1.19 | F | 107.7 | 1.19 |
| | WBT | C | 23.0 | 0.73 | C | 23.4 | 0.75 | C | 23.4 | 0.75 | C | 26.7 | 0.83 | C | 26.7 | 0.83 | F | 142.5 | 1.25 | F | 153.3 | 1.28 | F | 153.3 | 1.28 | F | 212.0 | 1.41 | F | 212.0 | 1.41 |
| | WBR | B | 18.0 | 0.35 | B | 18.5 | 0.39 | B | 18.8 | 0.40 | B | 19.1 | 0.42 | B | 19.4 | 0.44 | B | 15.5 | 0.14 | B | 15.6 | 0.15 | B | 15.6 | 0.15 | B | 15.8 | 0.17 | B | 15.8 | 0.17 |
| Grafton Road | SBL | C | 21.7 | 0.51 | C | 21.9 | 0.54 | C | 21.9 | 0.55 | C | 21.9 | 0.57 | C | 21.9 | 0.57 | C | 26.9 | 0.79 | C | 34.6 | 0.88 | D | 36.6 | 0.89 | D | 49.2 | 0.96 | D | 52.6 | 0.98 |
| | SBR | B | 18.7 | 0.15 | B | 18.5 | 0.16 | B | 18.6 | 0.19 | B | 18.3 | 0.21 | B | 18.7 | 0.27 | F | 282.6 | 1.56 | F | 328.8 | 1.67 | F | 366.1 | 1.75 | F | 419.7 | 1.87 | F | 457.3 | 1.95 |
| **Traffic Signal - Corporate Drive at International Drive** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Overall** | | -- | -- | -- | -- | -- | -- | -- | -- | -- | **B** | **19.6** | **0.92** | **C** | **24.4** | **0.95** | -- | -- | -- | -- | -- | -- | -- | -- | -- | **C** | **24.8** | **0.84** | **C** | **31.9** | **0.93** |
| | EBL | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 33.0 | 0.45 | D | 41.9 | 0.53 | -- | -- | -- | -- | -- | -- | -- | -- | -- | B | 14.9 | 0.31 | B | 14.0 | 0.28 |
| | EBTR | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 31.5 | 0.31 | D | 39.4 | 0.36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | B | 12.8 | 0.02 | B | 12.1 | 0.02 |
| Corporate Drive | WBL | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 30.0 | 0.10 | D | 37.4 | 0.12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | B | 12.8 | 0.02 | B | 12.1 | 0.02 |
| | WBT | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 29.8 | 0.07 | D | 37.1 | 0.08 | -- | -- | -- | -- | -- | -- | -- | -- | -- | B | 13.0 | 0.05 | B | 12.2 | 0.04 |
| | WBR | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 29.8 | 0.08 | D | 37.4 | 0.12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 28.7 | 0.84 | D | 39.5 | 0.93 |
| | NBL | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 30.3 | 0.09 | D | 38.0 | 0.11 | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 21.2 | 0.06 | C | 24.4 | 0.06 |
| | NBTR | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 32.3 | 0.43 | D | 40.7 | 0.52 | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 29.9 | 0.77 | D | 36.0 | 0.82 |
| International Drive | SBL | -- | -- | -- | -- | -- | -- | -- | -- | -- | C | 24.2 | 0.92 | C | 30.1 | 0.95 | -- | -- | -- | -- | -- | -- | -- | -- | -- | B | 19.3 | 0.59 | C | 28.1 | 0.70 |
| | SBT | -- | -- | -- | -- | -- | -- | -- | -- | -- | A | 6.3 | 0.51 | A | 5.3 | 0.48 | -- | -- | -- | -- | -- | -- | -- | -- | -- | B | 14.3 | 0.21 | B | 17.4 | 0.22 |
| | SBR | -- | -- | -- | -- | -- | -- | -- | -- | -- | A | 4.3 | 0.12 | A | 3.6 | 0.12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | B | 13.3 | 0.06 | B | 16.2 | 0.06 |
| **Unsignalized AWSC - Corporate Drive at International Drive** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Overall** | | **F** | **115.4** | **1.45** | **F** | **124.5** | **1.49** | **F** | **197.2** | **1.82** | -- | -- | -- | -- | -- | -- | **F** | **95.7** | **1.35** | **F** | **104.3** | **1.39** | **F** | **164.8** | **1.70** | -- | -- | -- | -- | -- | -- |
| | EBL | B | 14.7 | 0.23 | B | 14.8 | 0.24 | C | 15.6 | 0.25 | -- | -- | -- | -- | -- | -- | C | 20.9 | 0.46 | C | 21.5 | 0.48 | C | 22.4 | 0.50 | -- | -- | -- | -- | -- | -- |
| | EBTR | B | 13.7 | 0.23 | B | 13.9 | 0.24 | B | 14.7 | 0.25 | -- | -- | -- | -- | -- | -- | B | 12.5 | 0.06 | B | 12.6 | 0.06 | B | 13.1 | 0.06 | -- | -- | -- | -- | -- | -- |
| Corporate Drive | WBL | B | 12.9 | 0.05 | B | 12.9 | 0.05 | B | 13.3 | 0.05 | -- | -- | -- | -- | -- | -- | B | 12.0 | 0.03 | B | 12.1 | 0.03 | B | 12.2 | 0.03 | -- | -- | -- | -- | -- | -- |
| | WBT | B | 12.5 | 0.04 | B | 12.6 | 0.05 | B | 12.9 | 0.05 | -- | -- | -- | -- | -- | -- | B | 12.1 | 0.08 | B | 12.2 | 0.08 | B | 12.2 | 0.08 | -- | -- | -- | -- | -- | -- |
| | WBR | B | 13.8 | 0.22 | B | 14.0 | 0.23 | C | 17.1 | 0.39 | -- | -- | -- | -- | -- | -- | F | 204.0 | 1.35 | F | 223.1 | 1.39 | F | 351.9 | 1.70 | -- | -- | -- | -- | -- | -- |
| | NBL | B | 12.2 | 0.03 | B | 12.3 | 0.03 | B | 13.0 | 0.03 | -- | -- | -- | -- | -- | -- | B | 12.7 | 0.05 | B | 12.8 | 0.05 | B | 13.4 | 0.05 | -- | -- | -- | -- | -- | -- |
| | NBT | B | 13.5 | 0.20 | B | 13.6 | 0.20 | B | 14.5 | 0.21 | -- | -- | -- | -- | -- | -- | F | 64.4 | 1.03 | F | 70.5 | 1.06 | F | 74.3 | 1.14 | -- | -- | -- | -- | -- | -- |
| | NBTR | B | 13.9 | 0.27 | B | 14.1 | 0.28 | C | 15.1 | 0.30 | -- | -- | -- | -- | -- | -- | C | 20.2 | 0.54 | C | 20.8 | 0.56 | C | 22.0 | 0.59 | -- | -- | -- | -- | -- | -- |
| International Drive | SBL | F | 240.8 | 1.45 | F | 258.4 | 1.49 | F | 412.7 | 1.82 | -- | -- | -- | -- | -- | -- | C | 15.8 | 0.20 | C | 16.1 | 0.20 | C | 17.3 | 0.24 | -- | -- | -- | -- | -- | -- |
| | SBT | F | 74.5 | 1.04 | F | 83.3 | 1.07 | F | 107.1 | 1.11 | -- | -- | -- | -- | -- | -- | C | 16.3 | 0.27 | C | 16.6 | 0.28 | C | 17.4 | 0.30 | -- | -- | -- | -- | -- | -- |
| | SBR | B | 10.9 | 0.29 | B | 11.0 | 0.29 | B | 11.7 | 0.31 | -- | -- | -- | -- | -- | -- | B | 14.8 | 0.24 | C | 15.1 | 0.25 | C | 15.9 | 0.27 | -- | -- | -- | -- | -- | -- |
| **Unsignalized TWSC - Corporate Drive at Goose Bay Drive (West)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corportate Drive | WB | A | 9.8 | 0.04 | A | 9.9 | 0.04 | B | 11.0 | 0.14 | B | 10.8 | 0.05 | B | 12.3 | 0.17 | A | 7.4 | 0.00 | A | 7.4 | 0.00 | A | 7.4 | 0.01 | A | 7.7 | 0.00 | A | 7.7 | 0.01 |
| Goose Bay Drive (West) | NB | C | 20.3 | 0.11 | C | 20.8 | 0.11 | F | 58.6 | 0.73 | D | 27.4 | 0.16 | F | 139.4 | 1.02 | F | 50.2 | 0.91 | F | 56.2 | 0.94 | F | 347.8 | 1.71 | F | 200.5 | 1.34 | F | 637.8 | 2.35 |
| **Unsignalized TWSC - Corporate Drive at Redhook Way** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corportate Drive | EBL | A | 7.5 | 0.01 | A | 7.5 | 0.01 | A | 7.6 | 0.01 | A | 7.5 | 0.02 | A | 7.6 | 0.02 | A | 8.9 | 0.01 | A | 8.9 | 0.01 | A | 9.0 | 0.01 | A | 9.1 | 0.01 | A | 9.2 | 0.01 |
| Redhook Way | SB | A | 9.2 | 0.01 | A | 9.2 | 0.01 | A | 9.5 | 0.02 | A | 9.3 | 0.02 | A | 9.6 | 0.02 | B | 11.6 | 0.06 | B | 11.7 | 0.06 | B | 11.9 | 0.06 | B | 12.4 | 0.08 | B | 12.6 | 0.08 |

**TABLE 4 (CONTINUED)**
Intersection Operation Summary - Capacity

| | Lane Use | Weekday Morning Peak Hour | | | | | | | | | | | | | | | | Weekday Afternoon Peak Hour | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2023 Existing | | | 2025 No Build | | | 2025 Build | | | 2035 No Build | | | 2035 Build | | | 2023 Existing | | | 2025 No Build | | | 2025 Build | | | 2035 No Build | | | 2035 Build | | |
| | | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C | LOS | Delay | V/C |
| **Unsignalized TWSC - Corporate Drive at Goose Bay Drive (East)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corportate Drive | WB | A | 7.7 | 0.01 | A | 7.7 | 0.01 | A | 7.8 | 0.00 | A | 8.0 | 0.01 | A | 8.1 | 0.00 | A | 7.4 | 0.00 | A | 7.4 | 0.01 | A | 0.0 | 0.00 | A | 7.6 | 0.01 | A | 0.0 | 0.00 |
| Goose Bay Drive (East) | NB | B | 11.2 | 0.08 | B | 11.3 | 0.09 | A | 0.0 | 0.00 | B | 12.5 | 0.10 | A | 0.0 | 0.00 | A | 9.9 | 0.04 | B | 10.0 | 0.05 | B | 11.4 | 0.03 | B | 11.2 | 0.06 | B | 12.9 | 0.04 |
| **Unsignalized TWSC - Goose Bay Drive at Corporate Center Driveway** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corporate Center Driveway | WB | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 8.5 | 0.02 | A | 8.5 | 0.02 | A | 0.0 | 0.00 | A | 8.5 | 0.02 | A | 0.0 | 0.00 |
| Goose Bay Drive (East) | SB | A | 7.3 | 0.01 | A | 7.3 | 0.01 | A | 0.0 | 0.00 | A | 7.3 | 0.01 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 |
| **Unsignalized TWSC - Goose Bay Drive at Lonza South Driveway** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lonza South Driveway | EB | A | 9.6 | 0.02 | A | 9.7 | 0.02 | A | 9.3 | 0.01 | A | 9.7 | 0.02 | A | 9.3 | 0.02 | A | 8.7 | 0.01 | A | 8.7 | 0.01 | A | 8.6 | 0.01 | A | 8.7 | 0.01 | A | 8.6 | 0.01 |
| Goose Bay Drive (West) | NB | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 |
| **Unsignalized TWSC - Goose Bay Drive at Lonza Parking Garage Driveway/ Proposed Site Driveway** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proposed Site Driveway | WB | -- | -- | -- | -- | -- | -- | A | 8.8 | 0.07 | -- | -- | -- | A | 8.8 | 0.07 | -- | -- | -- | -- | -- | -- | B | 13.7 | 0.27 | -- | -- | -- | B | 14.6 | 0.29 |
| Goose Bay Drive | NB | A | 8.1 | 0.01 | A | 8.1 | 0.01 | A | 8.1 | 0.01 | A | 8.2 | 0.01 | A | 8.2 | 0.01 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 |
| | SB | -- | -- | -- | -- | -- | -- | A | 7.5 | 0.10 | -- | -- | -- | A | 7.5 | 0.10 | -- | -- | -- | -- | -- | -- | A | 8.4 | 0.01 | -- | -- | -- | A | 8.6 | 0.01 |
| **Unsignalized TWSC - Corporate Drive at Granite State Driveway** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Granite State Driveway | WB | B | 13.4 | 0.03 | B | 13.6 | 0.03 | B | 13.6 | 0.03 | C | 16.0 | 0.04 | C | 16.0 | 0.04 | C | 15.9 | 0.03 | C | 16.1 | 0.03 | C | 16.1 | 0.03 | C | 19.0 | 0.05 | C | 19.0 | 0.05 |
| International Drive | SB | A | 7.7 | 0.01 | A | 7.7 | 0.01 | A | 7.7 | 0.01 | A | 7.9 | 0.01 | A | 7.9 | 0.01 | A | 9.1 | 0.01 | A | 9.2 | 0.01 | A | 9.2 | 0.01 | A | 9.5 | 0.01 | A | 9.5 | 0.01 |
| **Unsignalized TWSC - Corporate Drive at Lonza North Driveway** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lonza North Driveway | WB | B | 12.7 | 0.07 | B | 12.8 | 0.08 | B | 12.8 | 0.08 | B | 14.8 | 0.10 | B | 14.8 | 0.10 | D | 26.7 | 0.63 | D | 28.6 | 0.66 | D | 28.6 | 0.66 | F | 50.6 | 0.84 | F | 50.6 | 0.84 |
| International Drive | SB | A | 7.6 | 0.02 | A | 7.6 | 0.02 | A | 7.6 | 0.02 | A | 7.8 | 0.02 | A | 7.8 | 0.02 | A | 8.9 | 0.02 | A | 9.0 | 0.02 | A | 9.0 | 0.02 | A | 9.3 | 0.02 | A | 9.3 | 0.02 |
| **Unsignalized TWSC - Corporate Drive at Lonza South Driveway** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lonza South Driveway | WB | A | 9.3 | 0.01 | A | 9.4 | 0.01 | A | 9.4 | 0.01 | A | 9.8 | 0.01 | A | 9.8 | 0.01 | B | 11.6 | 0.03 | B | 11.7 | 0.03 | B | 11.7 | 0.03 | B | 12.4 | 0.04 | B | 12.4 | 0.04 |
| International Drive | SB | A | 7.6 | 0.01 | A | 7.6 | 0.01 | A | 7.6 | 0.01 | A | 7.8 | 0.01 | A | 7.8 | 0.01 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 |
| **Unsignalized TWSC - New Hampshire Avenue/ Corporate Drive at International Drive/ Durham Street** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Durham Street | EB | D | 27.1 | 0.14 | D | 32.5 | 0.16 | D | 32.5 | 0.16 | E | 41.2 | 0.22 | E | 41.2 | 0.22 | D | 28.2 | 0.38 | E | 37.3 | 0.47 | E | 37.3 | 0.47 | F | 54.1 | 0.61 | F | 54.1 | 0.61 |
| International Drive | WB | F | 62.5 | 0.74 | F | 105.3 | 0.92 | F | 105.3 | 0.92 | F | 223.7 | 1.25 | F | 223.7 | 1.25 | F | 323.0 | 1.59 | F | 506.9 | 2.00 | F | 506.9 | 2.00 | F | 820.1 | 2.68 | F | 820.1 | 2.68 |
| Corporate Drive | NB | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 0.0 | 0.00 | A | 8.4 | 0.00 | A | 8.6 | 0.00 | A | 8.6 | 0.00 | A | 8.8 | 0.00 | A | 8.8 | 0.00 |
| New Hampshire Avenue | SB | A | 9.7 | 0.04 | B | 10.1 | 0.04 | B | 10.1 | 0.04 | B | 10.6 | 0.05 | B | 10.6 | 0.05 | A | 8.2 | 0.00 | A | 8.3 | 0.00 | A | 8.3 | 0.00 | A | 8.4 | 0.00 | A | 8.4 | 0.00 |
| **Unsignalized TWSC - Corporate Drive at Grafton Road** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Grafton Road | EBL | F | 107.9 | 1.16 | F | 158.2 | 1.29 | F | 216.0 | 1.42 | F | 236.0 | 1.47 | F | 304.4 | 1.62 | F | 150.6 | 1.19 | F | 242.2 | 1.42 | F | 461.3 | 1.90 | F | 473.3 | 1.94 | F | 815.9 | 2.68 |
| | EBR | B | 10.7 | 0.37 | B | 10.7 | 0.38 | B | 11.2 | 0.42 | B | 11.2 | 0.42 | B | 11.7 | 0.47 | A | 8.7 | 0.08 | A | 8.7 | 0.08 | A | 8.8 | 0.09 | A | 8.8 | 0.09 | A | 8.8 | 0.10 |
| Corporate Drive | NBL | A | 8.0 | 0.05 | A | 8.1 | 0.06 | A | 8.2 | 0.08 | A | 8.2 | 0.06 | A | 8.3 | 0.09 | B | 12.2 | 0.34 | B | 13.2 | 0.38 | B | 14.3 | 0.46 | C | 15.1 | 0.45 | C | 16.9 | 0.54 |
| **Unsignalized - Grafton Road at I-95 SB Off Ramp** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I-95 SB Off-ramp | WB | F | 592.5 | 2.13 | F | 859.4 | 2.72 | F | 974.6 | 2.96 | F | 1366.0 | 3.81 | F | 1552 | 4.10 | B | 13.1 | 0.15 | B | 13.7 | 0.18 | B | 13.8 | 0.18 | B | 14.8 | 0.21 | B | 14.9 | 0.21 |

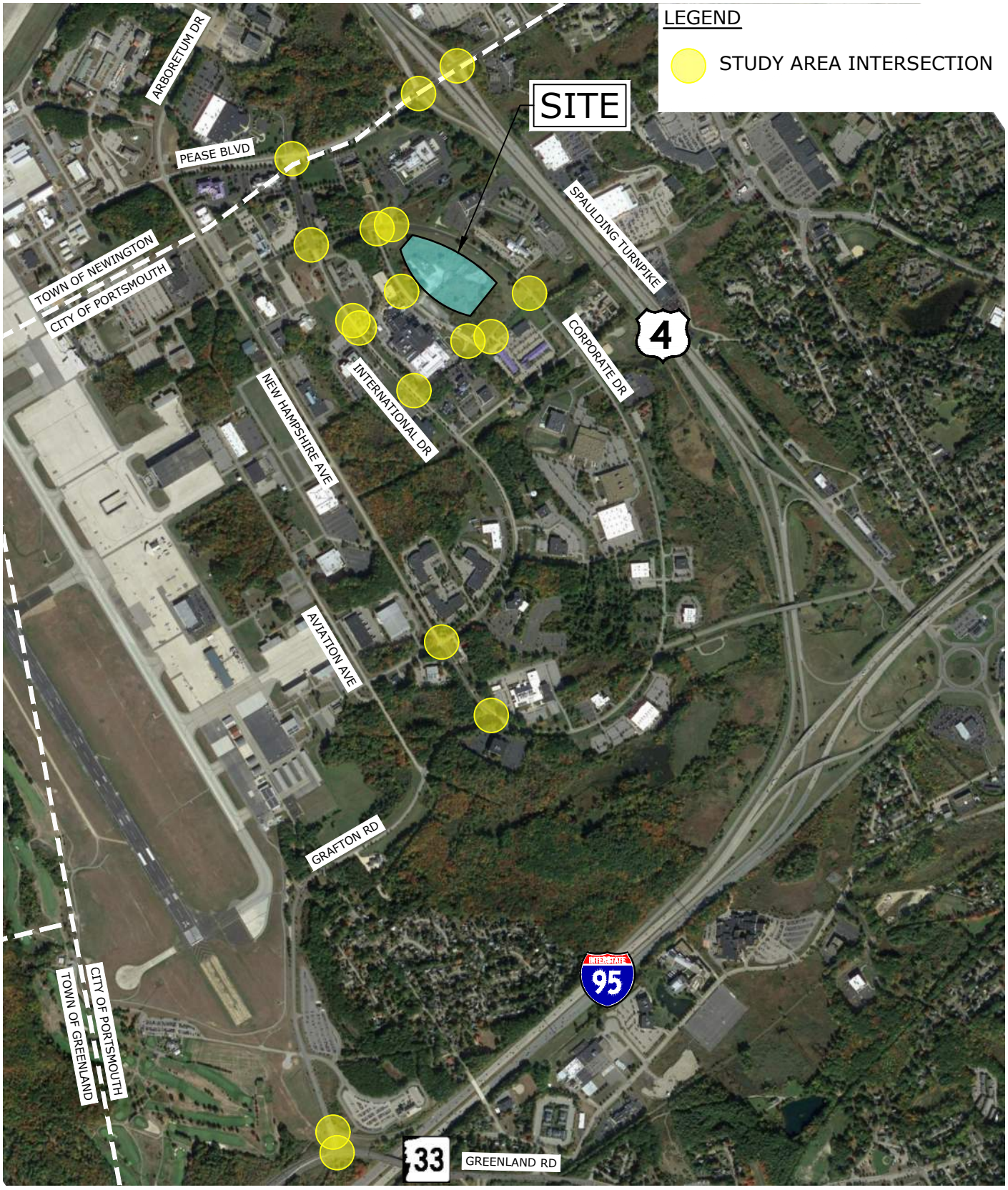
**TABLE 5**
Intersection Operation Summary - Queues (In Feet)

| | Lane Use | Available Storage | Weekday Morning Peak Hour | | | | | | | | | | Weekday Afternoon Peak Hour | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2023 Existing | | 2025 No Build | | 2025 Build | | 2035 No Build | | 2035 Build | | 2023 Existing | | 2025 No Build | | 2025 Build | | 2035 No Build | | 2035 Build | |
| | | | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th |
| **Traffic Signal - Pease Boulevard at International Drive** | | | | | | | | | | | | | | | | | | | | | | |
| Pease Boulevard | EBL | 290 | 2 | 9 | 2 | 9 | 2 | 9 | 2 | 9 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | EBT | >1000 | 31 | 56 | 37 | 64 | 38 | 64 | 43 | 69 | 43 | 69 | 87 | 135 | 101 | 153 | 102 | 154 | 123 | 188 | 124 | 190 |
| | WBL | 690 | 304 | 391 | 320 | 409 | 397 | 464 | 488 | 549 | 576 | 672 | 53 | 93 | 56 | 98 | 58 | 101 | 96 | 155 | 98 | 158 |
| | WBT | >1000 | 70 | 271 | 80 | 303 | 90 | 303 | 107 | 343 | 107 | 343 | 17 | 31 | 20 | 35 | 20 | 35 | 22 | 36 | 22 | 36 |
| | NBT | 840 | 7 | 25 | 7 | 25 | 7 | 25 | 9 | 27 | 9 | 27 | 4 | 18 | 4 | 19 | 4 | 18 | 5 | 22 | 5 | 22 |
| International Drive | NBR | 530 | 92 | 143 | 98 | 147 | 118 | 173 | 134 | 192 | 155 | 242 | 404 | 623 | 433 | 664 | 489 | 732 | 578 | 876 | 641 | 955 |
| | SBT | >1000 | 6 | 16 | 6 | 17 | 7 | 17 | 7 | 18 | 7 | 18 | 24 | 46 | 26 | 49 | 26 | 49 | 33 | 62 | 33 | 62 |
| **Traffic Signal - Pease Boulevard at US Route 4 SB On/Off Ramps** | | | | | | | | | | | | | | | | | | | | | | |
| Pease Boulevard | EBT | >1000 | 41 | 52 | 45 | 55 | 50 | 61 | 56 | 67 | 61 | 72 | 204 | 225 | 220 | 242 | 236 | 258 | 252 | 274 | 269 | 291 |
| | EBR | 530 | 0 | 29 | 0 | 29 | 0 | 30 | 0 | 31 | 0 | 32 | 63 | 173 | 74 | 190 | 113 | 243 | 154 | 308 | 203 | 420 |
| | WBL | 370 | 63 | 67 | 65 | 67 | 65 | 65 | 75 | 70 | 75 | 67 | 261 | 356 | 267 | 361 | 267 | 352 | 303 | 359 | 303 | 358 |
| | WBT | 370 | 332 | 307 | 341 | 310 | 357 | 314 | 391 | 324 | 407 | 328 | 51 | 94 | 57 | 95 | 58 | 95 | 77 | 94 | 78 | 95 |
| US Route 4 SB On/ Off Ramps | SBL | 520 | 242 | 248 | 248 | 253 | 248 | 253 | 282 | 284 | 282 | 284 | 124 | 172 | 126 | 175 | 126 | 175 | 142 | 194 | 142 | 194 |
| | SBR | 520 | 478 | 455 | 529 | 501 | 597 | 560 | 685 | 638 | 744 | 688 | 0 | 27 | 0 | 28 | 0 | 28 | 0 | 29 | 0 | 30 |
| **Traffic Signal - Pease Boulevard at US Route 4 NB On/Off Ramps** | | | | | | | | | | | | | | | | | | | | | | |
| Pease Boulevard | EBL | 375 | 28 | 32 | 29 | 34 | 36 | 42 | 33 | 40 | 39 | 47 | 243 | 293 | 258 | 314 | 282 | 351 | 290 | 365 | 326 | 414 |
| | EBT | 375 | 285 | 336 | 294 | 341 | 295 | 341 | 334 | 355 | 334 | 357 | 111 | 127 | 115 | 131 | 112 | 141 | 126 | 190 | 124 | 443 |
| | WBT | 460 | 70 | 106 | 77 | 116 | 79 | 117 | 93 | 135 | 95 | 138 | 294 | 355 | 308 | 371 | 308 | 371 | 358 | 464 | 359 | 464 |
| US Route 4 NB On/ Off Ramps | NBL | 360 | 387 | 404 | 401 | 416 | 432 | 444 | 499 | 505 | 530 | 532 | 65 | 99 | 66 | 101 | 67 | 102 | 74 | 111 | 75 | 111 |
| | NBR | 360 | 0 | 18 | 0 | 17 | 5 | 23 | 18 | 36 | 23 | 42 | 0 | 47 | 0 | 47 | 0 | 47 | 0 | 49 | 0 | 49 |
| **Traffic Signal - Greenland Road (Route 33) at Grafton Road** | | | | | | | | | | | | | | | | | | | | | | |
| Greenland Road (State Route 33) | EBL | 400 | 422 | 632 | 440 | 643 | 454 | 656 | 516 | 705 | 529 | 717 | 205 | 334 | 211 | 341 | 211 | 341 | 239 | 373 | 240 | 374 |
| | EBT | >1000 | 526 | 671 | 552 | 689 | 553 | 689 | 668 | 785 | 670 | 785 | 391 | 497 | 405 | 512 | 405 | 512 | 484 | 591 | 484 | 591 |
| | WBT | >1000 | 123 | 179 | 126 | 183 | 126 | 183 | 144 | 235 | 144 | 235 | 327 | 443 | 337 | 455 | 337 | 455 | 396 | 516 | 396 | 516 |
| | WBR | 275 | 0 | 62 | 0 | 64 | 0 | 65 | 0 | 67 | 0 | 69 | 0 | 40 | 0 | 42 | 0 | 42 | 0 | 44 | 0 | 44 |
| Grafton Road | SBL | 300 | 61 | 83 | 67 | 90 | 68 | 92 | 72 | 99 | 73 | 100 | 138 | 256 | 159 | 296 | 163 | 303 | 180 | 336 | 184 | 342 |
| | SBR | 1000 | 0 | 24 | 0 | 25 | 1 | 26 | 4 | 29 | 10 | 36 | 397 | 572 | 438 | 614 | 470 | 648 | 517 | 696 | 549 | 730 |
| **Traffic Signal - Corporate Drive at International Drive** | | | | | | | | | | | | | | | | | | | | | | |
| Corporate Drive | EBL | 300 | -- | -- | -- | -- | -- | -- | 47 | 97 | 60 | 97 | -- | -- | -- | -- | -- | -- | 59 | 94 | 59 | 94 |
| | EBTR | >1000 | -- | -- | -- | -- | -- | -- | 36 | 82 | 47 | 82 | -- | -- | -- | -- | -- | -- | 2 | 13 | 2 | 13 |
| | WBL | 175 | -- | -- | -- | -- | -- | -- | 9 | 30 | 12 | 30 | -- | -- | -- | -- | -- | -- | 4 | 11 | 4 | 11 |
| | WBT | 525 | -- | -- | -- | -- | -- | -- | 8 | 28 | 11 | 28 | -- | -- | -- | -- | -- | -- | 10 | 22 | 10 | 22 |
| | WBR | 675 | -- | -- | -- | -- | -- | -- | 0 | 32 | 0 | 36 | -- | -- | -- | -- | -- | -- | 211 | 251 | 308 | 349 |
| | NBL | 175 | -- | -- | -- | -- | -- | -- | 5 | 22 | 6 | 22 | -- | -- | -- | -- | -- | -- | 7 | 26 | 8 | 26 |
| | NBTR | >1000 | -- | -- | -- | -- | -- | -- | 54 | 106 | 70 | 106 | -- | -- | -- | -- | -- | -- | 171 | 275 | 204 | 275 |
| International Drive | SBL | 850 | -- | -- | -- | -- | -- | -- | 265 | 363 | 434 | 538 | -- | -- | -- | -- | -- | -- | 47 | 110 | 64 | 132 |
| | SBT | 850 | -- | -- | -- | -- | -- | -- | 128 | 186 | 134 | 186 | -- | -- | -- | -- | -- | -- | 49 | 107 | 61 | 107 |
| | SBR | 250 | -- | -- | -- | -- | -- | -- | 0 | 9 | 0 | 9 | -- | -- | -- | -- | -- | -- | 0 | 31 | 0 | 31 |
| **Unsignalized AWSC - Corporate Drive at International Drive** | | | | | | | | | | | | | | | | | | | | | | |
| Corporate Drive | EBL | 300 | -- | 23 | -- | 23 | -- | -- | -- | -- | -- | -- | -- | 55 | -- | 57 | -- | 57 | -- | -- | -- | -- |
| | EBR | >1000 | -- | 20 | -- | 23 | -- | 23 | -- | -- | -- | -- | -- | 5 | -- | 5 | -- | 5 | -- | -- | -- | -- |
| | WBL | 175 | -- | 3 | -- | 3 | -- | 3 | -- | -- | -- | -- | -- | 3 | -- | 3 | -- | 3 | -- | -- | -- | -- |
| | WBT | 525 | -- | 3 | -- | 3 | -- | 3 | -- | -- | -- | -- | -- | 5 | -- | 5 | -- | 5 | -- | -- | -- | -- |
| | WBR | 675 | -- | 20 | -- | 20 | -- | 40 | -- | -- | -- | -- | -- | 735 | -- | 785 | -- | 1165 | -- | -- | -- | -- |
| | NBL | 175 | -- | 3 | -- | 3 | -- | 3 | -- | -- | -- | -- | -- | 3 | -- | 3 | -- | 3 | -- | -- | -- | -- |
| | NBT | >1000 | -- | 18 | -- | 18 | -- | 18 | -- | -- | -- | -- | -- | 270 | -- | 285 | -- | 280 | -- | -- | -- | -- |
| | NBTR | 175 | -- | 25 | -- | 25 | -- | 28 | -- | -- | -- | -- | -- | 65 | -- | 68 | -- | 70 | -- | -- | -- | -- |
| International Drive | SBL | 850 | -- | 928 | -- | 982 | -- | 1443 | -- | -- | -- | -- | -- | 15 | -- | 15 | -- | 20 | -- | -- | -- | -- |
| | SBT | 850 | -- | 400 | -- | 433 | -- | 497 | -- | -- | -- | -- | -- | 23 | -- | 25 | -- | 25 | -- | -- | -- | -- |
| | SBR | 250 | -- | 30 | -- | 30 | -- | 33 | -- | -- | -- | -- | -- | 20 | -- | 23 | -- | 20 | -- | -- | -- | -- |

**TABLE 5 (CONTINUED)**
Intersection Operation Summary - Queues (In Feet)

| | Lane Use | Available Storage | Weekday Morning Peak Hour | | | | | | | | | | Weekday Afternoon Peak Hour | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2023 Existing | | 2025 No Build | | 2025 Build | | 2035 No Build | | 2035 Build | | 2023 Existing | | 2025 No Build | | 2025 Build | | 2035 No Build | | 2035 Build | |
| | | | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th | 50th | 95th |
| **Unsignalized TWSC - Corporate Drive at Goose Bay Drive (West)** | | | | | | | | | | | | | | | | | | | | | | |
| Corportate Drive | WB | 120 | -- | 3 | -- | 3 | -- | 13 | -- | 5 | -- | 15 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| Goose Bay Drive (West) | NB | 685 | -- | 8 | -- | 10 | -- | 118 | -- | 15 | -- | 195 | -- | 260 | -- | 283 | -- | 1258 | -- | 598 | -- | 1738 |
| **Unsignalized TWSC - Corporate Drive at Redhook Way** | | | | | | | | | | | | | | | | | | | | | | |
| Corportate Drive | EB | 120 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| Redhook Way | SB | 320 | -- | 0 | -- | 0 | -- | 0 | -- | 3 | -- | 3 | -- | 5 | -- | 5 | -- | 5 | -- | 8 | -- | 8 |
| **Unsignalized TWSC - Corporate Drive at Goose Bay Drive (East)** | | | | | | | | | | | | | | | | | | | | | | |
| Corportate Drive | WB | 360 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| Goose Bay Drive (East) | NB | 580 | -- | 5 | -- | 8 | -- | 0 | -- | 8 | -- | 0 | -- | 3 | -- | 3 | -- | 3 | -- | 5 | -- | 3 |
| **Unsignalized TWSC - Goose Bay Drive at Corporate Center Driveway** | | | | | | | | | | | | | | | | | | | | | | |
| Corporate Center Drivewa | WB | 100 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 3 | -- | 0 | -- | 3 | -- | 0 |
| Goose Bay Drive (East) | SB | 580 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Unsignalized TWSC - Goose Bay Drive at Lonza South Driveway** | | | | | | | | | | | | | | | | | | | | | | |
| Lonza South Driveway | EB | 200 | -- | 0 | -- | 0 | -- | 0 | -- | 3 | -- | 3 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| Goose Bay Drive (West) | NB | 250 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Unsignalized TWSC - Goose Bay Drive at Lonza Parking Garage Driveway/ Proposed Site Driveway** | | | | | | | | | | | | | | | | | | | | | | |
| Proposed Site Driveway | WB | 300 | -- | -- | -- | -- | -- | 5 | -- | -- | -- | 5 | -- | -- | -- | -- | -- | 28 | -- | -- | -- | 30 |
| Goose Bay Drive | NB | 200 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | SB | 675 | -- | 0 | -- | -- | -- | 8 | -- | 0 | -- | 8 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Unsignalized TWSC - Corporate Drive at Granite State Driveway** | | | | | | | | | | | | | | | | | | | | | | |
| Granite State Driveway | WB | 340 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 |
| International Drive | SB | 470 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Unsignalized TWSC - Corporate Drive at Lonza North Driveway** | | | | | | | | | | | | | | | | | | | | | | |
| Lonza North Driveway | WB | 200 | -- | 5 | -- | 5 | -- | 5 | -- | 8 | -- | 8 | -- | 105 | -- | 115 | -- | 115 | -- | 193 | -- | 193 |
| Corporate Drive | SB | 85 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 |
| **Unsignalized TWSC - Corporate Drive at Lonza South Driveway** | | | | | | | | | | | | | | | | | | | | | | |
| Lonza South Driveway | WB | 100 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 |
| International Drive | SB | 400 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Unsignalized TWSC - New Hampshire Avenue/ Corporate Drive at International Drive/ Durham Street** | | | | | | | | | | | | | | | | | | | | | | |
| Durham Street | EB | 860 | -- | 13 | -- | 15 | -- | 15 | -- | 20 | -- | 20 | -- | 43 | -- | 55 | -- | 55 | -- | 83 | -- | 83 |
| International Drive | WB | >1000 | -- | 123 | -- | 168 | -- | 168 | -- | 255 | -- | 255 | -- | 585 | -- | 718 | -- | 718 | -- | 932 | -- | 932 |
| Corporate Drive | NB | 920 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| New Hampshire Avenue | SB | >1000 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 3 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Unsignalized TWSC - Corporate Drive at Grafton Road** | | | | | | | | | | | | | | | | | | | | | | |
| Grafton Road | EBL | 220 | -- | 668 | -- | 898 | -- | 1070 | -- | 1223 | -- | 1403 | -- | 393 | -- | 538 | -- | 715 | -- | 785 | -- | 955 |
| | EBR | 220 | -- | 43 | -- | 45 | -- | 53 | -- | 53 | -- | 63 | -- | 8 | -- | 8 | -- | 8 | -- | 8 | -- | 8 |
| Corporate Drive | NBL | >1000 | -- | 5 | -- | 5 | -- | 8 | -- | 5 | -- | 8 | -- | 38 | -- | 45 | -- | 60 | -- | 60 | -- | 83 |
| **Unsignalized TWSC - Grafton Road at I-95 SB Off Ramp** | | | | | | | | | | | | | | | | | | | | | | |
| I-95 SB Off Ramp | WB | >1000 | -- | 545 | -- | 685 | -- | 710 | -- | 838 | -- | 853 | -- | 13 | -- | 18 | -- | 18 | -- | 20 | -- | 20 |

# Section 8
# Figures




LONZA BIOLOGICS INDUSTRIAL DEVELOPMENT

PORTSMOUTH, NH

# SITE LOCATION MAP

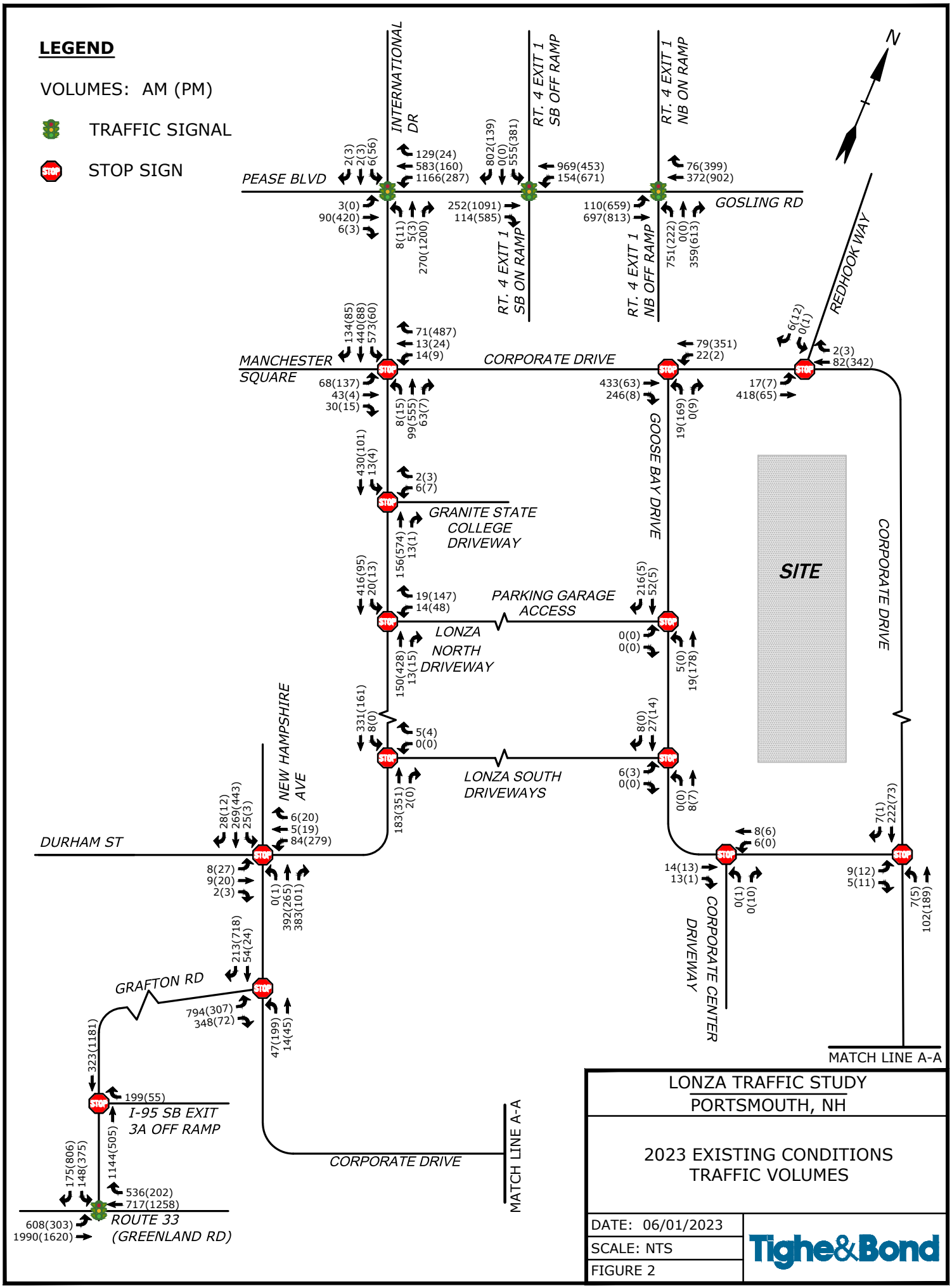
NORTH

NO SCALE

FIGURE 1

Tighe&Bond

May 19, 2023-9:48am Plotted By: MStoutz
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Site Location Map.dwg



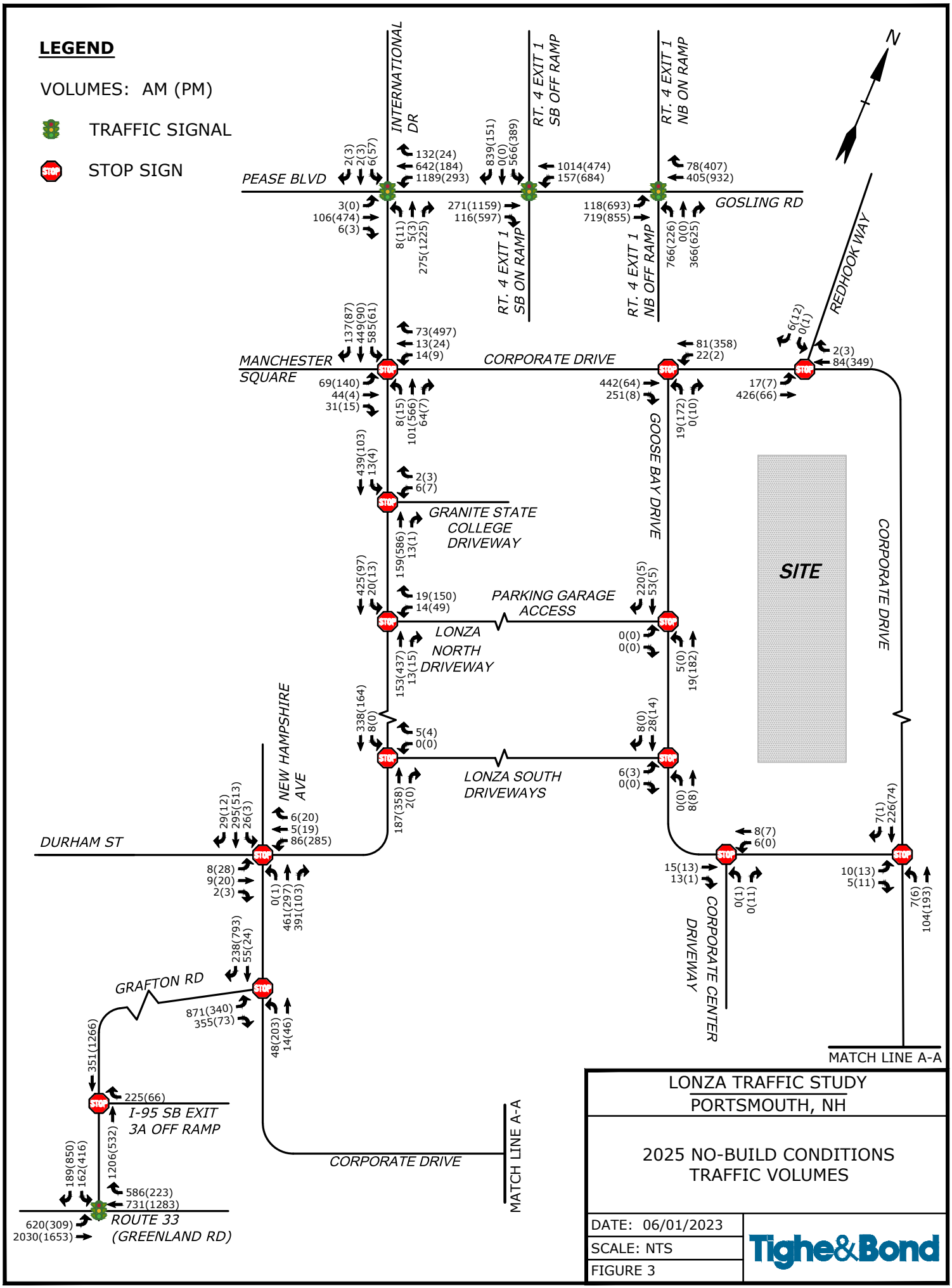

LONZA TRAFFIC STUDY
PORTSMOUTH, NH

2023 EXISTING CONDITIONS
TRAFFIC VOLUMES

DATE: 06/01/2023
SCALE: NTS
FIGURE 2

Tighe&Bond

Jun 01, 2023-10:33am Plotted By: RCase
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg



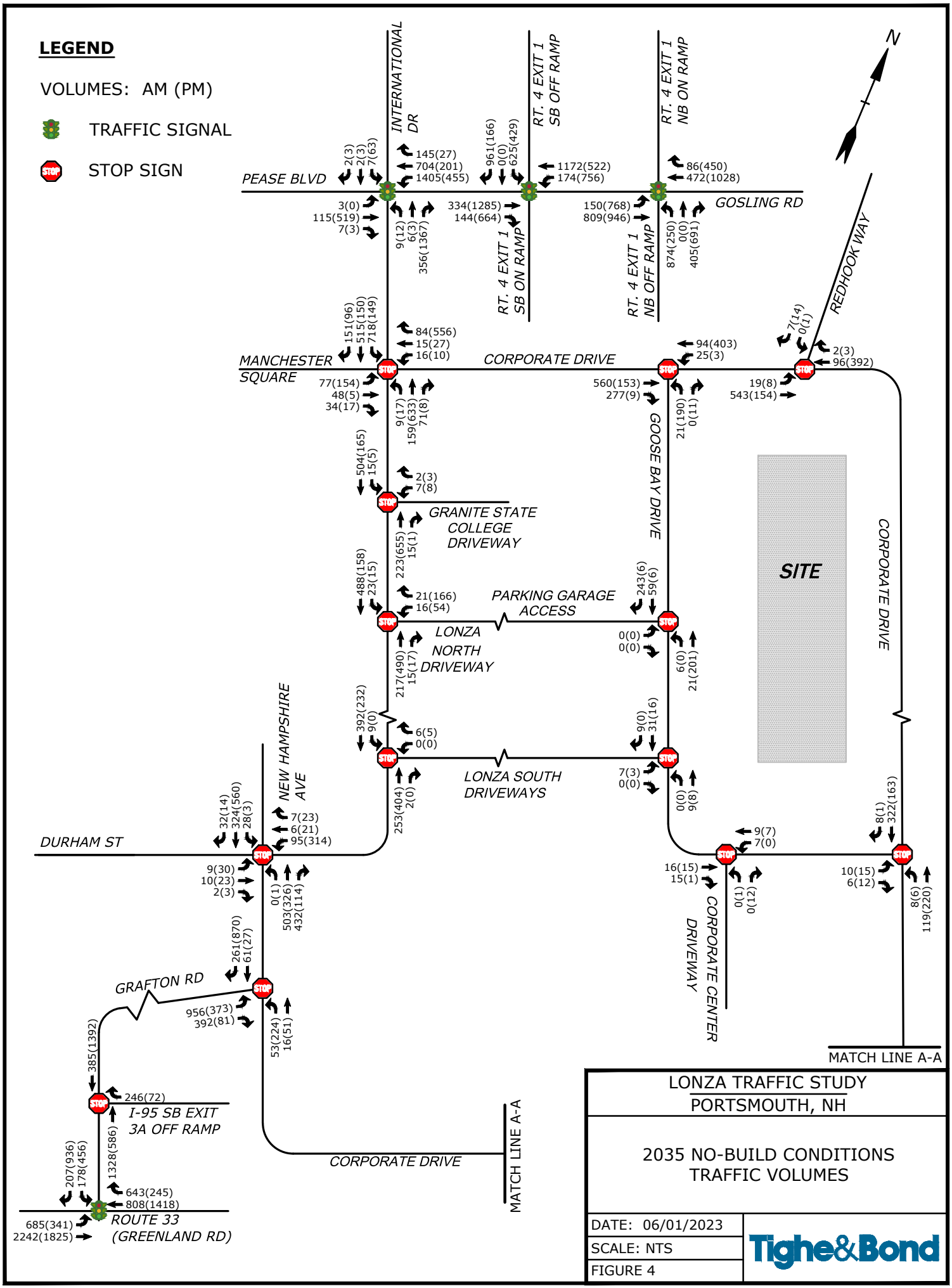

LONZA TRAFFIC STUDY
PORTSMOUTH, NH

2025 NO-BUILD CONDITIONS
TRAFFIC VOLUMES

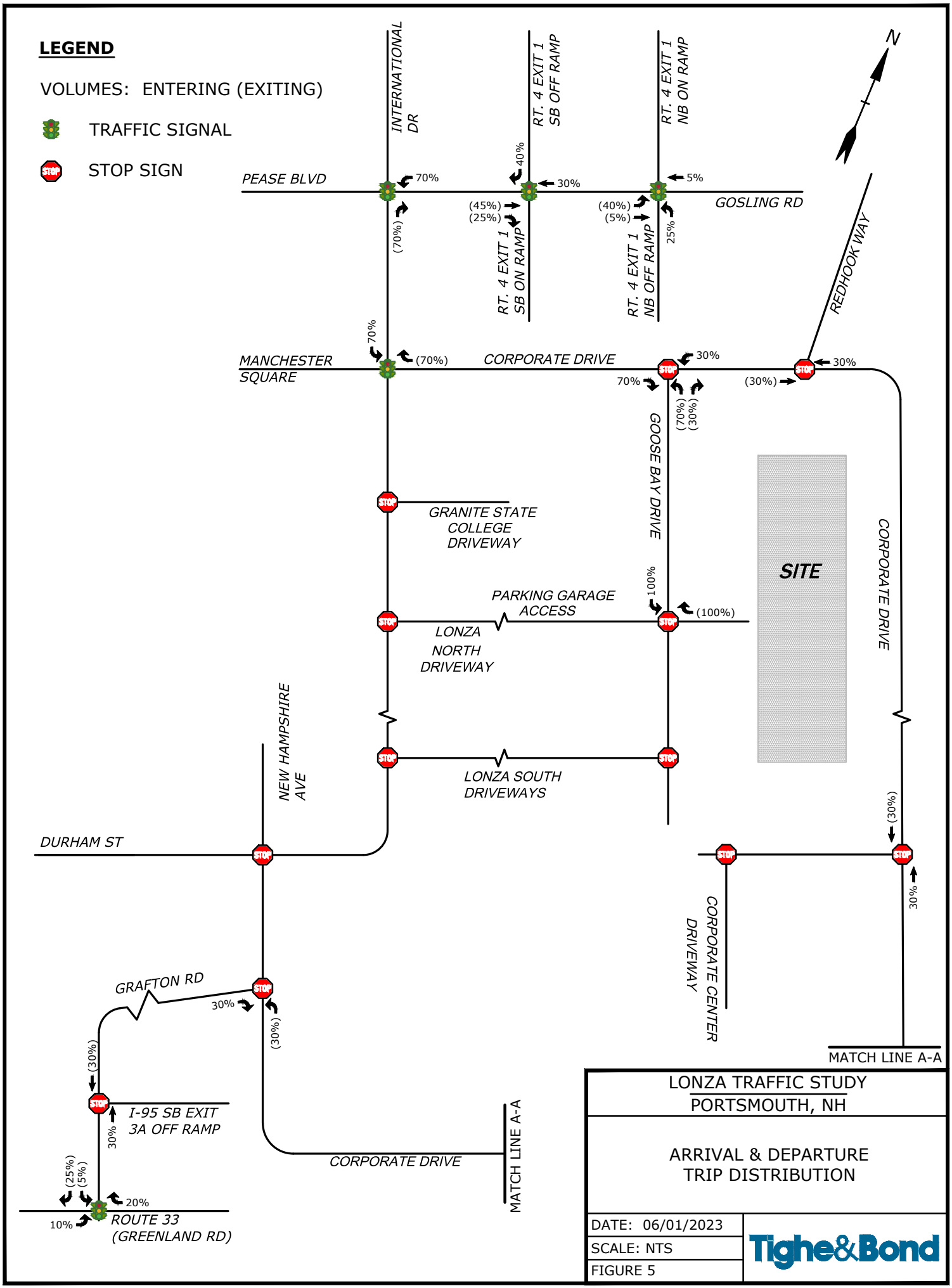
DATE: 06/01/2023
SCALE: NTS
FIGURE 3

Tighe&Bond

Jun 01, 2023-10:34am Plotted By: RCase
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg




Jun 01, 2023-10:34am Plotted By: RCase
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg



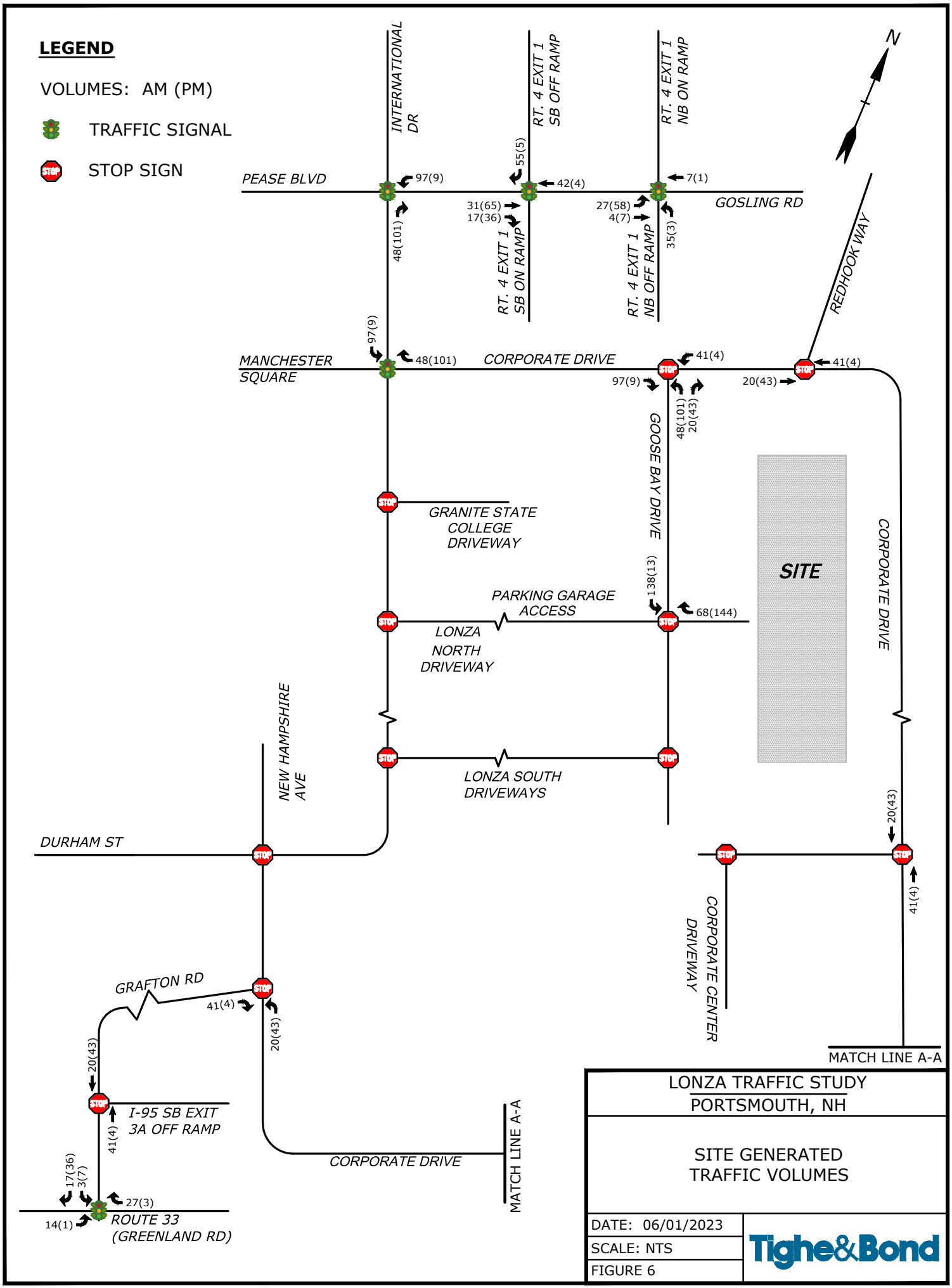

LONZA TRAFFIC STUDY
PORTSMOUTH, NH

ARRIVAL & DEPARTURE TRIP DISTRIBUTION

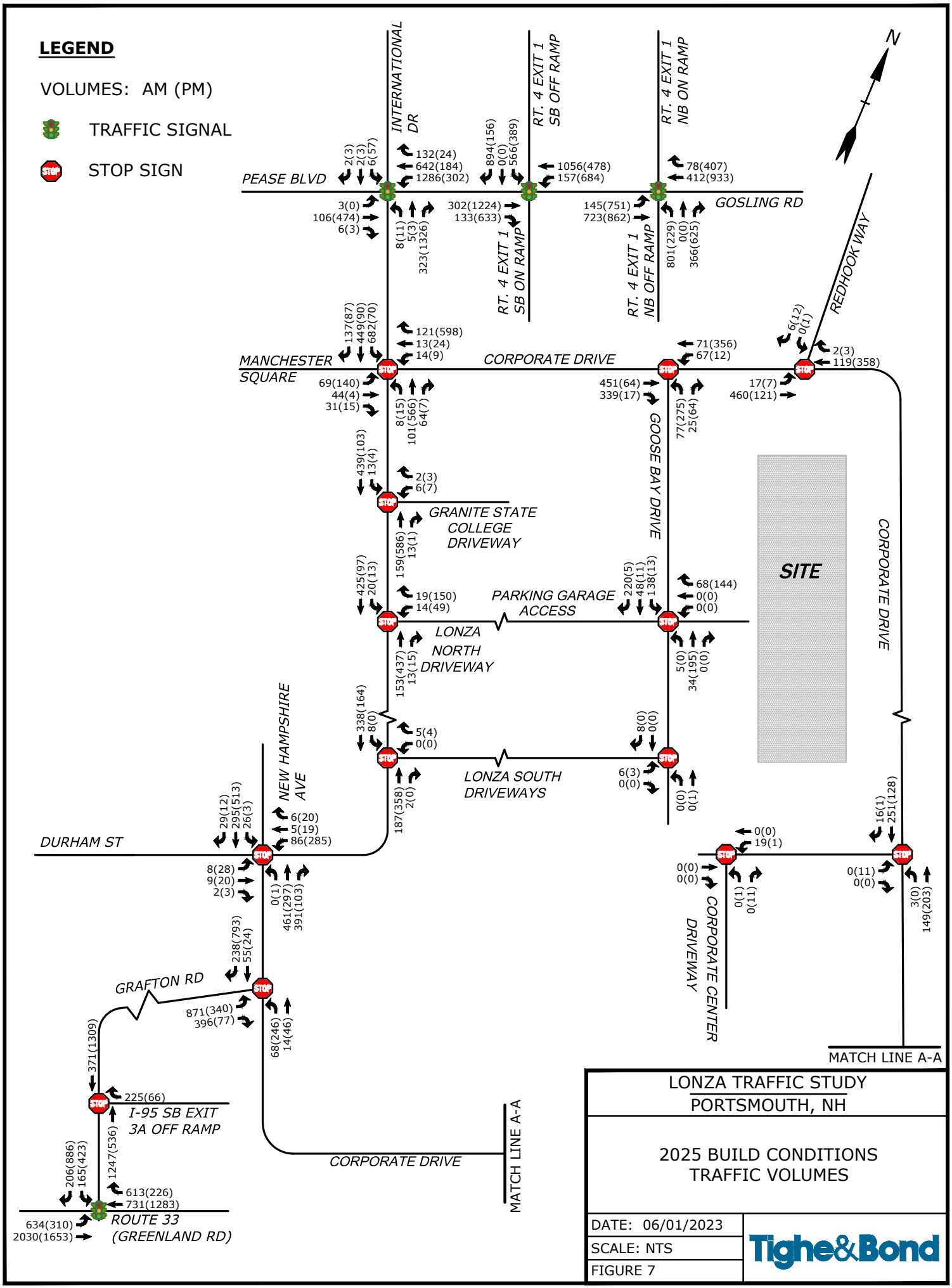
DATE: 06/01/2023
SCALE: NTS
FIGURE 5

Tighe&Bond

Jun 01, 2023-10:34am Plotted By: RCase
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg




Jun 01, 2023-10:34am Plotted By: RCase
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg



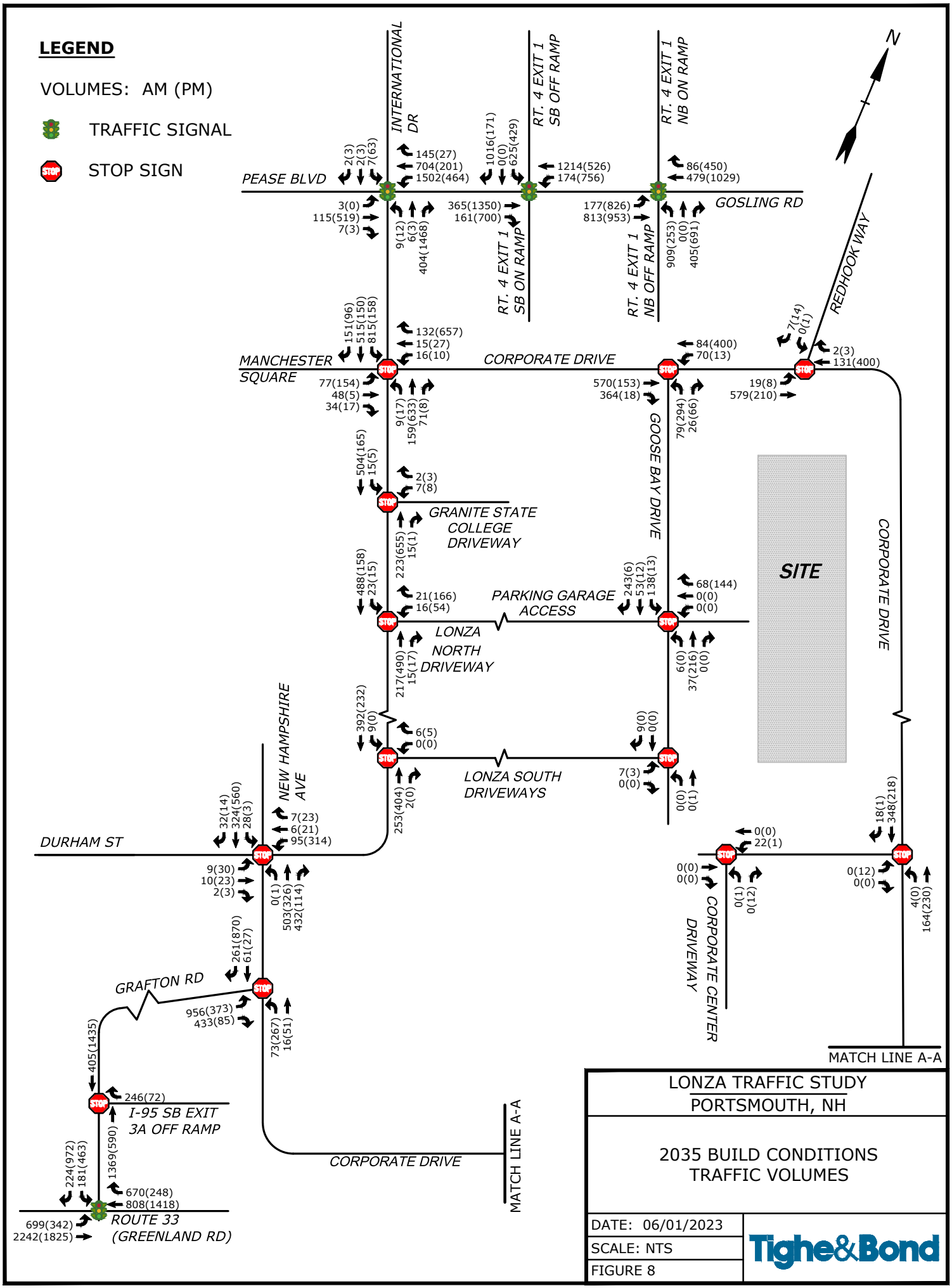

LONZA TRAFFIC STUDY
PORTSMOUTH, NH

2025 BUILD CONDITIONS
TRAFFIC VOLUMES

DATE: 06/01/2023
SCALE: NTS
FIGURE 7

Tighe&Bond

Jun 01, 2023-10:34am Plotted By: RCase
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg




Jun 01, 2023-10:34am Plotted By: RCase
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg

# APPENDIX A

Traffic Count Data

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 1 |
| Location: | Portsmouth, NH |
| Street 1: | Pease Blvd |
| Street 2: | International Drive |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 117 | 54 | 7 |
| 7:15 AM | 0 | 0 | 1 | 29 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 1 | 1 | 150 | 76 | 8 |
| 7:30 AM | 0 | 2 | 0 | 34 | 0 | 1 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 170 | 80 | 16 |
| 7:45 AM | 0 | 1 | 0 | 40 | 0 | 0 | 1 | 0 | 0 | 1 | 14 | 0 | 0 | 235 | 110 | 14 |
| 8:00 AM | 0 | 2 | 1 | 35 | 0 | 1 | 0 | 1 | 0 | 1 | 15 | 1 | 0 | 167 | 90 | 26 |
| 8:15 AM | 0 | 0 | 2 | 44 | 0 | 1 | 0 | 0 | 0 | 0 | 14 | 2 | 0 | 168 | 90 | 26 |
| 8:30 AM | 0 | 0 | 1 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 1 | 0 | 124 | 73 | 12 |
| 8:45 AM | 0 | 1 | 0 | 55 | 0 | 3 | 0 | 1 | 0 | 3 | 14 | 0 | 0 | 114 | 83 | 9 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 4 | 0 | 246 | 0 | 9 | 0 | 0 | 0 | 0 | 90 | 0 | 0 | 49 | 32 | 2 |
| 4:15 PM | 0 | 0 | 0 | 227 | 0 | 9 | 0 | 0 | 0 | 0 | 76 | 1 | 0 | 56 | 32 | 2 |
| 4:30 PM | 0 | 2 | 2 | 242 | 0 | 14 | 2 | 1 | 0 | 0 | 82 | 1 | 0 | 56 | 28 | 4 |
| 4:45 PM | 0 | 2 | 0 | 180 | 0 | 10 | 0 | 1 | 0 | 0 | 65 | 0 | 0 | 54 | 28 | 10 |
| 5:00 PM | 0 | 1 | 0 | 225 | 0 | 24 | 0 | 2 | 0 | 0 | 107 | 3 | 0 | 40 | 25 | 1 |
| 5:15 PM | 0 | 1 | 0 | 146 | 0 | 19 | 0 | 1 | 0 | 0 | 83 | 4 | 0 | 24 | 29 | 2 |
| 5:30 PM | 0 | 0 | 0 | 104 | 0 | 13 | 0 | 2 | 0 | 0 | 45 | 0 | 1 | 28 | 25 | 2 |
| 5:45 PM | 0 | 0 | 0 | 90 | 0 | 16 | 0 | 0 | 0 | 0 | 31 | 3 | 1 | 25 | 16 | 6 |

| **AM PEAK HOUR** 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **5** | **3** | **153** | **0** | **3** | **1** | **1** | **0** | **2** | **51** | **4** | **0** | **740** | **370** | **82** |
| ***PHF*** | **0.88** | | | | **0.63** | | | | **0.84** | | | | **0.83** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **5.9%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **2.0%** | **0.0%** | **0.0%** | **0.9%** | **1.1%** | **0.0%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **8** | **2** | **895** | **0** | **42** | **2** | **2** | **0** | **0** | **313** | **2** | **0** | **215** | **120** | **18** |
| ***PHF*** | **0.91** | | | | **0.68** | | | | **0.88** | | | | **0.96** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.6%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.6%** | **0.0%** | **0.0%** | **1.9%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 1 |
| Location: | Portsmouth, NH |
| Street 1: | Pease Blvd |
| Street 2: | International Drive |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

BOSTON TRAFFIC DATA
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DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

## *HEAVY VEHICLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 |
| 7:30 AM | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 0 |
| 7:45 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| 8:30 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 |
| 8:45 AM | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 1 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **10** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **8** | **4** | **0** |
| ***PHF*** | **0.42** | | | | **0.00** | | | | **0.25** | | | | **0.75** | | | |

| **PM PEAK HOUR** 4:30 PM to 5:30 PM | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **4** | **0** | **0** | **0** | **0** | **0** | **0** | **4** | **1** | **0** | **4** | **0** | **0** |
| ***PHF*** | **0.50** | | | | **0.00** | | | | **0.63** | | | | **0.33** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 1 |
| Location: | Portsmouth, NH |
| Street 1: | Pease Blvd |
| Street 2: | International Drive |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

## *PEDESTRIANS & BICYCLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Pease Blvd Eastbound | | | | Pease Blvd Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 6 |
| Location: | Portsmouth, NH |
| Street 1: | Newington Street |
| Street 2: | Route 4 Southbound On/Off-Ramps |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 91 | 0 | 0 | 41 | 21 | 0 | 15 | 81 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 65 | 0 | 86 | 0 | 0 | 23 | 16 | 0 | 16 | 105 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 73 | 0 | 104 | 0 | 0 | 17 | 16 | 1 | 22 | 113 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 152 | 0 | 0 | 34 | 19 | 1 | 17 | 175 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 61 | 0 | 94 | 0 | 0 | 47 | 15 | 1 | 21 | 121 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 71 | 0 | 94 | 0 | 0 | 38 | 13 | 0 | 22 | 126 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 59 | 0 | 77 | 0 | 0 | 43 | 21 | 0 | 18 | 121 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 64 | 0 | 72 | 0 | 0 | 47 | 16 | 0 | 35 | 119 | 0 |

| | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 66 | 0 | 14 | 0 | 0 | 129 | 89 | 2 | 81 | 63 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 55 | 0 | 21 | 0 | 0 | 151 | 74 | 0 | 90 | 54 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 57 | 0 | 27 | 0 | 0 | 162 | 73 | 0 | 99 | 68 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 50 | 1 | 21 | 0 | 0 | 133 | 96 | 3 | 92 | 77 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 59 | 0 | 11 | 0 | 0 | 187 | 99 | 0 | 103 | 62 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 64 | 0 | 23 | 0 | 0 | 119 | 57 | 0 | 88 | 52 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 55 | 0 | 16 | 0 | 0 | 96 | 67 | 1 | 94 | 39 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 25 | 1 | 0 | 79 | 55 | 0 | 74 | 50 | 0 |

| **AM PEAK HOUR** 7:30 AM to 8:30 AM | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **301** | **0** | **444** | **0** | **0** | **136** | **63** | **3** | **82** | **535** | **0** |
| ***PHF*** | **0.00** | | | | **0.75** | | | | **0.80** | | | | **0.80** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **1.0%** | **0.0%** | **1.4%** | **0.0%** | **0.0%** | **2.2%** | **9.5%** | **0.0%** | **12.2%** | **1.3%** | **0.0%** |

| **PM PEAK HOUR** 4:15 PM to 5:15 PM | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **221** | **1** | **80** | **0** | **0** | **633** | **342** | **3** | **384** | **261** | **0** |
| ***PHF*** | **0.00** | | | | **0.90** | | | | **0.85** | | | | **0.94** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **1.3%** | **0.0%** | **0.0%** | **0.5%** | **0.6%** | **0.0%** | **0.8%** | **1.1%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 6 |
| Location: | Portsmouth, NH |
| Street 1: | Newington Street |
| Street 2: | Route 4 Southbound On/Off-Ramps |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *HEAVY VEHICLES*

| | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 6 | 3 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 4 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 2 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 2 | 0 | 2 | 3 | 0 |

| | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **6** | **0** | **0** | **4** | **6** | **0** | **10** | **8** | **0** |
| ***PHF*** | **0.00** | | | | **0.45** | | | | **0.63** | | | | **0.50** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **2** | **3** | **0** | **5** | **3** | **0** |
| ***PHF*** | **0.00** | | | | **0.25** | | | | **0.63** | | | | **0.50** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 6 |
| Location: | Portsmouth, NH |
| Street 1: | Newington Street |
| Street 2: | Route 4 Southbound On/Off-Ramps |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *PEDESTRIANS & BICYCLES*

| | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:30 AM to 8:30 AM | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

| **PM PEAK HOUR**[1] 4:15 PM to 5:15 PM | Route 4 Southbound On-Ramp Northbound | | | | Route 4 Southbound Off-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 7 |
| Location: | Portsmouth, NH |
| Street 1: | Newington Street |
| Street 2: | Route 4 Northbound On/Off-Ramps |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 68 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 24 | 56 | 0 | 0 | 0 | 27 | 10 |
| 7:15 AM | 0 | 76 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 17 | 72 | 0 | 0 | 0 | 46 | 9 |
| 7:30 AM | 0 | 71 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 4 | 85 | 0 | 0 | 0 | 70 | 12 |
| 7:45 AM | 0 | 130 | 0 | 66 | 0 | 0 | 0 | 0 | 0 | 18 | 111 | 0 | 0 | 0 | 59 | 14 |
| 8:00 AM | 0 | 94 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 16 | 91 | 0 | 0 | 0 | 48 | 9 |
| 8:15 AM | 0 | 98 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 12 | 97 | 0 | 0 | 0 | 47 | 10 |
| 8:30 AM | 0 | 94 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 15 | 87 | 0 | 0 | 0 | 52 | 9 |
| 8:45 AM | 0 | 85 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 16 | 95 | 0 | 0 | 0 | 64 | 13 |

| | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 29 | 0 | 86 | 0 | 0 | 0 | 0 | 0 | 79 | 118 | 0 | 0 | 0 | 111 | 51 |
| 4:15 PM | 0 | 28 | 1 | 94 | 0 | 0 | 0 | 0 | 0 | 89 | 117 | 0 | 0 | 0 | 122 | 51 |
| 4:30 PM | 0 | 30 | 0 | 89 | 0 | 0 | 0 | 0 | 0 | 89 | 120 | 0 | 0 | 0 | 140 | 72 |
| 4:45 PM | 0 | 36 | 0 | 94 | 0 | 0 | 0 | 0 | 0 | 91 | 108 | 0 | 0 | 0 | 130 | 44 |
| 5:00 PM | 0 | 36 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 116 | 130 | 0 | 0 | 0 | 135 | 66 |
| 5:15 PM | 0 | 24 | 0 | 94 | 0 | 0 | 0 | 0 | 0 | 72 | 108 | 0 | 0 | 0 | 117 | 63 |
| 5:30 PM | 0 | 16 | 0 | 92 | 0 | 0 | 0 | 0 | 0 | 57 | 91 | 0 | 0 | 0 | 114 | 57 |
| 5:45 PM | 0 | 24 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 45 | 80 | 0 | 0 | 0 | 100 | 52 |

| **AM PEAK HOUR** 7:45 AM to 8:45 AM | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **416** | **0** | **199** | **0** | **0** | **0** | **0** | **0** | **61** | **386** | **0** | **0** | **0** | **206** | **42** |
| ***PHF*** | **0.78** | | | | **0.00** | | | | **0.87** | | | | **0.85** | | | |
| ***HV %*** | **0.0%** | **2.4%** | **0.0%** | **3.5%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **4.9%** | **1.6%** | **0.0%** | **0.0%** | **0.0%** | **2.4%** | **4.8%** |

| **PM PEAK HOUR** 4:15 PM to 5:15 PM | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **130** | **1** | **357** | **0** | **0** | **0** | **0** | **0** | **385** | **475** | **0** | **0** | **0** | **527** | **233** |
| ***PHF*** | **0.94** | | | | **0.00** | | | | **0.87** | | | | **0.90** | | | |
| ***HV %*** | **0.0%** | **1.5%** | **0.0%** | **1.1%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.3%** | **0.4%** | **0.0%** | **0.0%** | **0.0%** | **0.8%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 7 |
| Location: | Portsmouth, NH |
| Street 1: | Newington Street |
| Street 2: | Route 4 Northbound On/Off-Ramps |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *HEAVY VEHICLES*

| | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 |
| 7:15 AM | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 1 |
| 7:30 AM | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 |
| 7:45 AM | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| 8:00 AM | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 |
| 8:15 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 8:30 AM | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| 8:45 AM | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 3 | 0 |

| | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 4:15 PM | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 4:45 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 5:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 5:30 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |

| **AM PEAK HOUR** 7:00 AM to 8:00 AM | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **8** | **0** | **17** | **0** | **0** | **0** | **0** | **0** | **4** | **4** | **0** | **0** | **0** | **11** | **3** |
| ***PHF*** | **0.78** | | | | **0.00** | | | | **0.50** | | | | **0.44** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **2** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **1** | **1** | **0** | **0** | **0** | **6** | **0** |
| ***PHF*** | **0.42** | | | | **0.00** | | | | **0.25** | | | | **0.50** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 7 |
| Location: | Portsmouth, NH |
| Street 1: | Newington Street |
| Street 2: | Route 4 Northbound On/Off-Ramps |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *PEDESTRIANS & BICYCLES*

| | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:45 AM to 8:45 AM | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:15 PM to 5:15 PM | Route 4 Northbound Off-Ramp Northbound | | | | Route 4 Northbound On-Ramp Southbound | | | | Newington Street Eastbound | | | | Newington Street Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 12 |
| Location: | Portsmouth, NH |
| Street 1: | Grafton Road |
| Street 2: | Greenland Road (Route 33) |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 25 | 0 | 52 | 142 | 0 | 0 | 0 | 67 | 26 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 12 | 0 | 53 | 222 | 0 | 0 | 0 | 82 | 39 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 19 | 0 | 68 | 305 | 0 | 0 | 0 | 90 | 70 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 19 | 0 | 128 | 292 | 0 | 0 | 0 | 82 | 99 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 36 | 0 | 74 | 269 | 0 | 0 | 0 | 117 | 59 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 19 | 0 | 67 | 236 | 0 | 0 | 0 | 108 | 69 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 25 | 0 | 80 | 209 | 0 | 0 | 0 | 97 | 57 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 29 | 0 | 73 | 204 | 0 | 0 | 0 | 84 | 64 |

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 63 | 0 | 122 | 0 | 32 | 247 | 0 | 0 | 0 | 207 | 43 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 36 | 0 | 102 | 0 | 37 | 225 | 0 | 0 | 0 | 154 | 37 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 123 | 0 | 45 | 265 | 0 | 0 | 0 | 179 | 33 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 104 | 0 | 46 | 207 | 0 | 0 | 0 | 178 | 22 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 58 | 0 | 140 | 0 | 34 | 237 | 0 | 0 | 0 | 205 | 18 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 51 | 0 | 104 | 0 | 23 | 238 | 0 | 0 | 0 | 173 | 26 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 103 | 0 | 31 | 185 | 0 | 0 | 0 | 145 | 23 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 63 | 0 | 29 | 216 | 0 | 0 | 0 | 117 | 27 |

| **AM PEAK HOUR** 7:30 AM to 8:30 AM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **78** | **0** | **93** | **0** | **337** | **1102** | **0** | **0** | **0** | **397** | **297** |
| ***PHF*** | **0.00** | | | | **0.76** | | | | **0.86** | | | | **0.96** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **5.1%** | **0.0%** | **5.4%** | **0.0%** | **0.3%** | **4.1%** | **0.0%** | **0.0%** | **0.0%** | **8.3%** | **1.7%** |

| **PM PEAK HOUR** 4:30 PM to 5:30 PM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **219** | **0** | **471** | **0** | **148** | **947** | **0** | **0** | **0** | **735** | **99** |
| ***PHF*** | **0.00** | | | | **0.87** | | | | **0.88** | | | | **0.93** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **1.4%** | **0.0%** | **1.3%** | **0.0%** | **0.7%** | **2.1%** | **0.0%** | **0.0%** | **0.0%** | **2.4%** | **2.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 12 |
| Location: | Portsmouth, NH |
| Street 1: | Grafton Road |
| Street 2: | Greenland Road (Route 33) |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *HEAVY VEHICLES*

| | Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 7 | 0 | 0 | 0 | 6 | 1 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 6 | 4 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 13 | 0 | 0 | 0 | 4 | 1 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 12 | 0 | 0 | 0 | 10 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 0 | 8 | 1 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 11 | 3 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 14 | 0 | 0 | 0 | 5 | 3 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 0 | 0 | 9 | 2 |

| | Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 12 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 2 | 2 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 5 | 0 | 0 | 0 | 5 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 1 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 0 | 4 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5 | 1 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 9 | 1 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 2 |

| **AM PEAK HOUR** 7:45 AM to 8:45 AM | Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **4** | **0** | **3** | **46** | **0** | **0** | **0** | **34** | **7** |
| ***PHF*** | **0.00** | | | | **0.88** | | | | **0.77** | | | | **0.73** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **5** | **0** | **1** | **20** | **0** | **0** | **0** | **23** | **3** |
| ***PHF*** | **0.00** | | | | **0.50** | | | | **0.88** | | | | **0.54** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 12 |
| Location: | Portsmouth, NH |
| Street 1: | Grafton Road |
| Street 2: | Greenland Road (Route 33) |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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## *PEDESTRIANS & BICYCLES*

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:30 AM to 8:30 AM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:30 PM to 5:30 PM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Greenland Road (Route 33) Eastbound | | | | Greenland Road (Route 33) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 2 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Corporate Drive/Manchester Square |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 1 | 23 | 9 | 0 | 64 | 52 | 9 | 0 | 2 | 1 | 2 | 0 | 2 | 1 | 11 |
| 7:15 AM | 0 | 2 | 13 | 6 | 0 | 83 | 50 | 11 | 0 | 1 | 2 | 3 | 0 | 4 | 1 | 7 |
| 7:30 AM | 0 | 1 | 9 | 8 | 0 | 84 | 58 | 17 | 0 | 12 | 12 | 5 | 0 | 3 | 1 | 10 |
| 7:45 AM | 0 | 0 | 17 | 11 | 0 | 120 | 89 | 25 | 0 | 7 | 7 | 3 | 0 | 3 | 2 | 12 |
| 8:00 AM | 0 | 0 | 18 | 14 | 0 | 81 | 57 | 22 | 0 | 15 | 3 | 3 | 0 | 1 | 3 | 7 |
| 8:15 AM | 0 | 4 | 19 | 5 | 0 | 64 | 75 | 21 | 0 | 9 | 4 | 8 | 0 | 2 | 2 | 16 |
| 8:30 AM | 0 | 2 | 13 | 4 | 0 | 54 | 43 | 15 | 0 | 11 | 7 | 5 | 0 | 1 | 2 | 17 |
| 8:45 AM | 0 | 3 | 12 | 7 | 0 | 52 | 44 | 11 | 0 | 9 | 3 | 4 | 0 | 2 | 4 | 35 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 4 | 106 | 0 | 0 | 8 | 13 | 18 | 0 | 23 | 3 | 5 | 0 | 1 | 5 | 107 |
| 4:15 PM | 0 | 3 | 90 | 2 | 0 | 17 | 14 | 16 | 0 | 22 | 0 | 4 | 0 | 2 | 5 | 119 |
| 4:30 PM | 0 | 1 | 121 | 0 | 0 | 12 | 17 | 16 | 0 | 35 | 0 | 0 | 0 | 2 | 6 | 88 |
| 4:45 PM | 0 | 3 | 99 | 3 | 0 | 8 | 22 | 14 | 0 | 23 | 0 | 2 | 0 | 2 | 2 | 50 |
| 5:00 PM | 0 | 4 | 133 | 1 | 0 | 7 | 13 | 7 | 0 | 29 | 0 | 0 | 0 | 0 | 1 | 62 |
| 5:15 PM | 0 | 2 | 82 | 0 | 0 | 3 | 9 | 4 | 0 | 13 | 1 | 1 | 0 | 1 | 2 | 49 |
| 5:30 PM | 0 | 0 | 53 | 3 | 0 | 9 | 9 | 0 | 0 | 5 | 0 | 0 | 0 | 3 | 1 | 41 |
| 5:45 PM | 0 | 1 | 44 | 0 | 0 | 4 | 15 | 0 | 0 | 12 | 0 | 0 | 0 | 1 | 3 | 24 |

| **AM PEAK HOUR** 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **5** | **63** | **38** | **0** | **349** | **279** | **85** | **0** | **43** | **26** | **19** | **0** | **9** | **8** | **45** |
| ***PHF*** | **0.83** | | | | **0.76** | | | | **0.76** | | | | **0.78** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **2.6%** | **0.0%** | **1.7%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **3.8%** | **5.3%** | **0.0%** | **0.0%** | **12.5%** | **17.8%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **11** | **416** | **5** | **0** | **45** | **66** | **64** | **0** | **103** | **3** | **11** | **0** | **7** | **18** | **364** |
| ***PHF*** | **0.89** | | | | **0.93** | | | | **0.84** | | | | **0.77** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.7%** | **0.0%** | **0.0%** | **4.4%** | **3.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **5.6%** | **0.8%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 2 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Corporate Drive/Manchester Square |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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Office: 978-746-1259
DataRequest@BostonTrafficData.com
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## *HEAVY VEHICLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 7:45 AM | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 8:45 AM | 0 | 0 | 1 | 1 | 0 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 4:30 PM | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 5:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 8:00 AM to 9:00 AM | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **1** | **1** | **0** | **9** | **1** | **1** | **0** | **0** | **1** | **2** | **0** | **0** | **2** | **6** |
| ***PHF*** | **0.25** | | | | **0.46** | | | | **0.38** | | | | **0.67** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **3** | **0** | **0** | **2** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **3** |
| ***PHF*** | **0.38** | | | | **0.50** | | | | **0.00** | | | | **0.50** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 2 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Corporate Drive/Manchester Square |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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Office: 978-746-1259
DataRequest@BostonTrafficData.com
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## *PEDESTRIANS & BICYCLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Manchester Square Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 3 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Goose Bay Drive (West) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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Office: 978-746-1259
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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 31 | 0 | 2 | 10 | 0 |
| 7:15 AM | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 27 | 0 | 4 | 9 | 0 |
| 7:30 AM | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 37 | 0 | 2 | 10 | 0 |
| 7:45 AM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 57 | 0 | 5 | 15 | 0 |
| 8:00 AM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 35 | 0 | 3 | 9 | 0 |
| 8:15 AM | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 24 | 0 | 3 | 17 | 0 |
| 8:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 18 | 0 | 2 | 19 | 0 |
| 8:45 AM | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 19 | 0 | 0 | 26 | 0 |

| | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 0 | 1 | 89 | 0 |
| 4:15 PM | 0 | 80 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 1 | 0 | 0 | 46 | 0 |
| 4:30 PM | 0 | 16 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 0 | 0 | 80 | 0 |
| 4:45 PM | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 0 | 0 | 48 | 0 |
| 5:00 PM | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 1 | 58 | 0 |
| 5:15 PM | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 45 | 0 |
| 5:30 PM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 5 | 0 | 0 | 43 | 0 |
| 5:45 PM | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 1 | 22 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **11** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **275** | **156** | **0** | **14** | **43** | **0** |
| ***PHF*** | **0.69** | | | | **0.00** | | | | **0.78** | | | | **0.71** | | | |
| ***HV %*** | **0.0%** | **36.4%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.4%** | **4.5%** | **0.0%** | **0.0%** | **11.6%** | **0.0%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **127** | **0** | **7** | **0** | **0** | **0** | **0** | **0** | **0** | **47** | **6** | **0** | **1** | **263** | **0** |
| ***PHF*** | **0.40** | | | | **0.00** | | | | **0.70** | | | | **0.73** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **4.3%** | **0.0%** | **0.0%** | **0.0%** | **1.5%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 3 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Goose Bay Drive (West) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *HEAVY VEHICLES*

| | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 |
| 7:30 AM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 |
| 7:45 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 8:30 AM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **4** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **7** | **0** | **0** | **5** | **0** |
| ***PHF*** | **0.50** | | | | **0.00** | | | | **0.50** | | | | **0.42** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **0** | **4** | **0** |
| ***PHF*** | **0.00** | | | | **0.00** | | | | **0.25** | | | | **0.50** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 3 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Goose Bay Drive (West) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PEDESTRIANS & BICYCLES*

| | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:15 AM to 8:15 AM | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| **PM PEAK HOUR**[1] 4:00 PM to 5:00 PM | Goose Bay Drive (West) Northbound | | | | Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 4 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Redhook Way |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

BOSTON TRAFFIC DATA
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Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 42 | 0 | 1 | 0 | 8 | 2 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 59 | 0 | 0 | 0 | 12 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 66 | 0 | 0 | 0 | 11 | 1 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 79 | 0 | 1 | 0 | 18 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 61 | 0 | 0 | 0 | 11 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 48 | 0 | 0 | 0 | 19 | 2 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 0 | 0 | 22 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 38 | 0 | 0 | 0 | 25 | 0 |

| | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 7 | 0 | 0 | 0 | 84 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 21 | 0 | 0 | 0 | 46 | 1 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 12 | 0 | 0 | 0 | 79 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 0 | 0 | 47 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 7 | 0 | 0 | 0 | 57 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 3 | 0 | 0 | 0 | 39 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 0 | 43 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 20 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **4** | **0** | **11** | **265** | **0** | **1** | **0** | **52** | **1** |
| ***PHF*** | **0.00** | | | | **0.50** | | | | **0.85** | | | | **0.71** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **25.0%** | **0.0%** | **0.0%** | **0.4%** | **0.0%** | **0.0%** | **0.0%** | **7.7%** | **0.0%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **9** | **1** | **5** | **49** | **0** | **0** | **0** | **256** | **2** |
| ***PHF*** | **0.00** | | | | **0.36** | | | | **0.63** | | | | **0.77** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **11.1%** | **0.0%** | **40.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **1.2%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 4 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Redhook Way |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *HEAVY VEHICLES*

| | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |

| | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 8:00 AM to 9:00 AM | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **5** | **0** | **0** | **0** | **2** | **0** |
| ***PHF*** | **0.00** | | | | **0.00** | | | | **0.75** | | | | **0.50** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Redhook Way Northbound | | | | Redhook Way Southbound | | | | Corporate Drive Eastbound | | | | Corporate Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **2** | **0** | **0** | **0** | **0** | **3** | **0** |
| ***PHF*** | **0.00** | | | | **0.25** | | | | **0.25** | | | | **0.38** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 4 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Redhook Way |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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DataRequest@BostonTrafficData.com
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## *PEDESTRIANS & BICYCLES*

| | Redhook Way | | | | | | | | Corporate Drive | | | | Corporate Drive | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Redhook Way | | | | | | | | Corporate Drive | | | | Corporate Drive | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] | Redhook Way | | | | | | | | Corporate Drive | | | | Corporate Drive | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7:15 AM | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
| to | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] | Redhook Way | | | | | | | | Corporate Drive | | | | Corporate Drive | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4:00 PM | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | |
| to | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Matthew Stoutz, PE, PTOE, RSP1

| | |
|---|---|
| Project #: | 1202_5_TB |
| BTD #: | Location 5 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Goose Bay Drive (East) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 1 | 12 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 13 | 0 | 0 | 0 | 30 | 2 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 1 | 18 | 0 | 0 | 0 | 37 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 3 | 18 | 0 | 0 | 0 | 37 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 16 | 0 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 3 | 16 | 0 | 0 | 0 | 26 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 22 | 0 | 0 | 0 | 22 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 16 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 1 | 44 | 0 | 0 | 0 | 11 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 29 | 0 | 0 | 0 | 11 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 1 | 41 | 0 | 0 | 0 | 17 | 1 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 1 | 28 | 0 | 0 | 0 | 16 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 30 | 0 | 0 | 0 | 9 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 21 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 24 | 0 | 0 | 0 | 10 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 13 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Corporate Drive ~~Northbound~~ WB | | | | Corporate Drive ~~Southbound~~ EB | | | | Goose Bay Drive (East) ~~Eastbound~~ NB | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **4** | **65** | **0** | **0** | **0** | **141** | **4** | **0** | **5** | **0** | **3** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.82** | | | | **0.95** | | | | **0.40** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **4.6%** | **0.0%** | **0.0%** | **0.0%** | **0.7%** | **0.0%** | **0.0%** | **20.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Corporate Drive ~~Northbound~~ WB | | | | Corporate Drive ~~Southbound~~ EB | | | | Goose Bay Drive (East) ~~Eastbound~~ NB | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **3** | **142** | **0** | **0** | **0** | **55** | **1** | **0** | **9** | **0** | **8** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.81** | | | | **0.78** | | | | **0.71** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **1.4%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **11.1%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 5 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Goose Bay Drive (East) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *HEAVY VEHICLES*

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:00 AM to 8:00 AM | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **4** | **0** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.50** | | | | **0.25** | | | | **0.25** | | | | **0.00** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.50** | | | | **0.00** | | | | **0.25** | | | | **0.00** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 5 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Goose Bay Drive (East) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

## *PEDESTRIANS & BICYCLES*

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7:15 AM to 8:15 AM | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Goose Bay Drive (East) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4:00 PM to 5:00 PM | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 6 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Corporate Center Driveway |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 2 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 1 | 0 |
| 8:30 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

| | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 |
| 4:15 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 5:00 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Corporate Center Driveway ~~Northbound~~ WB | | | | Southbound | | | | Goose Bay Drive ~~Eastbound~~ NB | | | | Goose Bay Drive ~~Westbound~~ SB | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **8** | **8** | **0** | **4** | **4** | **0** |
| ***PHF*** | **0.00** | | | | **0.00** | | | | **0.53** | | | | **0.50** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **12.5%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Corporate Center Driveway ~~Northbound~~ WB | | | | Southbound | | | | Goose Bay Drive ~~Eastbound~~ NB | | | | Goose Bay Drive ~~Westbound~~ SB | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **1** | **0** | **7** | **0** | **0** | **0** | **0** | **0** | **0** | **10** | **1** | **0** | **0** | **4** | **0** |
| ***PHF*** | **0.67** | | | | **0.00** | | | | **0.69** | | | | **0.50** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **10.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 6 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Corporate Center Driveway |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *HEAVY VEHICLES*

| | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:00 AM to 8:00 AM | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.00** | | | | **0.00** | | | | **0.25** | | | | **0.00** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.00** | | | | **0.00** | | | | **0.25** | | | | **0.00** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 6 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Corporate Center Driveway |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PEDESTRIANS & BICYCLES*

| | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:15 AM to 8:15 AM | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |

| **PM PEAK HOUR**[1] 4:00 PM to 5:00 PM | Corporate Center Driveway Northbound | | | | Southbound | | | | Goose Bay Drive Eastbound | | | | Goose Bay Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 7 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Lonza Biologics Driveway (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Goose Bay Drive ~~Northbound~~ WB | | | | Goose Bay Drive ~~Southbound~~ EB | | | | Lonza Biologics Driveway (South) ~~Eastbound~~ NB | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **5** | **0** | **0** | **0** | **17** | **5** | **0** | **4** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.42** | | | | **0.69** | | | | **0.50** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **5.9%** | **80.0%** | **0.0%** | **75.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Goose Bay Drive ~~Northbound~~ WB | | | | Goose Bay Drive ~~Southbound~~ EB | | | | Lonza Biologics Driveway (South) ~~Eastbound~~ NB | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **5** | **0** | **0** | **0** | **10** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.63** | | | | **0.63** | | | | **0.25** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **10.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 7 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Lonza Biologics Driveway (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *HEAVY VEHICLES*

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7:15 AM to | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 8:15 AM | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **4** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.00** | | | | **0.42** | | | | **0.75** | | | | **0.00** | | | |

| **PM PEAK HOUR** | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4:00 PM to | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 5:00 PM | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.00** | | | | **0.25** | | | | **0.00** | | | | **0.00** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 7 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Lonza Biologics Driveway (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *PEDESTRIANS & BICYCLES*

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:15 AM to 8:15 AM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:00 PM to 5:00 PM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Biologics Driveway (South) Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 8 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Lonza Parking Garage Entrance Dr |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 1 | 5 | 0 | 0 | 0 | 8 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 1 | 3 | 0 | 0 | 0 | 7 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 1 | 3 | 0 | 0 | 0 | 11 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 1 | 3 | 0 | 0 | 0 | 8 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 2 | 0 | 0 | 0 | 5 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 1 | 14 | 0 | 0 | 0 | 5 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 24 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 84 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:15 AM to 8:15 AM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **3** | **11** | **0** | **0** | **0** | **33** | **136** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.88** | | | | **0.69** | | | | **0.00** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **18.2%** | **0.0%** | **0.0%** | **0.0%** | **15.2%** | **0.7%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **132** | **0** | **0** | **0** | **4** | **4** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.39** | | | | **0.67** | | | | **0.00** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 8 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Lonza Parking Garage Entrance Dr |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *HEAVY VEHICLES*

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 8:00 AM to 9:00 AM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **6** | **0** | **0** | **0** | **6** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.75** | | | | **0.58** | | | | **0.00** | | | | **0.00** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.00** | | | | **0.00** | | | | **0.00** | | | | **0.00** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 8 |
| Location: | Portsmouth, NH |
| Street 1: | Goose Bay Drive |
| Street 2: | Lonza Parking Garage Entrance Dr |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *PEDESTRIANS & BICYCLES*

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

| | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:15 AM to 8:15 AM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:00 PM to 5:00 PM | Goose Bay Drive Northbound | | | | Goose Bay Drive Southbound | | | | Lonza Parking Garage Entrance Driveway Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 9 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Granite State College Drive (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 24 | 1 | 0 | 1 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:15 AM | 0 | 0 | 19 | 4 | 0 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 19 | 1 | 0 | 2 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 7:45 AM | 0 | 0 | 25 | 1 | 0 | 1 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:00 AM | 0 | 0 | 29 | 4 | 0 | 1 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:15 AM | 0 | 0 | 26 | 2 | 0 | 4 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:30 AM | 0 | 0 | 19 | 3 | 0 | 1 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 18 | 1 | 1 | 1 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 102 | 1 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 |
| 4:15 PM | 0 | 0 | 87 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 4:30 PM | 0 | 0 | 111 | 1 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4:45 PM | 0 | 0 | 94 | 0 | 0 | 2 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 5:00 PM | 0 | 0 | 138 | 0 | 0 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 5:15 PM | 0 | 0 | 77 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 5:30 PM | 0 | 0 | 54 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 43 | 1 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

| **AM PEAK HOUR** 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **99** | **8** | **0** | **8** | **273** | **0** | **0** | **0** | **0** | **0** | **0** | **4** | **0** | **1** |
| ***PHF*** | **0.81** | | | | **0.84** | | | | **0.00** | | | | **0.63** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.7%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:15 PM to 5:15 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **430** | **1** | **0** | **3** | **76** | **0** | **0** | **0** | **0** | **0** | **0** | **5** | **0** | **2** |
| ***PHF*** | **0.78** | | | | **0.76** | | | | **0.00** | | | | **0.88** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.7%** | **0.0%** | **0.0%** | **0.0%** | **3.9%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 9 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Granite State College Drive (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *HEAVY VEHICLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 8:00 AM to 9:00 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **2** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.25** | | | | **0.25** | | | | **0.00** | | | | **0.00** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **3** | **0** | **0** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.38** | | | | **0.75** | | | | **0.00** | | | | **0.00** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 9 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Granite State College Drive (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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Office: 978-746-1259
DataRequest@BostonTrafficData.com
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## *PEDESTRIANS & BICYCLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:15 PM to 5:15 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Granite State College Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 10 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Lonza Biologics Driveway (North) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 10 | 4 | 0 | 4 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 15 |
| 7:15 AM | 0 | 0 | 18 | 2 | 0 | 3 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 5 |
| 7:30 AM | 0 | 0 | 17 | 3 | 0 | 3 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 |
| 7:45 AM | 0 | 0 | 23 | 3 | 0 | 5 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 |
| 8:00 AM | 0 | 0 | 29 | 1 | 0 | 2 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 8:15 AM | 0 | 0 | 26 | 1 | 0 | 3 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 8:30 AM | 0 | 0 | 19 | 2 | 0 | 1 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 |
| 8:45 AM | 0 | 0 | 18 | 4 | 0 | 1 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 76 | 3 | 0 | 2 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 27 |
| 4:15 PM | 0 | 0 | 61 | 1 | 0 | 1 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 26 |
| 4:30 PM | 0 | 0 | 78 | 6 | 0 | 4 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 33 |
| 4:45 PM | 0 | 0 | 62 | 1 | 0 | 4 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 33 |
| 5:00 PM | 0 | 0 | 120 | 3 | 0 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 18 |
| 5:15 PM | 0 | 0 | 61 | 1 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| 5:30 PM | 0 | 0 | 42 | 2 | 1 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 11 |
| 5:45 PM | 0 | 0 | 34 | 0 | 0 | 3 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 10 |

| **AM PEAK HOUR** 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **95** | **8** | **0** | **13** | **264** | **0** | **0** | **0** | **0** | **0** | **0** | **9** | **0** | **12** |
| ***PHF*** | **0.86** | | | | **0.83** | | | | **0.00** | | | | **0.88** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **1.1%** | **62.5%** | **0.0%** | **0.0%** | **0.4%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **44.4%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:15 PM to 5:15 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **321** | **11** | **0** | **10** | **71** | **0** | **0** | **0** | **0** | **0** | **0** | **36** | **0** | **110** |
| ***PHF*** | **0.67** | | | | **0.81** | | | | **0.00** | | | | **0.72** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **0.9%** | **45.5%** | **0.0%** | **0.0%** | **2.8%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **13.9%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 10 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Lonza Biologics Driveway (North) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *HEAVY VEHICLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 7:45 AM | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 8:45 AM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4:30 PM | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| 4:45 PM | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 5:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:00 AM to 8:00 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **1** | **9** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **8** | **0** | **0** |
| ***PHF*** | **0.83** | | | | **0.00** | | | | **0.00** | | | | **0.67** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **3** | **7** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **7** | **0** | **0** |
| ***PHF*** | **0.50** | | | | **0.50** | | | | **0.00** | | | | **0.58** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 10 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Lonza Biologics Driveway (North) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PEDESTRIANS & BICYCLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:15 PM to 5:15 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (North) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 11 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Lonza Biologics Driveway (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 17 | 0 | 0 | 1 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 23 | 0 | 0 | 1 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 0 | 22 | 0 | 0 | 2 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:45 AM | 0 | 0 | 32 | 1 | 0 | 1 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 32 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:15 AM | 0 | 0 | 30 | 0 | 0 | 2 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:30 AM | 0 | 0 | 24 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:45 AM | 0 | 0 | 22 | 0 | 0 | 1 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 65 | 0 | 0 | 1 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 45 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 4:30 PM | 0 | 0 | 72 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 49 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 97 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 45 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 32 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 20 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **116** | **1** | **0** | **5** | **210** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| ***PHF*** | | | **0.89** | | | | **0.81** | | | | **0.00** | | | | **0.75** | |
| ***HV %*** | **0.0%** | **0.0%** | **5.2%** | **100.0%** | **0.0%** | **0.0%** | **1.9%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:15 PM to 5:15 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **263** | **0** | **0** | **0** | **121** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| ***PHF*** | | | **0.68** | | | | **0.74** | | | | **0.00** | | | | **0.25** | |
| ***HV %*** | **0.0%** | **0.0%** | **3.0%** | **0.0%** | **0.0%** | **0.0%** | **6.6%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 11 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Lonza Biologics Driveway (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *HEAVY VEHICLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:00 AM to 8:00 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **10** | **1** | **0** | **0** | **8** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.69** | | | | **0.67** | | | | **0.00** | | | | **0.00** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **10** | **0** | **0** | **0** | **9** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.63** | | | | **0.75** | | | | **0.00** | | | | **0.00** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 11 |
| Location: | Portsmouth, NH |
| Street 1: | International Drive |
| Street 2: | Lonza Biologics Driveway (South) |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PEDESTRIANS & BICYCLES*

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:30 AM to 8:30 AM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:15 PM to 5:15 PM | International Drive Northbound | | | | International Drive Southbound | | | | Eastbound | | | | Lonza Biologics Driveway (South) Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 12 |
| Location: | Portsmouth, NH |
| Street 1: | New Hampshire Ave/Corporate Dr |
| Street 2: | International Drive/Durham Street |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 33 | 29 | 0 | 3 | 17 | 6 | 0 | 0 | 1 | 0 | 0 | 8 | 0 | 2 |
| 7:15 AM | 0 | 0 | 43 | 40 | 0 | 5 | 24 | 4 | 0 | 2 | 1 | 0 | 0 | 8 | 2 | 1 |
| 7:30 AM | 0 | 0 | 55 | 46 | 0 | 7 | 30 | 6 | 0 | 0 | 1 | 0 | 0 | 14 | 0 | 0 |
| 7:45 AM | 0 | 0 | 55 | 71 | 0 | 7 | 43 | 9 | 0 | 2 | 2 | 0 | 0 | 10 | 1 | 2 |
| 8:00 AM | 0 | 0 | 67 | 70 | 0 | 2 | 44 | 4 | 0 | 2 | 0 | 0 | 0 | 10 | 0 | 0 |
| 8:15 AM | 0 | 0 | 63 | 45 | 0 | 2 | 41 | 3 | 0 | 1 | 2 | 0 | 0 | 21 | 1 | 1 |
| 8:30 AM | 0 | 0 | 64 | 57 | 0 | 5 | 43 | 2 | 0 | 0 | 2 | 1 | 0 | 12 | 1 | 1 |
| 8:45 AM | 0 | 1 | 50 | 35 | 0 | 4 | 47 | 2 | 0 | 0 | 1 | 0 | 0 | 14 | 0 | 0 |

| | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 63 | 22 | 0 | 1 | 66 | 4 | 0 | 10 | 2 | 0 | 0 | 53 | 4 | 8 |
| 4:15 PM | 0 | 0 | 49 | 13 | 0 | 1 | 59 | 2 | 0 | 2 | 4 | 2 | 0 | 39 | 5 | 1 |
| 4:30 PM | 0 | 1 | 38 | 19 | 0 | 1 | 93 | 4 | 0 | 10 | 7 | 0 | 0 | 57 | 2 | 4 |
| 4:45 PM | 0 | 0 | 55 | 27 | 0 | 0 | 84 | 1 | 0 | 4 | 1 | 0 | 0 | 52 | 2 | 6 |
| 5:00 PM | 0 | 0 | 57 | 17 | 0 | 0 | 96 | 2 | 0 | 4 | 3 | 0 | 0 | 61 | 5 | 4 |
| 5:15 PM | 0 | 0 | 27 | 18 | 0 | 0 | 69 | 3 | 0 | 1 | 0 | 1 | 0 | 48 | 2 | 5 |
| 5:30 PM | 0 | 0 | 32 | 7 | 0 | 1 | 48 | 0 | 0 | 0 | 0 | 1 | 0 | 31 | 0 | 3 |
| 5:45 PM | 0 | 0 | 28 | 8 | 0 | 0 | 40 | 1 | 0 | 0 | 2 | 0 | 0 | 18 | 1 | 2 |

| **AM PEAK HOUR** 7:45 AM to 8:45 AM | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **249** | **243** | **0** | **16** | **171** | **18** | **0** | **5** | **6** | **1** | **0** | **53** | **3** | **4** |
| ***PHF*** | **0.90** | | | | **0.87** | | | | **0.75** | | | | **0.65** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **1.6%** | **2.5%** | **0.0%** | **0.0%** | **2.9%** | **0.0%** | **0.0%** | **20.0%** | **0.0%** | **0.0%** | **0.0%** | **3.8%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:15 PM to 5:15 PM | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **1** | **199** | **76** | **0** | **2** | **332** | **9** | **0** | **20** | **15** | **2** | **0** | **209** | **14** | **15** |
| ***PHF*** | **0.84** | | | | **0.88** | | | | **0.54** | | | | **0.85** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **1.5%** | **1.3%** | **0.0%** | **0.0%** | **0.6%** | **11.1%** | **0.0%** | **0.0%** | **13.3%** | **0.0%** | **0.0%** | **0.0%** | **14.3%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 12 |
| Location: | Portsmouth, NH |
| Street 1: | New Hampshire Ave/Corporate Dr |
| Street 2: | International Drive/Durham Street |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *HEAVY VEHICLES*

| | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:30 AM | 0 | 0 | 1 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 4:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 4:30 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 8:00 AM to 9:00 AM | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **5** | **4** | **0** | **0** | **7** | **0** | **0** | **1** | **0** | **0** | **0** | **2** | **0** | **0** |
| ***PHF*** | **0.56** | | | | **0.58** | | | | **0.25** | | | | **0.50** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **3** | **2** | **0** | **0** | **2** | **0** | **0** | **1** | **2** | **0** | **0** | **0** | **4** | **0** |
| ***PHF*** | **0.63** | | | | **0.50** | | | | **0.75** | | | | **0.50** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 12 |
| Location: | Portsmouth, NH |
| Street 1: | New Hampshire Ave/Corporate Dr |
| Street 2: | International Drive/Durham Street |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Cloudy, 35°F |

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## *PEDESTRIANS & BICYCLES*

| | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:45 AM to 8:45 AM | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:15 PM to 5:15 PM | Corporate Drive Northbound | | | | New Hampshire Avenue Southbound | | | | Durham Street Eastbound | | | | International Drive Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 13 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Grafton Road |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 21 | 0 | 64 | 0 | 27 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 5 | 0 | 0 | 0 | 0 | 8 | 19 | 0 | 83 | 0 | 28 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 6 | 1 | 0 | 0 | 0 | 1 | 40 | 0 | 107 | 0 | 40 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 4 | 1 | 0 | 0 | 0 | 10 | 29 | 0 | 132 | 0 | 57 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 12 | 2 | 0 | 0 | 0 | 9 | 36 | 0 | 141 | 0 | 54 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 7 | 2 | 0 | 0 | 0 | 8 | 39 | 0 | 111 | 0 | 51 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 7 | 4 | 0 | 0 | 0 | 7 | 31 | 0 | 120 | 0 | 59 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 14 | 5 | 0 | 0 | 0 | 12 | 29 | 0 | 92 | 0 | 61 | 0 | 0 | 0 | 0 |

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 34 | 7 | 0 | 0 | 0 | 4 | 111 | 0 | 75 | 0 | 12 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 34 | 3 | 0 | 0 | 0 | 3 | 102 | 0 | 58 | 0 | 15 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 44 | 3 | 0 | 0 | 0 | 3 | 147 | 0 | 52 | 0 | 7 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 29 | 10 | 0 | 0 | 0 | 9 | 125 | 0 | 67 | 0 | 16 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 42 | 18 | 0 | 0 | 0 | 3 | 164 | 0 | 53 | 0 | 16 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 21 | 3 | 0 | 0 | 0 | 2 | 114 | 0 | 41 | 0 | 10 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 20 | 1 | 0 | 0 | 0 | 5 | 71 | 0 | 37 | 0 | 10 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 10 | 4 | 0 | 0 | 0 | 2 | 50 | 0 | 32 | 0 | 7 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:45 AM to 8:45 AM | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **30** | **9** | **0** | **0** | **0** | **34** | **135** | **0** | **504** | **0** | **221** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.70** | | | | **0.90** | | | | **0.93** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **3.3%** | **11.1%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **4.4%** | **0.0%** | **1.4%** | **0.0%** | **1.4%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| **PM PEAK HOUR** 4:15 PM to 5:15 PM | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **149** | **34** | **0** | **0** | **0** | **18** | **538** | **0** | **230** | **0** | **54** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.76** | | | | **0.83** | | | | **0.86** | | | | **0.00** | | | |
| ***HV %*** | **0.0%** | **0.7%** | **2.9%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.9%** | **0.0%** | **2.2%** | **0.0%** | **1.9%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 13 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Grafton Road |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *HEAVY VEHICLES*

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:45 AM to 8:45 AM | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **1** | **1** | **0** | **0** | **0** | **0** | **6** | **0** | **7** | **0** | **3** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.50** | | | | **0.50** | | | | **0.63** | | | | **0.00** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **2** | **1** | **0** | **0** | **0** | **0** | **5** | **0** | **4** | **0** | **1** | **0** | **0** | **0** | **0** |
| ***PHF*** | **0.25** | | | | **0.42** | | | | **0.63** | | | | **0.00** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 1202_5_TB |
| BTD #: | Location 13 |
| Location: | Portsmouth, NH |
| Street 1: | Corporate Drive |
| Street 2: | Grafton Road |
| Count Date: | 3/7/2023 |
| Day of Week: | Tuesday |
| Weather: | Clouds & Sun, 40°F |

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## *PEDESTRIANS & BICYCLES*

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7:45 AM to 8:45 AM | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] | Corporate Drive Northbound | | | | Corporate Drive Southbound | | | | Grafton Road Eastbound | | | | Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4:15 PM to 5:15 PM | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 11 |
| Location: | Portsmouth, NH |
| Street 1: | Grafton Road |
| Street 2: | I-95 Southbound Off-Ramp |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

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Office: 978-746-1259
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## *PASSENGER CARS & HEAVY VEHICLES COMBINED*

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 78 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 7:15 AM | 0 | 0 | 92 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| 7:30 AM | 0 | 0 | 138 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| 7:45 AM | 0 | 0 | 227 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| 8:00 AM | 0 | 0 | 133 | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| 8:15 AM | 0 | 0 | 136 | 0 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| 8:30 AM | 0 | 0 | 137 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| 8:45 AM | 0 | 0 | 137 | 0 | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 75 | 0 | 0 | 0 | 185 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 4:15 PM | 0 | 0 | 74 | 0 | 0 | 0 | 138 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:30 PM | 0 | 0 | 78 | 0 | 0 | 0 | 183 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 4:45 PM | 0 | 0 | 68 | 0 | 0 | 0 | 154 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 5:00 PM | 0 | 0 | 52 | 0 | 0 | 0 | 198 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 5:15 PM | 0 | 0 | 49 | 0 | 0 | 0 | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 5:30 PM | 0 | 0 | 54 | 0 | 0 | 0 | 142 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 5:45 PM | 0 | 0 | 56 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |

| **AM PEAK HOUR** 7:45 AM to 8:45 AM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **633** | **0** | **0** | **0** | **179** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **110** |
| ***PHF*** | **0.70** | | | | **0.80** | | | | **0.00** | | | | **0.76** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **1.6%** | **0.0%** | **0.0%** | **0.0%** | **3.9%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **2.7%** |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **295** | **0** | **0** | **0** | **660** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **32** |
| ***PHF*** | **0.95** | | | | **0.89** | | | | **0.00** | | | | **0.73** | | | |
| ***HV %*** | **0.0%** | **0.0%** | **1.4%** | **0.0%** | **0.0%** | **0.0%** | **1.2%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **12.5%** |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 11 |
| Location: | Portsmouth, NH |
| Street 1: | Grafton Road |
| Street 2: | I-95 Southbound Off-Ramp |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

## *HEAVY VEHICLES*

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 7:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 7:15 AM | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 8:15 AM | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:15 PM | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:45 PM | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR** 7:00 AM to 8:00 AM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **8** | **0** | **0** | **0** | **11** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| ***PHF*** | **0.40** | | | | **0.69** | | | | **0.00** | | | | **0.38** | | | |

| **PM PEAK HOUR** 4:00 PM to 5:00 PM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right | U-Turn | Left | Thru | Right |
| | **0** | **0** | **4** | **0** | **0** | **0** | **8** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **4** |
| ***PHF*** | **0.50** | | | | **0.50** | | | | **0.00** | | | | **0.50** | | | |

| | |
|---|---|
| Client: | Matthew Stoutz, PE, PTOE, RSP1 |
| Project #: | 856_010_TB |
| BTD #: | Location 11 |
| Location: | Portsmouth, NH |
| Street 1: | Grafton Road |
| Street 2: | I-95 Southbound Off-Ramp |
| Count Date: | 2/17/2022 |
| Day of Week: | Thursday |
| Weather: | Cloudy, 55°F |

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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www.BostonTrafficData.com

## *PEDESTRIANS & BICYCLES*

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **AM PEAK HOUR**[1] 7:45 AM to 8:45 AM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| **PM PEAK HOUR**[1] 4:00 PM to 5:00 PM | Grafton Road Northbound | | | | Grafton Road Southbound | | | | Eastbound | | | | I-95 Southbound Off-Ramp Westbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED | Left | Thru | Right | PED |
| | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

# Volume Report

**Job** 1202_5_TB_ATR 1A
**Area** Portsmouth, NH
**Location** Pease Blvd (Newington St) EB, 200' west of Rte 4 SB Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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www.BostonTrafficData.com

**Tuesday, March 7, 2023**

| Time | Total | | EB | | | | Time | Total | | EB | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 57 | | 57 | | 0 | | 1200 | 221 | | 221 | | 0 | |
| 0015 | 27 | | 27 | | 0 | | 1215 | 171 | | 171 | | 0 | |
| 0030 | 48 | | 48 | | 0 | | 1230 | 146 | | 146 | | 0 | |
| 0045 | 10 | 142 | 10 | 142 | 0 | 0 | 1245 | 126 | 664 | 126 | 664 | 0 | 0 |
| 0100 | 13 | | 13 | | 0 | | 1300 | 132 | | 132 | | 0 | |
| 0115 | 9 | | 9 | | 0 | | 1315 | 111 | | 111 | | 0 | |
| 0130 | 5 | | 5 | | 0 | | 1330 | 130 | | 130 | | 0 | |
| 0145 | 9 | 36 | 9 | 36 | 0 | 0 | 1345 | 153 | 526 | 153 | 526 | 0 | 0 |
| 0200 | 4 | | 4 | | 0 | | 1400 | 150 | | 150 | | 0 | |
| 0215 | 2 | | 2 | | 0 | | 1415 | 142 | | 142 | | 0 | |
| 0230 | 7 | | 7 | | 0 | | 1430 | 243 | | 243 | | 0 | |
| 0245 | 4 | 17 | 4 | 17 | 0 | 0 | 1445 | 193 | 728 | 193 | 728 | 0 | 0 |
| 0300 | 1 | | 1 | | 0 | | 1500 | 223 | | 223 | | 0 | |
| 0315 | 4 | | 4 | | 0 | | 1515 | 165 | | 165 | | 0 | |
| 0330 | 7 | | 7 | | 0 | | 1530 | 281 | | 281 | | 0 | |
| 0345 | 5 | 17 | 5 | 17 | 0 | 0 | 1545 | 202 | 871 | 202 | 871 | 0 | 0 |
| 0400 | 6 | | 6 | | 0 | | 1600 | 325 | | 325 | | 0 | |
| 0415 | 7 | | 7 | | 0 | | 1615 | 307 | | 307 | | 0 | |
| 0430 | 6 | | 6 | | 0 | | 1630 | 325 | | 325 | | 0 | |
| 0445 | 9 | 28 | 9 | 28 | 0 | 0 | 1645 | 250 | 1207 | 250 | 1207 | 0 | 0 |
| 0500 | 8 | | 8 | | 0 | | 1700 | 339 | | 339 | | 0 | |
| 0515 | 10 | | 10 | | 0 | | 1715 | 238 | | 238 | | 0 | |
| 0530 | 13 | | 13 | | 0 | | 1730 | 165 | | 165 | | 0 | |
| 0545 | 18 | 49 | 18 | 49 | 0 | 0 | 1745 | 146 | 888 | 146 | 888 | 0 | 0 |
| 0600 | 24 | | 24 | | 0 | | 1800 | 137 | | 137 | | 0 | |
| 0615 | 16 | | 16 | | 0 | | 1815 | 92 | | 92 | | 0 | |
| 0630 | 26 | | 26 | | 0 | | 1830 | 78 | | 78 | | 0 | |
| 0645 | 37 | 103 | 37 | 103 | 0 | 0 | 1845 | 58 | 365 | 58 | 365 | 0 | 0 |
| 0700 | 48 | | 48 | | 0 | | 1900 | 85 | | 85 | | 0 | |
| 0715 | 41 | | 41 | | 0 | | 1915 | 43 | | 43 | | 0 | |
| 0730 | 42 | | 42 | | 0 | | 1930 | 41 | | 41 | | 0 | |
| 0745 | 52 | 183 | 52 | 183 | 0 | 0 | 1945 | 34 | 203 | 34 | 203 | 0 | 0 |
| 0800 | 51 | | 51 | | 0 | | 2000 | 50 | | 50 | | 0 | |
| 0815 | 61 | | 61 | | 0 | | 2015 | 17 | | 17 | | 0 | |
| 0830 | 60 | | 60 | | 0 | | 2030 | 28 | | 28 | | 0 | |
| 0845 | 70 | 242 | 70 | 242 | 0 | 0 | 2045 | 17 | 112 | 17 | 112 | 0 | 0 |
| 0900 | 78 | | 78 | | 0 | | 2100 | 12 | | 12 | | 0 | |
| 0915 | 87 | | 87 | | 0 | | 2115 | 17 | | 17 | | 0 | |
| 0930 | 93 | | 93 | | 0 | | 2130 | 15 | | 15 | | 0 | |
| 0945 | 88 | 346 | 88 | 346 | 0 | 0 | 2145 | 18 | 62 | 18 | 62 | 0 | 0 |
| 1000 | 98 | | 98 | | 0 | | 2200 | 21 | | 21 | | 0 | |
| 1015 | 104 | | 104 | | 0 | | 2215 | 9 | | 9 | | 0 | |
| 1030 | 109 | | 109 | | 0 | | 2230 | 7 | | 7 | | 0 | |
| 1045 | 111 | 422 | 111 | 422 | 0 | 0 | 2245 | 19 | 56 | 19 | 56 | 0 | 0 |
| 1100 | 137 | | 137 | | 0 | | 2300 | 20 | | 20 | | 0 | |
| 1115 | 143 | | 143 | | 0 | | 2315 | 16 | | 16 | | 0 | |
| 1130 | 150 | | 150 | | 0 | | 2330 | 60 | | 60 | | 0 | |
| 1145 | 185 | 615 | 185 | 615 | 0 | 0 | 2345 | 32 | 128 | 32 | 128 | 0 | 0 |
| | | | | | | | **Total** | **8010** | | **8010** | | **0** | |

# Volume Report

**Job** 1202_5_TB_ATR 1A
**Area** Portsmouth, NH
**Location** Pease Blvd (Newington St) EB, 200' west of Rte 4 SB Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

**Wednesday, March 8, 2023**

| Time | Total | | EB | | | | Time | Total | | EB | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 58 | | 58 | | 0 | | 1200 | 236 | | 236 | | 0 | |
| 0015 | 24 | | 24 | | 0 | | 1215 | 182 | | 182 | | 0 | |
| 0030 | 42 | | 42 | | 0 | | 1230 | 195 | | 195 | | 0 | |
| 0045 | 15 | 139 | 15 | 139 | 0 | 0 | 1245 | 152 | 765 | 152 | 765 | 0 | 0 |
| 0100 | 16 | | 16 | | 0 | | 1300 | 126 | | 126 | | 0 | |
| 0115 | 11 | | 11 | | 0 | | 1315 | 117 | | 117 | | 0 | |
| 0130 | 9 | | 9 | | 0 | | 1330 | 128 | | 128 | | 0 | |
| 0145 | 5 | 41 | 5 | 41 | 0 | 0 | 1345 | 144 | 515 | 144 | 515 | 0 | 0 |
| 0200 | 5 | | 5 | | 0 | | 1400 | 153 | | 153 | | 0 | |
| 0215 | 7 | | 7 | | 0 | | 1415 | 137 | | 137 | | 0 | |
| 0230 | 4 | | 4 | | 0 | | 1430 | 255 | | 255 | | 0 | |
| 0245 | 3 | 19 | 3 | 19 | 0 | 0 | 1445 | 215 | 760 | 215 | 760 | 0 | 0 |
| 0300 | 1 | | 1 | | 0 | | 1500 | 261 | | 261 | | 0 | |
| 0315 | 1 | | 1 | | 0 | | 1515 | 157 | | 157 | | 0 | |
| 0330 | 13 | | 13 | | 0 | | 1530 | 263 | | 263 | | 0 | |
| 0345 | 5 | 20 | 5 | 20 | 0 | 0 | 1545 | 221 | 902 | 221 | 902 | 0 | 0 |
| 0400 | 4 | | 4 | | 0 | | 1600 | 330 | | 330 | | 0 | |
| 0415 | 9 | | 9 | | 0 | | 1615 | 318 | | 318 | | 0 | |
| 0430 | 5 | | 5 | | 0 | | 1630 | 352 | | 352 | | 0 | |
| 0445 | 11 | 29 | 11 | 29 | 0 | 0 | 1645 | 245 | 1245 | 245 | 1245 | 0 | 0 |
| 0500 | 7 | | 7 | | 0 | | 1700 | 332 | | 332 | | 0 | |
| 0515 | 12 | | 12 | | 0 | | 1715 | 242 | | 242 | | 0 | |
| 0530 | 14 | | 14 | | 0 | | 1730 | 193 | | 193 | | 0 | |
| 0545 | 19 | 52 | 19 | 52 | 0 | 0 | 1745 | 155 | 922 | 155 | 922 | 0 | 0 |
| 0600 | 29 | | 29 | | 0 | | 1800 | 144 | | 144 | | 0 | |
| 0615 | 21 | | 21 | | 0 | | 1815 | 79 | | 79 | | 0 | |
| 0630 | 20 | | 20 | | 0 | | 1830 | 74 | | 74 | | 0 | |
| 0645 | 45 | 115 | 45 | 115 | 0 | 0 | 1845 | 82 | 379 | 82 | 379 | 0 | 0 |
| 0700 | 56 | | 56 | | 0 | | 1900 | 88 | | 88 | | 0 | |
| 0715 | 39 | | 39 | | 0 | | 1915 | 49 | | 49 | | 0 | |
| 0730 | 37 | | 37 | | 0 | | 1930 | 36 | | 36 | | 0 | |
| 0745 | 61 | 193 | 61 | 193 | 0 | 0 | 1945 | 39 | 212 | 39 | 212 | 0 | 0 |
| 0800 | 57 | | 57 | | 0 | | 2000 | 44 | | 44 | | 0 | |
| 0815 | 69 | | 69 | | 0 | | 2015 | 26 | | 26 | | 0 | |
| 0830 | 79 | | 79 | | 0 | | 2030 | 21 | | 21 | | 0 | |
| 0845 | 75 | 280 | 75 | 280 | 0 | 0 | 2045 | 21 | 112 | 21 | 112 | 0 | 0 |
| 0900 | 81 | | 81 | | 0 | | 2100 | 17 | | 17 | | 0 | |
| 0915 | 92 | | 92 | | 0 | | 2115 | 10 | | 10 | | 0 | |
| 0930 | 85 | | 85 | | 0 | | 2130 | 25 | | 25 | | 0 | |
| 0945 | 99 | 357 | 99 | 357 | 0 | 0 | 2145 | 19 | 71 | 19 | 71 | 0 | 0 |
| 1000 | 106 | | 106 | | 0 | | 2200 | 15 | | 15 | | 0 | |
| 1015 | 116 | | 116 | | 0 | | 2215 | 11 | | 11 | | 0 | |
| 1030 | 98 | | 98 | | 0 | | 2230 | 10 | | 10 | | 0 | |
| 1045 | 135 | 455 | 135 | 455 | 0 | 0 | 2245 | 11 | 47 | 11 | 47 | 0 | 0 |
| 1100 | 161 | | 161 | | 0 | | 2300 | 22 | | 22 | | 0 | |
| 1115 | 159 | | 159 | | 0 | | 2315 | 5 | | 5 | | 0 | |
| 1130 | 183 | | 183 | | 0 | | 2330 | 45 | | 45 | | 0 | |
| 1145 | 178 | 681 | 178 | 681 | 0 | 0 | 2345 | 32 | 104 | 32 | 104 | 0 | 0 |
| | | | | | | | **Total** | **8415** | | **8415** | | **0** | |

# Volume Report

**Job** 1202_5_TB_ATR 1B
**Area** Portsmouth, NH
**Location** Pease Blvd (Newington St) WB, 200' west of Rte 4 SB Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

**Tuesday, March 7, 2023**

| Time | Total | | WB | | | | Time | Total | | WB | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 6 | | 6 | | 0 | | 1200 | 142 | | 142 | | 0 | |
| 0015 | 6 | | 6 | | 0 | | 1215 | 157 | | 157 | | 0 | |
| 0030 | 3 | | 3 | | 0 | | 1230 | 150 | | 150 | | 0 | |
| 0045 | 5 | 20 | 5 | 20 | 0 | 0 | 1245 | 196 | 645 | 196 | 645 | 0 | 0 |
| 0100 | 3 | | 3 | | 0 | | 1300 | 151 | | 151 | | 0 | |
| 0115 | 1 | | 1 | | 0 | | 1315 | 128 | | 128 | | 0 | |
| 0130 | 4 | | 4 | | 0 | | 1330 | 139 | | 139 | | 0 | |
| 0145 | 0 | 8 | 0 | 8 | 0 | 0 | 1345 | 121 | 539 | 121 | 539 | 0 | 0 |
| 0200 | 8 | | 8 | | 0 | | 1400 | 120 | | 120 | | 0 | |
| 0215 | 3 | | 3 | | 0 | | 1415 | 116 | | 116 | | 0 | |
| 0230 | 4 | | 4 | | 0 | | 1430 | 113 | | 113 | | 0 | |
| 0245 | 2 | 17 | 2 | 17 | 0 | 0 | 1445 | 121 | 470 | 121 | 470 | 0 | 0 |
| 0300 | 4 | | 4 | | 0 | | 1500 | 89 | | 89 | | 0 | |
| 0315 | 3 | | 3 | | 0 | | 1515 | 113 | | 113 | | 0 | |
| 0330 | 7 | | 7 | | 0 | | 1530 | 98 | | 98 | | 0 | |
| 0345 | 6 | 20 | 6 | 20 | 0 | 0 | 1545 | 80 | 380 | 80 | 380 | 0 | 0 |
| 0400 | 3 | | 3 | | 0 | | 1600 | 79 | | 79 | | 0 | |
| 0415 | 7 | | 7 | | 0 | | 1615 | 89 | | 89 | | 0 | |
| 0430 | 19 | | 19 | | 0 | | 1630 | 88 | | 88 | | 0 | |
| 0445 | 33 | 62 | 33 | 62 | 0 | 0 | 1645 | 84 | 340 | 84 | 340 | 0 | 0 |
| 0500 | 77 | | 77 | | 0 | | 1700 | 63 | | 63 | | 0 | |
| 0515 | 132 | | 132 | | 0 | | 1715 | 50 | | 50 | | 0 | |
| 0530 | 178 | | 178 | | 0 | | 1730 | 56 | | 56 | | 0 | |
| 0545 | 202 | 589 | 202 | 589 | 0 | 0 | 1745 | 45 | 214 | 45 | 214 | 0 | 0 |
| 0600 | 130 | | 130 | | 0 | | 1800 | 54 | | 54 | | 0 | |
| 0615 | 150 | | 150 | | 0 | | 1815 | 61 | | 61 | | 0 | |
| 0630 | 163 | | 163 | | 0 | | 1830 | 35 | | 35 | | 0 | |
| 0645 | 245 | 688 | 245 | 688 | 0 | 0 | 1845 | 27 | 177 | 27 | 177 | 0 | 0 |
| 0700 | 180 | | 180 | | 0 | | 1900 | 24 | | 24 | | 0 | |
| 0715 | 219 | | 219 | | 0 | | 1915 | 26 | | 26 | | 0 | |
| 0730 | 260 | | 260 | | 0 | | 1930 | 35 | | 35 | | 0 | |
| 0745 | 313 | 972 | 313 | 972 | 0 | 0 | 1945 | 28 | 113 | 28 | 113 | 0 | 0 |
| 0800 | 275 | | 275 | | 0 | | 2000 | 19 | | 19 | | 0 | |
| 0815 | 241 | | 241 | | 0 | | 2015 | 31 | | 31 | | 0 | |
| 0830 | 184 | | 184 | | 0 | | 2030 | 14 | | 14 | | 0 | |
| 0845 | 193 | 893 | 193 | 893 | 0 | 0 | 2045 | 16 | 80 | 16 | 80 | 0 | 0 |
| 0900 | 146 | | 146 | | 0 | | 2100 | 14 | | 14 | | 0 | |
| 0915 | 126 | | 126 | | 0 | | 2115 | 11 | | 11 | | 0 | |
| 0930 | 90 | | 90 | | 0 | | 2130 | 8 | | 8 | | 0 | |
| 0945 | 114 | 476 | 114 | 476 | 0 | 0 | 2145 | 7 | 40 | 7 | 40 | 0 | 0 |
| 1000 | 89 | | 89 | | 0 | | 2200 | 4 | | 4 | | 0 | |
| 1015 | 108 | | 108 | | 0 | | 2215 | 7 | | 7 | | 0 | |
| 1030 | 104 | | 104 | | 0 | | 2230 | 5 | | 5 | | 0 | |
| 1045 | 105 | 406 | 105 | 406 | 0 | 0 | 2245 | 7 | 23 | 7 | 23 | 0 | 0 |
| 1100 | 89 | | 89 | | 0 | | 2300 | 7 | | 7 | | 0 | |
| 1115 | 106 | | 106 | | 0 | | 2315 | 2 | | 2 | | 0 | |
| 1130 | 114 | | 114 | | 0 | | 2330 | 5 | | 5 | | 0 | |
| 1145 | 128 | 437 | 128 | 437 | 0 | 0 | 2345 | 6 | 20 | 6 | 20 | 0 | 0 |
| | | | | | | | **Total** | **7629** | | **7629** | | **0** | |

# Volume Report

**Job** 1202_5_TB_ATR 1B
**Area** Portsmouth, NH
**Location** Pease Blvd (Newington St) WB, 200' west of Rte 4 SB Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

**Wednesday, March 8, 2023**

| Time | Total | | WB | | | | Time | Total | | WB | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 4 | | 4 | | 0 | | 1200 | 145 | | 145 | | 0 | |
| 0015 | 3 | | 3 | | 0 | | 1215 | 196 | | 196 | | 0 | |
| 0030 | 0 | | 0 | | 0 | | 1230 | 161 | | 161 | | 0 | |
| 0045 | 0 | 7 | 0 | 7 | 0 | 0 | 1245 | 178 | 680 | 178 | 680 | 0 | 0 |
| 0100 | 6 | | 6 | | 0 | | 1300 | 164 | | 164 | | 0 | |
| 0115 | 2 | | 2 | | 0 | | 1315 | 136 | | 136 | | 0 | |
| 0130 | 5 | | 5 | | 0 | | 1330 | 158 | | 158 | | 0 | |
| 0145 | 4 | 17 | 4 | 17 | 0 | 0 | 1345 | 124 | 582 | 124 | 582 | 0 | 0 |
| 0200 | 5 | | 5 | | 0 | | 1400 | 123 | | 123 | | 0 | |
| 0215 | 3 | | 3 | | 0 | | 1415 | 106 | | 106 | | 0 | |
| 0230 | 1 | | 1 | | 0 | | 1430 | 125 | | 125 | | 0 | |
| 0245 | 3 | 12 | 3 | 12 | 0 | 0 | 1445 | 130 | 484 | 130 | 484 | 0 | 0 |
| 0300 | 0 | | 0 | | 0 | | 1500 | 99 | | 99 | | 0 | |
| 0315 | 0 | | 0 | | 0 | | 1515 | 102 | | 102 | | 0 | |
| 0330 | 7 | | 7 | | 0 | | 1530 | 91 | | 91 | | 0 | |
| 0345 | 7 | 14 | 7 | 14 | 0 | 0 | 1545 | 93 | 385 | 93 | 385 | 0 | 0 |
| 0400 | 8 | | 8 | | 0 | | 1600 | 54 | | 54 | | 0 | |
| 0415 | 11 | | 11 | | 0 | | 1615 | 78 | | 78 | | 0 | |
| 0430 | 21 | | 21 | | 0 | | 1630 | 87 | | 87 | | 0 | |
| 0445 | 37 | 77 | 37 | 77 | 0 | 0 | 1645 | 90 | 309 | 90 | 309 | 0 | 0 |
| 0500 | 68 | | 68 | | 0 | | 1700 | 65 | | 65 | | 0 | |
| 0515 | 127 | | 127 | | 0 | | 1715 | 67 | | 67 | | 0 | |
| 0530 | 162 | | 162 | | 0 | | 1730 | 57 | | 57 | | 0 | |
| 0545 | 206 | 563 | 206 | 563 | 0 | 0 | 1745 | 57 | 246 | 57 | 246 | 0 | 0 |
| 0600 | 137 | | 137 | | 0 | | 1800 | 41 | | 41 | | 0 | |
| 0615 | 151 | | 151 | | 0 | | 1815 | 44 | | 44 | | 0 | |
| 0630 | 170 | | 170 | | 0 | | 1830 | 44 | | 44 | | 0 | |
| 0645 | 259 | 717 | 259 | 717 | 0 | 0 | 1845 | 24 | 153 | 24 | 153 | 0 | 0 |
| 0700 | 179 | | 179 | | 0 | | 1900 | 38 | | 38 | | 0 | |
| 0715 | 224 | | 224 | | 0 | | 1915 | 32 | | 32 | | 0 | |
| 0730 | 264 | | 264 | | 0 | | 1930 | 28 | | 28 | | 0 | |
| 0745 | 335 | 1002 | 335 | 1002 | 0 | 0 | 1945 | 33 | 131 | 33 | 131 | 0 | 0 |
| 0800 | 262 | | 262 | | 0 | | 2000 | 21 | | 21 | | 0 | |
| 0815 | 274 | | 274 | | 0 | | 2015 | 22 | | 22 | | 0 | |
| 0830 | 221 | | 221 | | 0 | | 2030 | 12 | | 12 | | 0 | |
| 0845 | 248 | 1005 | 248 | 1005 | 0 | 0 | 2045 | 22 | 77 | 22 | 77 | 0 | 0 |
| 0900 | 133 | | 133 | | 0 | | 2100 | 26 | | 26 | | 0 | |
| 0915 | 135 | | 135 | | 0 | | 2115 | 19 | | 19 | | 0 | |
| 0930 | 114 | | 114 | | 0 | | 2130 | 14 | | 14 | | 0 | |
| 0945 | 119 | 501 | 119 | 501 | 0 | 0 | 2145 | 8 | 67 | 8 | 67 | 0 | 0 |
| 1000 | 102 | | 102 | | 0 | | 2200 | 8 | | 8 | | 0 | |
| 1015 | 122 | | 122 | | 0 | | 2215 | 0 | | 0 | | 0 | |
| 1030 | 112 | | 112 | | 0 | | 2230 | 7 | | 7 | | 0 | |
| 1045 | 124 | 460 | 124 | 460 | 0 | 0 | 2245 | 4 | 19 | 4 | 19 | 0 | 0 |
| 1100 | 97 | | 97 | | 0 | | 2300 | 5 | | 5 | | 0 | |
| 1115 | 124 | | 124 | | 0 | | 2315 | 3 | | 3 | | 0 | |
| 1130 | 149 | | 149 | | 0 | | 2330 | 7 | | 7 | | 0 | |
| 1145 | 133 | 503 | 133 | 503 | 0 | 0 | 2345 | 5 | 20 | 5 | 20 | 0 | 0 |
| | | | | | | | **Total** | **8031** | | **8031** | | **0** | |

# APPENDIX B

NHDOT Traffic Data

| Location Info | |
|---|---|
| Location ID | 82379024 |
| Type | I-SECTION |
| Functional Class | 7 |
| Located On | Pease Blvd |
| | |
| Direction | 2-WAY |
| Community | PORTSMOUTH |
| MPO_ID | |
| HPMS ID | |
| Agency | New Hampshire DOT |
| | |
| | |

| Count Data Info | |
|---|---|
| Start Date | 7/18/2018 |
| End Date | 7/19/2018 |
| Start Time | 12:00 AM |
| End Time | 12:00 AM |
| Direction | 2-WAY |
| Notes | nhdot |
| Count Source | 8.2379E+11 |
| File Name | 823790243070.prn |
| Weather | |
| Study | |
| Owner | iwong |
| QC Status | Accepted |

## Interval: 60 mins

| Time | Hourly Count |
|---|---|
| 00:00 - 01:00 | 251 |
| 01:00 - 02:00 | 46 |
| 02:00 - 03:00 | 123 |
| 03:00 - 04:00 | 92 |
| 04:00 - 05:00 | 184 |
| 05:00 - 06:00 | 416 |
| 06:00 - 07:00 | 1130 |
| 07:00 - 08:00 | 1664 |
| 08:00 - 09:00 | 1817 |
| 09:00 - 10:00 | 1277 |
| 10:00 - 11:00 | 1079 |
| 11:00 - 12:00 | 1570 |
| 12:00 - 13:00 | 2098 |
| 13:00 - 14:00 | 1616 |
| 14:00 - 15:00 | 1424 |
| 15:00 - 16:00 | 1936 |
| 16:00 - 17:00 | 2032 |
| 17:00 - 18:00 | 1831 |
| 18:00 - 19:00 | 989 |
| 19:00 - 20:00 | 603 |
| 20:00 - 21:00 | 417 |
| 21:00 - 22:00 | 343 |
| 22:00 - 23:00 | 210 |
| 23:00 - 24:00 | 166 |
| TOTAL | 23314 |

Year 2018 Monthly Data

Group 4 Averages: Urban Highways

| Month | ADT | Adjustment to Average | Adjustment to Peak |
|---|---|---|---|
| January | 11,282 | 1.13 | 1.24 |
| February | 11,848 | 1.08 | 1.18 |
| March | 11,828 | 1.08 | 1.18 |
| April | 12,491 | 1.02 | 1.12 |
| May | 13,587 | 0.94 | 1.03 |
| June | 13,911 | 0.92 | 1.00 |
| July | 13,765 | 0.93 | 1.01 |
| August | 13,945 | 0.92 | 1.00 |
| September | 13,168 | 0.97 | 1.06 |
| October | 13,367 | 0.96 | 1.04 |
| November | 12,215 | 1.05 | 1.14 |
| December | 11,963 | 1.07 | 1.17 |
| Average ADT: | 12,781 | | |
| Peak ADT: | 13,945 | | |

| GROUP | COUNTER | TOWN | LOCATION |
|---|---|---|---|
| 04 | 02051003 | BOW | NH 3A south of Robinson Rd |
| 04 | 02089001 | CHICHESTER | NH 28 (Suncook Valley Rd) north of Bear Hill Rd |
| 04 | 02091001 | CLAREMONT | NH 12/103 east of Vermont SL |
| 04 | 62099056 | CONCORD | NH 106 (Sheep Davis Rd) at Loudon TL (north of Ashby Rd) |
| 04 | 72099278 | CONCORD | US 3 (Fisherville Rd) north of Sewalls Falls Rd |
| 04 | 02125001 | DOVER | Dover Point Rd south of Thornwood Ln |
| 04 | 02133021 | DURHAM | US 4 east of NH 108 |
| 04 | 82197076 | HAMPTON | US 1 (Lafayette Rd) south of Ramp to NH 101 |
| *04* | *02229022* | *HUDSON** | *Circumferential Hwy east of Nashua TL* |
| 04 | 02253025 | LEBANON | NH 120 1 mile south of Hanover TL (south of Lahaye Dr) |
| 04 | 02255001 | LEE | NH 125 (Calef Hwy) north of Pinkham Rd |
| 04 | 02287001 | MARLBOROUGH | NH 12 at Swanzey TL |
| 04 | 02297001 | MERRIMACK | US 3 (Daniel Webster Hwy) north of Hilton Dr |
| *04* | *02303001* | *MILFORD** | *NH 101A at Amherst TL (west of Overlook Dr)* |
| *04* | *02315051* | *NASHUA** | *NH 111 (Bridge / Ferry St) at Hudson TL* |
| 04 | 02339001 | NEWPORT | NH 10 1 mile south of Croydon TL (north of Corbin Rd) |
| 04 | 02345001 | NORTH HAMPTON | US 1 (Lafayette Rd) north of North Rd |
| *04* | *62387052* | *RINDGE** | *US 202 at Jaffrey TL (north of County Rd)* |
| 04 | 02445001 | TEMPLE | NH 101 at Wilton TL (west of Old County Farm Rd) |
| 04 | 02489001 | WINDHAM | NH 28 at Derry TL (north of Northland Rd) |

** denotes counter that is not included in calculation*

Year 2019 Monthly Data

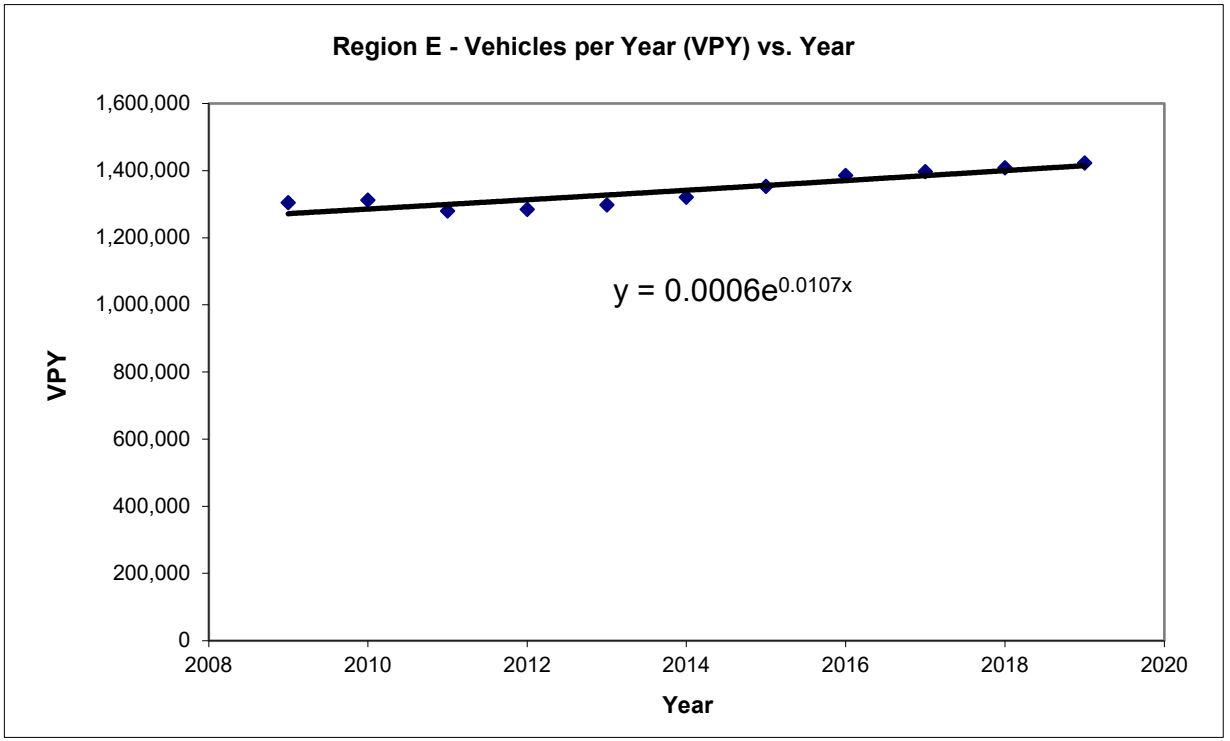
Group 4 Averages: Urban Highways

| Month | ADT | Adjustment to Average | Adjustment to Peak |
|---|---|---|---|
| January | 11,431 | 1.12 | 1.23 |
| February | 11,848 | 1.08 | 1.18 |
| March | 12,141 | 1.06 | 1.15 |
| April | 12,860 | 1.00 | 1.09 |
| May | 13,551 | 0.95 | 1.03 |
| June | 13,785 | 0.93 | 1.02 |
| July | 13,942 | 0.92 | 1.01 |
| August | 14,016 | 0.92 | 1.00 |
| September | 13,379 | 0.96 | 1.05 |
| October | 13,339 | 0.96 | 1.05 |
| November | 12,265 | 1.05 | 1.14 |
| December | 11,496 | 1.12 | 1.22 |
| Average ADT: | 12,838 | | |
| Peak ADT: | 14,016 | | |

| GROUP | COUNTER | TOWN | LOCATION |
|---|---|---|---|
| 04 | 02051003 | BOW | NH 3A south of Robinson Rd |
| 04 | 02089001 | CHICHESTER | NH 28 (Suncook Valley Rd) north of Bear Hill Rd |
| 04 | 02091001 | CLAREMONT | NH 12/103 east of Vermont SL |
| 04 | 62099056 | CONCORD | NH 106 (Sheep Davis Rd) at Loudon TL (north of Ashby Rd) |
| 04 | 72099278 | CONCORD | US 3 (Fisherville Rd) north of Sewalls Falls Rd |
| 04 | 02125001 | DOVER | Dover Point Rd south of Thornwood Ln |
| 04 | 02133021 | DURHAM | US 4 east of NH 108 |
| 04 | 82197076 | HAMPTON | US 1 (Lafayette Rd) south of Ramp to NH 101 |
| *04* | *02229022* | *HUDSON** | *Circumferential Hwy east of Nashua TL* |
| 04 | 02253025 | LEBANON | NH 120 1 mile south of Hanover TL (south of Lahaye Dr) |
| 04 | 02255001 | LEE | NH 125 (Calef Hwy) north of Pinkham Rd |
| 04 | 02287001 | MARLBOROUGH | NH 12 at Swanzey TL |
| 04 | 02297001 | MERRIMACK | US 3 (Daniel Webster Hwy) north of Hilton Dr |
| *04* | *02303001* | *MILFORD** | *NH 101A at Amherst TL (west of Overlook Dr)* |
| *04* | *02315051* | *NASHUA** | *NH 111 (Bridge / Ferry St) at Hudson TL* |
| 04 | 02339001 | NEWPORT | NH 10 1 mile south of Croydon TL (north of Corbin Rd) |
| 04 | 02345001 | NORTH HAMPTON | US 1 (Lafayette Rd) north of North Rd |
| *04* | *62387052* | *RINDGE** | *US 202 at Jaffrey TL (north of County Rd)* |
| 04 | 02445001 | TEMPLE | NH 101 at Wilton TL (west of Old County Farm Rd) |
| 04 | 02489001 | WINDHAM | NH 28 at Derry TL (north of Northland Rd) |

** denotes counter that is not included in calculation*

| Year | Total |
|---|---|
| 2009 | 1303948 |
| 2010 | 1312251 |
| 2011 | 1279824 |
| 2012 | 1284314 |
| 2013 | 1298171 |
| 2014 | 1320862 |
| 2015 | 1353486 |
| 2016 | 1385361 |
| 2017 | 1396932 |
| 2018 | 1408237 |
| 2019 | 1422176 |
| CAGR | 0.87% |
| Exp | 1.07% |
| Avg | 0.97% |



# APPENDIX C

Traffic Volume Adjustment Calculation

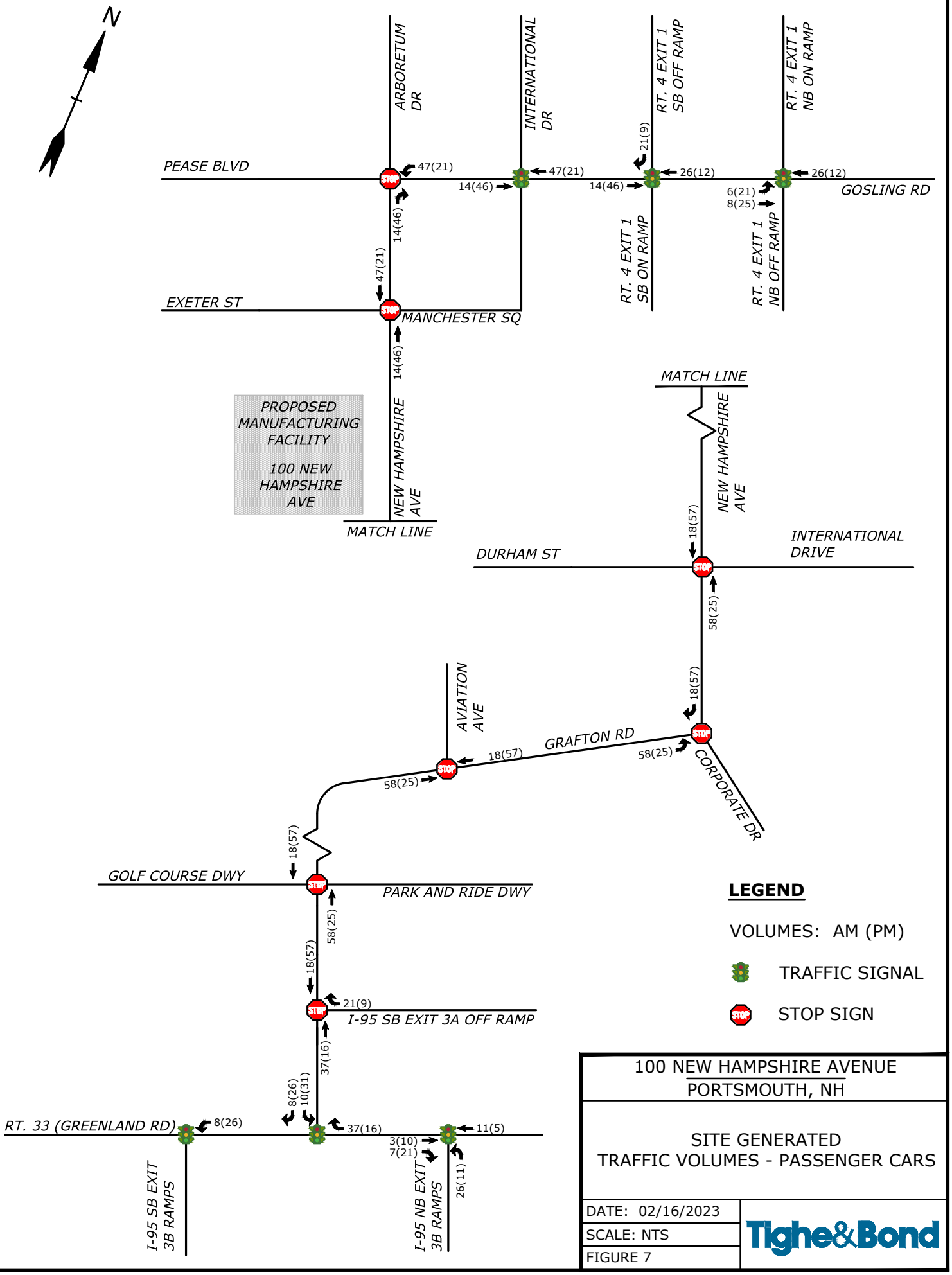
**Traffic Volume Adjustment Factor Calculation**

| Peak Hour | Feb 2022 | 2022 Seasonally Adjust to Peak[1] | March 2023 | 2023 Seasonally Adjust to Peak[2] | NHDOT Count Station Data (Loc ID 82379024) - Pease Blvd, West of Route 4 SB Ramps | | | 2022 Adjustment Factor (to 2019) | 2023 Adjustment Factor (to 2019) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | July 2018 | 2018 Seasonally Adjusted[2] | Grown to 2019[3] | | |
| AM Peak | 1027 | **1212** | 1175 | **1351** | 1817 | 1835 | **1854** | **53%** | **37%** |
| PM Peak | 1210 | **1428** | **1551** | **1783** | 2032 | 2052 | **2073** | **45%** | **16%** |

| | | |
|---|---|---|
| [1] 2019 Seasonal Adjustment Factor to Peak (Feb) | 1.18 | 2019 NHDOT Group 4 Adjustment to Peak for February |
| [2]2019 Seasonal Adjustment Factor to Peak (March) | 1.15 | 2019 NHDOT Group 4 Adjustment to Peak for March |
| [2]2018 Seasonal Adjustment Factor to Peak | 1.01 | 2018 NHDOT Group 4 Adjustment to Peak for July |
| [2]2019 Seasonal Adjustment Factor | 1.0 | 2019 NHDOT Group 4 Adjustment to Peak for August |
| [3]2019 Annual Growth | 1.0% | Per LOC ID 82379024 growth from 2018 to 2019 |

# APPENDIX D

Background Development Traffic Volumes



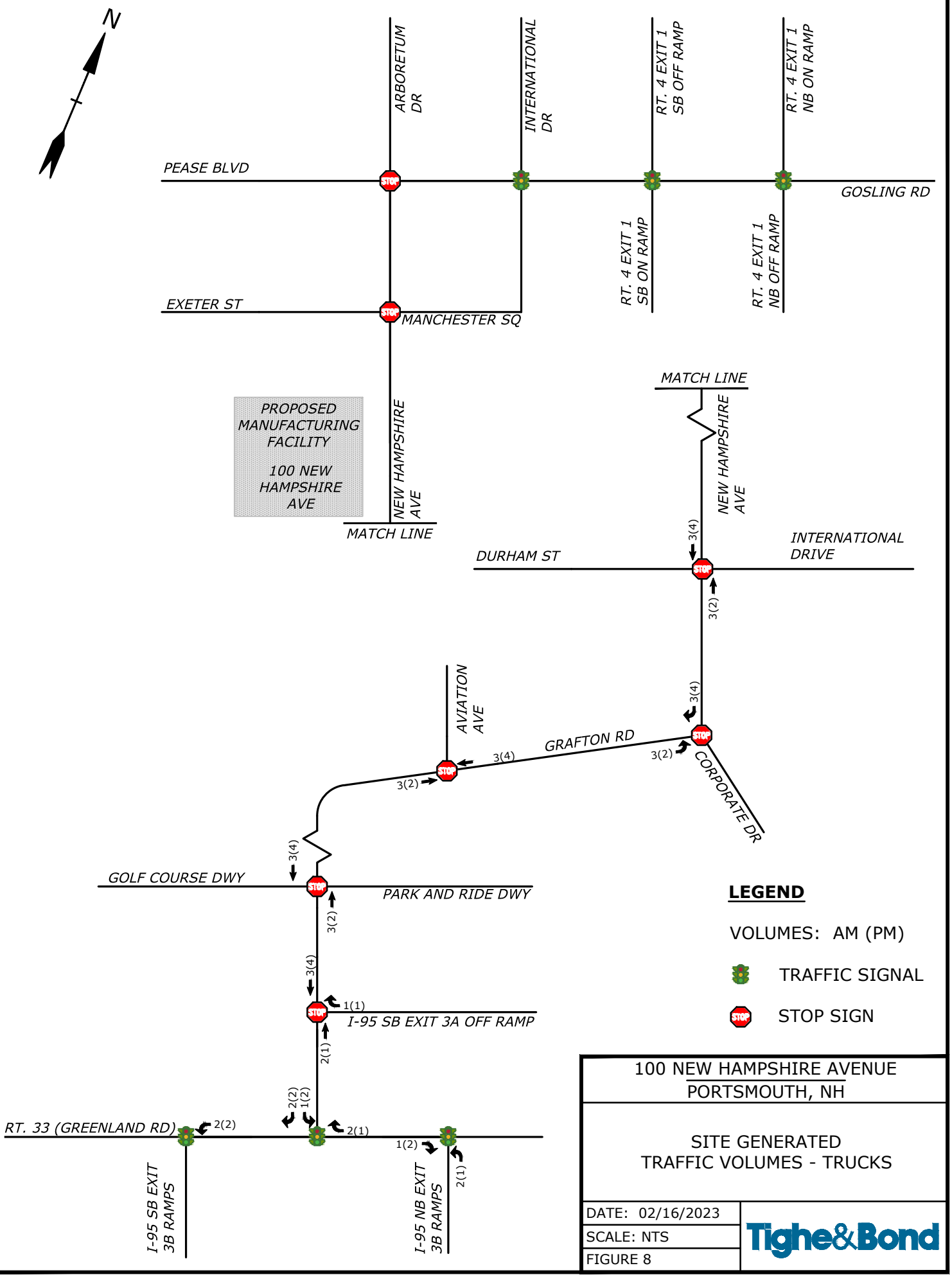

100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

SITE GENERATED
TRAFFIC VOLUMES - PASSENGER CARS

DATE: 02/16/2023
SCALE: NTS
FIGURE 7

Tighe&Bond

Feb 16, 2023-9:09am Plotted By: RCase
Tighe & Bond, Inc. \\tighebond.com\data\Data\Projects\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings_Figures\AutoCAD\Figures\Traffic Volume Figures.dwg



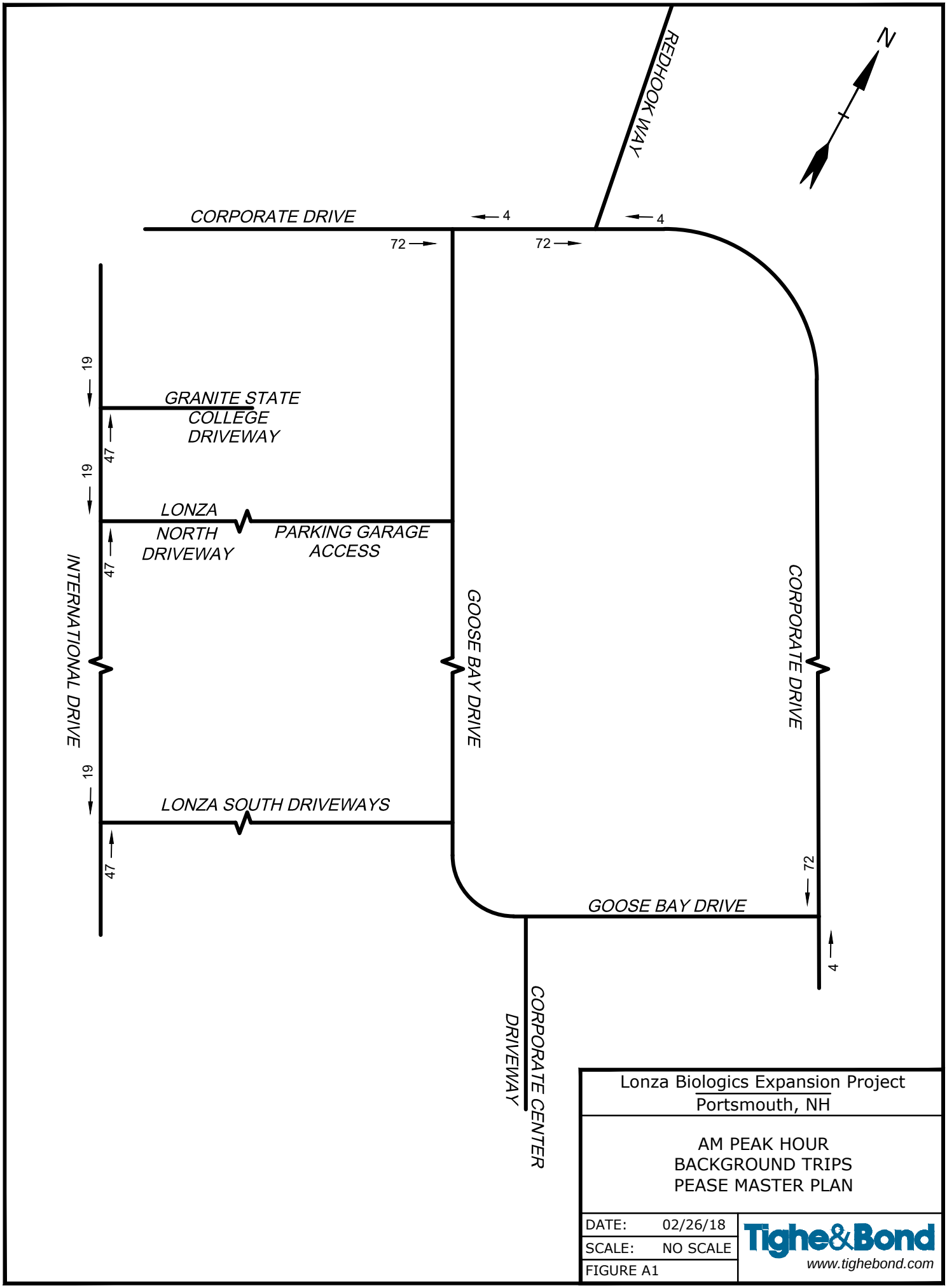

100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

SITE GENERATED
TRAFFIC VOLUMES - TRUCKS

DATE: 02/16/2023
SCALE: NTS
FIGURE 8

Tighe&Bond

Feb 16, 2023-9:10am Plotted By: RCase
Tighe & Bond, Inc. \\tighebond.com\data\Data\Projects\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings_Figures\AutoCAD\Figures\Traffic Volume Figures.dwg



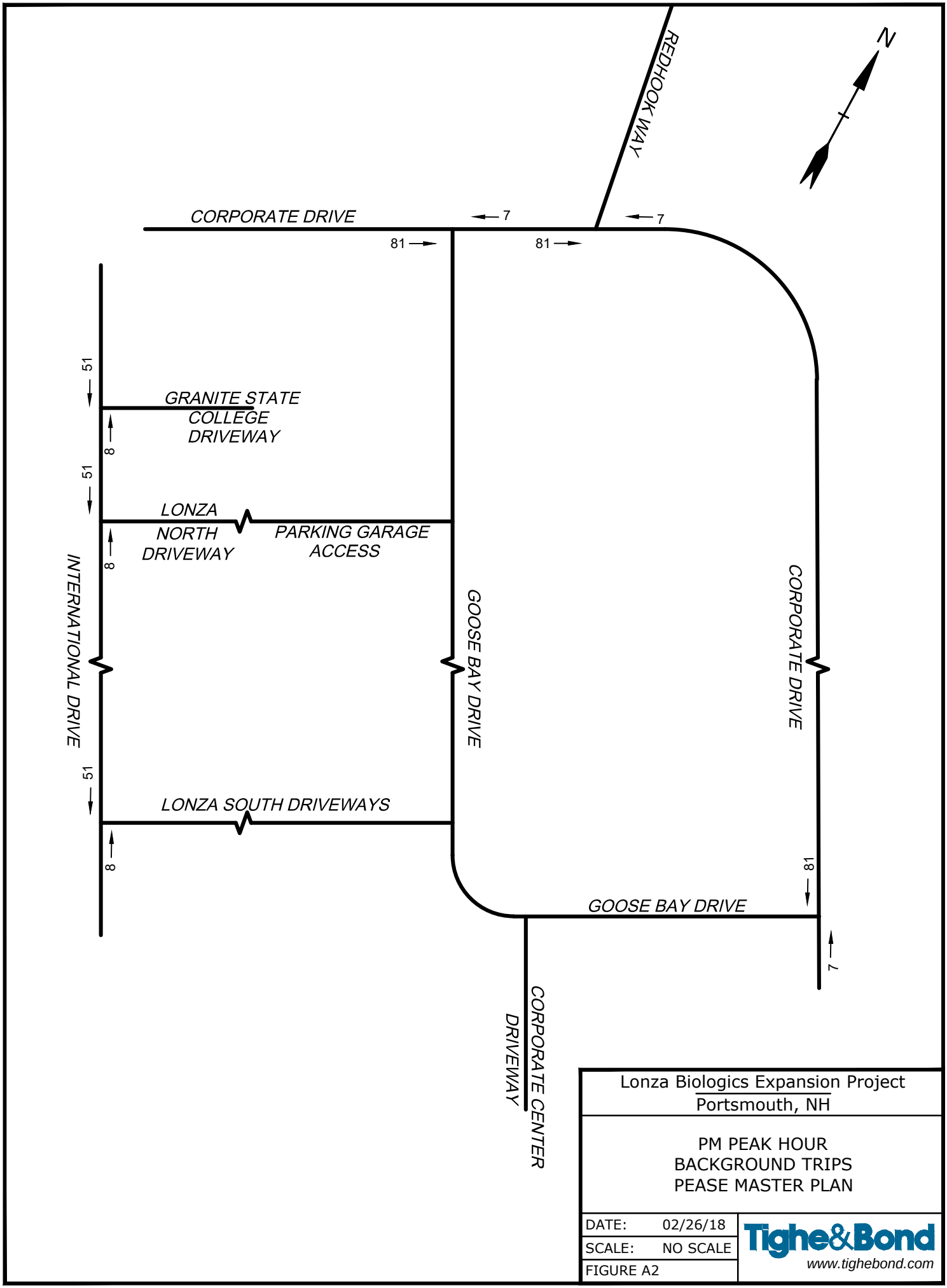

Lonza Biologics Expansion Project
Portsmouth, NH

AM PEAK HOUR
BACKGROUND TRIPS
PEASE MASTER PLAN

| | |
|---|---|
| DATE: | 02/26/18 |
| SCALE: | NO SCALE |
| FIGURE A1 | |

Tighe&Bond
www.tighebond.com

Feb 27, 2018-4:40pm Plotted By: DWBradshaw
Tighe & Bond, Inc. \\nas-wfo\data\Projects\L\L0700 Lonza Biologics Expansion was 1576F\013 Iron Parcel Redevelopment\Drawings_Figures\AutoCAD\Figures\Traffic Volumes_recover.dwg




Lonza Biologics Expansion Project
Portsmouth, NH

PM PEAK HOUR
BACKGROUND TRIPS
PEASE MASTER PLAN

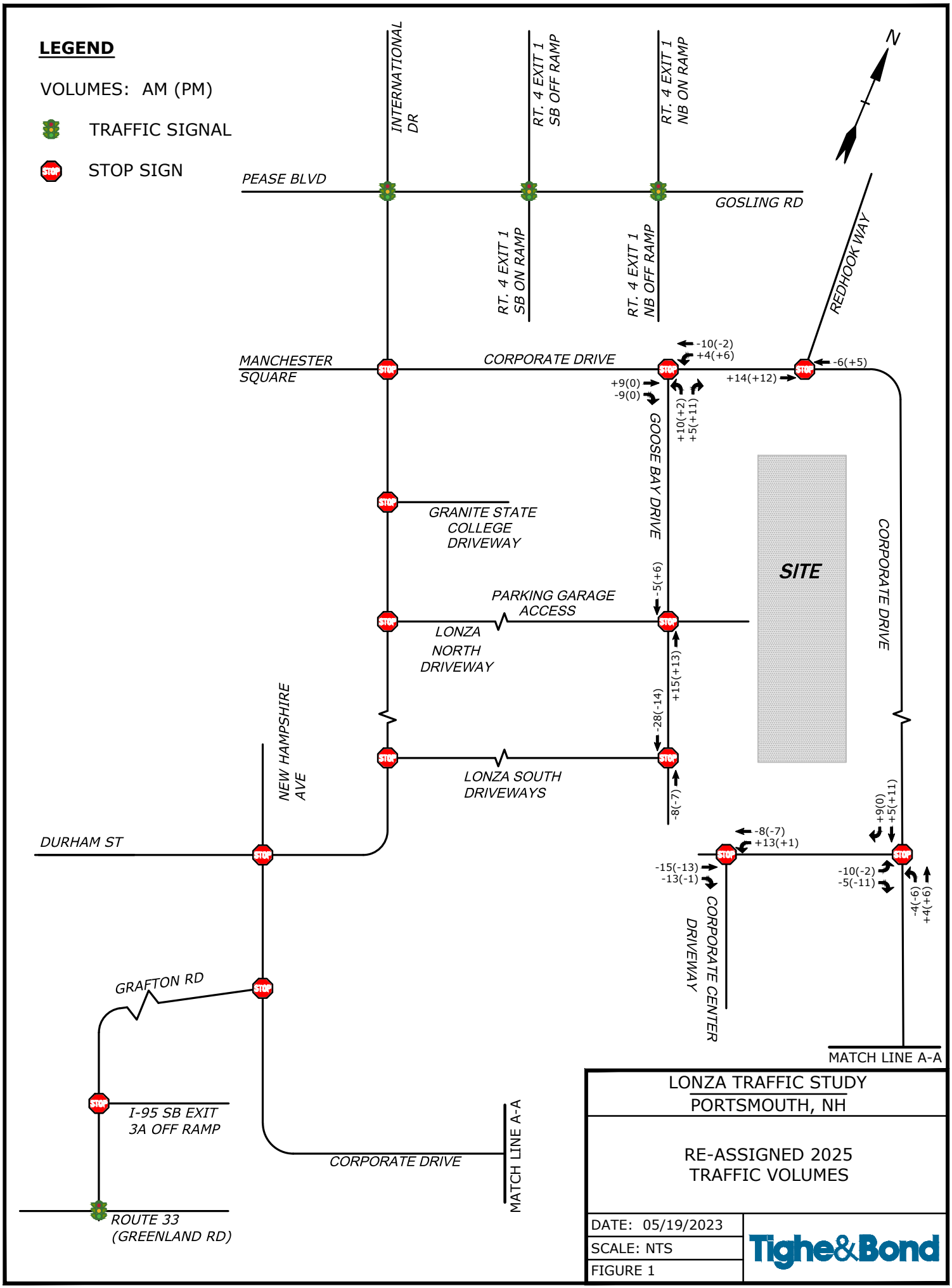
| | |
|---|---|
| DATE: | 02/26/18 |
| SCALE: | NO SCALE |
| FIGURE A2 | |

Tighe&Bond
www.tighebond.com

Feb 27, 2018-4:40pm Plotted By: DWBradshaw
Tighe & Bond, Inc. \\nas-wfo\data\Projects\LL\L0700 Lonza Biologics Expansion was 1576F\013 Iron Parcel Redevelopment\Drawings_Figures\AutoCAD\Figures\Traffic Volumes_recover.dwg

# APPENDIX E

Reassigned Traffic Volumes



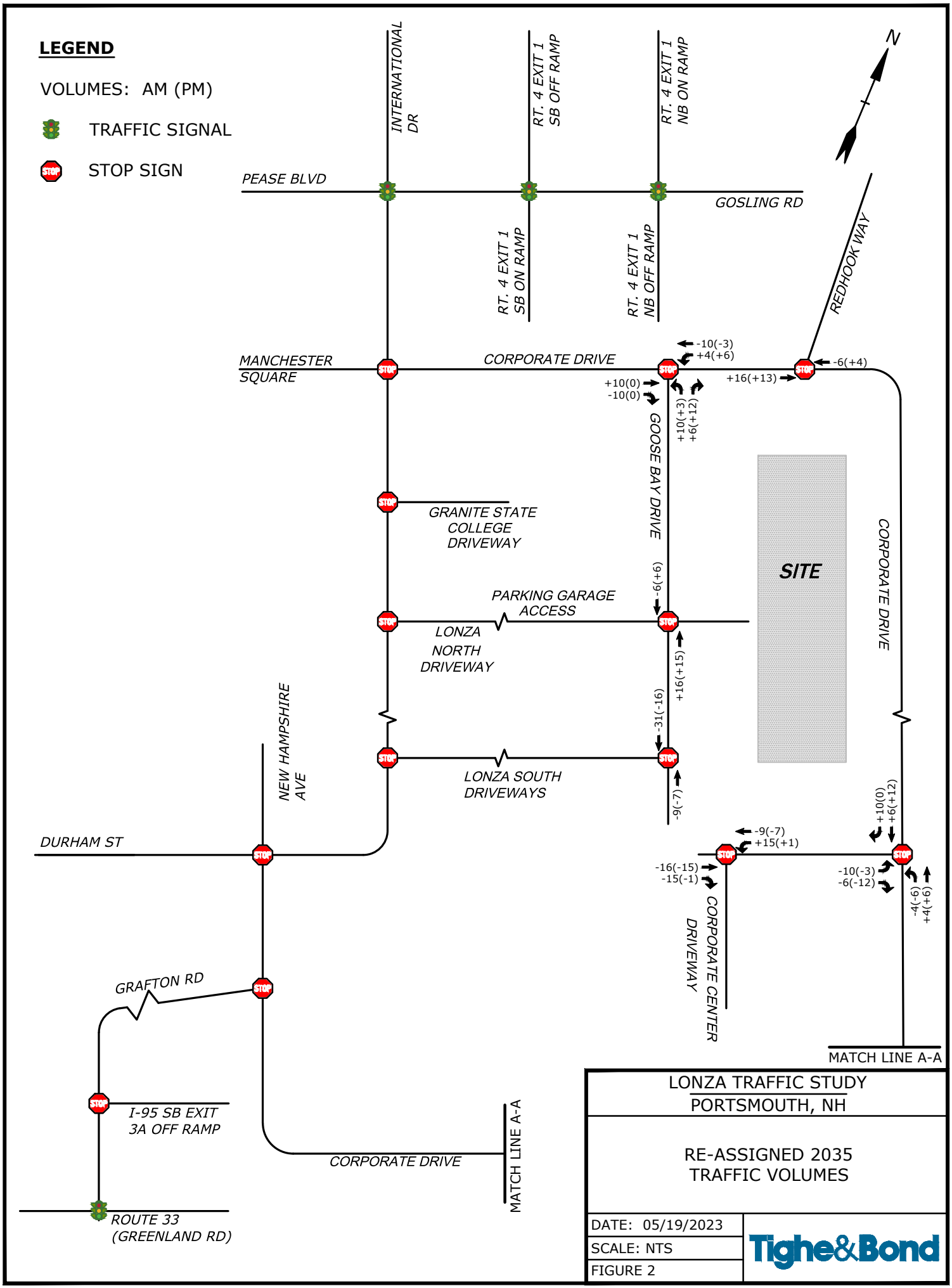

LONZA TRAFFIC STUDY
PORTSMOUTH, NH

RE-ASSIGNED 2025
TRAFFIC VOLUMES

DATE: 05/19/2023
SCALE: NTS
FIGURE 1

Tighe&Bond

May 19, 2023-10:49am Plotted By: MStoutz
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg




LONZA TRAFFIC STUDY
PORTSMOUTH, NH

RE-ASSIGNED 2035
TRAFFIC VOLUMES

DATE: 05/19/2023
SCALE: NTS
FIGURE 2

Tighe&Bond

May 19, 2023-10:49am Plotted By: MStoutz
Tighe & Bond, Inc. J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\Figures\L0700-026 Traffic Volume Figures.dwg

# APPENDIX F

Collision History Summary

**Intersection Collision History Summary**

**Intersection: Pease Boulevard at International Drive**

**COLLISION TYPE**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Fixed Object | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**CONTRIBUTING FACTOR**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**COLLISION EVENT**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Motor Vehicle | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**SEVERITY**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Minor Injury / Property Damage Only (PDO) | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**DAY & TIME**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Weekday Off-Peak | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**WEATHER**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**ROAD SURFACE CONDITION**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**LIGHT CONDITIONS**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 0 | 1 | 0 | **1** | **100.0%** |
| **TOTAL** | **0** | **1** | **0** | **1** | **100%** |

**Intersection Collision History Summary**

**Intersection: Pease Boulevard at US Route 4 SB Ramps**

**COLLISION TYPE**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Angle | 2 | 2 | 0 | **4** | **57.1%** |
| Rear-End | 0 | 1 | 0 | **1** | **14.3%** |
| Overturn/Rollover | 0 | 0 | 1 | **1** | **14.3%** |
| Sideswipe, Same Direction | 1 | 0 | 0 | **1** | **14.3%** |
| **TOTAL** | **3** | **3** | **1** | **7** | **100%** |

**CONTRIBUTING FACTOR**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 3 | 3 | 1 | **7** | **100.0%** |
| **TOTAL** | **3** | **3** | **1** | **7** | **100%** |

**COLLISION EVENT**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Motor Vehicle | 3 | 3 | 0 | **6** | **100.0%** |
| **TOTAL** | **3** | **3** | **0** | **6** | **100%** |

**SEVERITY**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Minor Injury / Property Damage Only (PDO) | 3 | 3 | 1 | **7** | **100.0%** |
| **TOTAL** | **3** | **3** | **1** | **7** | **100%** |

**DAY & TIME**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Weekday 6-9 A.M. | 1 | 0 | 0 | **1** | **14.3%** |
| Weekday Off-Peak | 2 | 1 | 0 | **3** | **42.9%** |
| Weekend Off-Peak | 0 | 2 | 1 | **3** | **42.9%** |
| **TOTAL** | **3** | **3** | **1** | **7** | **100%** |

**WEATHER**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Clear | 2 | 3 | 0 | **5** | **71.4%** |
| Snow | 1 | 0 | 0 | **1** | **14.3%** |
| Other/Unknown | 0 | 0 | 1 | **1** | **14.3%** |
| **TOTAL** | **3** | **3** | **1** | **7** | **100%** |

**ROAD SURFACE CONDITION**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Dry | 2 | 3 | 0 | **5** | **71.4%** |
| Snow | 1 | 0 | 0 | **1** | **14.3%** |
| Other/Unknown | 0 | 0 | 1 | **1** | **14.3%** |
| **TOTAL** | **3** | **3** | **1** | **7** | **100%** |

**LIGHT CONDITIONS**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 3 | 3 | 1 | **7** | **100.0%** |
| **TOTAL** | **3** | **3** | **1** | **7** | **100%** |

**Intersection Collision History Summary**

**Intersection: Gosling Road/Pease Boulevard at US Route 4 NB Ramps**

**COLLISION TYPE**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Rear-End | 0 | 1 | 3 | **4** | **36.4%** |
| Angle | 0 | 1 | 2 | **3** | **27.3%** |
| Sideswipe, Same Direction | 0 | 1 | 3 | **4** | **36.4%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**CONTRIBUTING FACTOR**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 0 | 3 | 8 | **11** | **100.0%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**COLLISION EVENT**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Motor Vehicle | 0 | 3 | 8 | **11** | **100.0%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**SEVERITY**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Minor Injury / Property Damage Only (PDO) | 0 | 3 | 8 | **11** | **100.0%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**DAY & TIME**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Weekday 6-9 A.M. | 0 | 0 | 1 | **1** | **9.1%** |
| Weekday 3-6 P.M. | 0 | 0 | 2 | **2** | **18.2%** |
| Weekday Off-Peak | 0 | 3 | 2 | **5** | **45.5%** |
| Saturday 11 A.M. - 2 P.M. | 0 | 0 | 2 | **2** | **18.2%** |
| Weekend Off-Peak | 0 | 0 | 1 | **1** | **9.1%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**WEATHER**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Clear | 0 | 3 | 0 | **3** | **27.3%** |
| Other/Unknown | 0 | 0 | 8 | **8** | **72.7%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**ROAD SURFACE CONDITION**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Dry | 0 | 3 | 0 | **3** | **27.3%** |
| Other/Unknown | 0 | 0 | 8 | **8** | **72.7%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**LIGHT CONDITIONS**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 0 | 3 | 8 | **11** | **100.0%** |
| **TOTAL** | **0** | **3** | **8** | **11** | **100%** |

**Intersection Collision History Summary**

**Intersection: Route 33 (Greenland Road) at Grafton Road**

**COLLISION TYPE**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Rear-End | 1 | 2 | 2 | **5** | **100.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**CONTRIBUTING FACTOR**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 2 | 2 | **5** | **100.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**COLLISION EVENT**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Motor Vehicle | 1 | 2 | 2 | **5** | **100.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**SEVERITY**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Minor Injury / Property Damage Only (PDO) | 1 | 2 | 2 | **5** | **100.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**DAY & TIME**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Weekday 3-6 P.M. | 1 | 0 | 1 | **2** | **40.0%** |
| Weekday Off-Peak | 0 | 1 | 0 | **1** | **20.0%** |
| Saturday 11 A.M. - 2 P.M. | 0 | 1 | 0 | **1** | **20.0%** |
| Weekend Off-Peak | 0 | 0 | 1 | **1** | **20.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**WEATHER**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 2 | 2 | **5** | **100.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**ROAD SURFACE CONDITION**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 2 | 2 | **5** | **100.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**LIGHT CONDITIONS**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 2 | 2 | **5** | **100.0%** |
| **TOTAL** | **1** | **2** | **2** | **5** | **100%** |

**Intersection Collision History Summary**

**Intersection: Corporate Drive at International Drive**

**COLLISION TYPE**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Rear-End | 2 | 0 | 1 | **3** | **30.0%** |
| Head-On | 1 | 0 | 0 | **1** | **10.0%** |
| Angle | 3 | 2 | 1 | **5** | **50.0%** |
| Sideswipe, Same Direction | 1 | 0 | 0 | **1** | **10.0%** |
| **TOTAL** | **7** | **2** | **2** | **10** | **100%** |

**CONTRIBUTING FACTOR**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 6 | 2 | 2 | **10** | **100.0%** |
| **TOTAL** | **6** | **2** | **2** | **10** | **100%** |

**COLLISION EVENT**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Motor Vehicle | 7 | 2 | 2 | **11** | **100.0%** |
| **TOTAL** | **7** | **2** | **2** | **11** | **100%** |

**SEVERITY**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Minor Injury / Property Damage Only (PDO) | 7 | 2 | 2 | **11** | **100.0%** |
| **TOTAL** | **7** | **2** | **2** | **11** | **100%** |

**DAY & TIME**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Weekday 6-9 A.M. | 1 | 1 | 1 | **3** | **27.3%** |
| Weekday 3-6 P.M. | 3 | 0 | 0 | **3** | **27.3%** |
| Weekday Off-Peak | 2 | 1 | 1 | **4** | **36.4%** |
| Weekend Off-Peak | 1 | 0 | 0 | **1** | **9.1%** |
| **TOTAL** | **7** | **2** | **2** | **11** | **100%** |

**WEATHER**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 7 | 2 | 2 | **11** | **100.0%** |
| **TOTAL** | **7** | **2** | **2** | **11** | **100%** |

**ROAD SURFACE CONDITION**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 7 | 2 | 2 | **11** | **100.0%** |
| **TOTAL** | **7** | **2** | **2** | **11** | **100%** |

**LIGHT CONDITIONS**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 7 | 2 | 2 | **11** | **100.0%** |
| **TOTAL** | **7** | **2** | **2** | **11** | **100%** |

**Intersection Collision History Summary**

**Intersection: New Hampshire Avenue at International Drive**

**COLLISION TYPE**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 0 | 0 | **1** | **16.7%** |
| Angle | 2 | 1 | 2 | **5** | **83.3%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**CONTRIBUTING FACTOR**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 3 | 1 | 2 | **6** | **100.0%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**COLLISION EVENT**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Motor Vehicle | 3 | 1 | 2 | **6** | **100.0%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**SEVERITY**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Serious Injury | 1 | 0 | 0 | **1** | **16.7%** |
| Minor Injury / Property Damage Only (PDO) | 2 | 1 | 2 | **5** | **83.3%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**DAY & TIME**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Weekday 3-6 P.M. | 0 | 0 | 1 | **1** | **16.7%** |
| Weekday Off-Peak | 3 | 1 | 0 | **4** | **66.7%** |
| Weekend Off-Peak | 0 | 0 | 1 | **1** | **16.7%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**WEATHER**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 3 | 1 | 2 | **6** | **100.0%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**ROAD SURFACE CONDITION**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 3 | 1 | 2 | **6** | **100.0%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**LIGHT CONDITIONS**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 3 | 1 | 2 | **6** | **100.0%** |
| **TOTAL** | **3** | **1** | **2** | **6** | **100%** |

**Intersection Collision History Summary**

**Intersection: Grafton Drive at Corporate Drive**

**COLLISION TYPE**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Angle | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

**CONTRIBUTING FACTOR**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

**COLLISION EVENT**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Motor Vehicle | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

**SEVERITY**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Minor Injury / Property Damage Only (PDO) | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

**DAY & TIME**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Weekday Off-Peak | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

**WEATHER**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

**ROAD SURFACE CONDITION**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

**LIGHT CONDITIONS**

| | 2020 | 2021 | 2022 | Total | Percent |
|---|---|---|---|---|---|
| Other/Unknown | 1 | 0 | 0 | **1** | **100.0%** |
| **TOTAL** | **1** | **0** | **0** | **1** | **100%** |

# APPENDIX G

Capacity Analysis Methodology

# CAPACITY ANALYSIS METHODOLOGY

A primary result of capacity analysis is the assignment of levels of service to traffic facilities under various traffic flow conditions. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM).[1] The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year. A description of the operating condition under each level of service is provided below:

- *LOS A* describes conditions with little to no delay to motorists.
- *LOS B* represents a desirable level with relatively low delay to motorists.
- *LOS C* describes conditions with average delays to motorists.
- *LOS D* describes operations where the influence of congestion becomes more noticeable. Delays are still within an acceptable range.
- *LOS E* represents operating conditions with high delay values. This level is considered by many agencies to be the limit of acceptable delay.
- *LOS F* is considered to be unacceptable to most drivers with high delay values that often occur, when arrival flow rates exceed the capacity of the intersection.

## Signalized Intersections

Levels of service for signalized intersections are also calculated using the operational analysis methodology of the HCM. The methodology for signalized intersections assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on average *control* delay. Control delay is used to establish the operating characteristics for an intersection or an approach to an intersection. Volume-to-capacity (v/c) ratios are also used to help signify the utilization of a lane group's capacity at an intersection. A v/c ratio of ≥1.00 represents conditions when the traffic signal cycle capacity is fully utilized and indicates a capacity failure. The level-of-service criteria for signalized intersections are shown in Table A-1.

[1] *Highway Capacity Manual, 6TH Edition: A Guide for Multimodal Mobility Analysis.* Washington, D.C.: Transportation Research Board, 2016.

# Unsignalized Intersections

Levels of service for unsignalized intersections are calculated using the operational analysis methodology of the HCM. The procedure accounts for lane configuration on both the minor and major street approaches, conflicting traffic stream volumes, and the type of intersection control (STOP, YIELD, or all-way STOP control). The definition of level of service for unsignalized intersections is a function of average *control* delay. Control delay at an unsignalized intersection is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position.

Volume-to-capacity (v/c) ratios are also used to help signify the utilization of a movement's capacity at an intersection. A v/c ratio of ≥1.00 represents conditions when the movement is fully utilized and indicates a capacity failure. The capacity of the movements is based on the distribution of gaps in the major street traffic stream, the selection of gaps to complete the desired movement, and the follow-up headways for each driver in the queue. When an unsignalized intersection is located within 0.25 miles of a signalized intersection, traffic flows may not be random and some platoon structure may exist, thereby affecting the minor street operations. The level-of-service criteria for unsignalized intersections are shown in Table A-1.

**TABLE A-1**
Level-of-Service Criteria for Intersections

| **Level of Service** | **Signalized Intersection Criteria** Average Control Delay (Seconds per Vehicle) | **Unsignalized Intersection Criteria** Average Control Delay (Seconds per Vehicle) | **V/C Ratio >1.00[a]** |
|---|---|---|---|
| A | ≤10 | ≤10 | F |
| B | >10 and ≤20 | >10 and ≤15 | F |
| C | >20 and ≤35 | >15 and ≤25 | F |
| D | >35 and ≤55 | >25 and ≤35 | F |
| E | >55 and ≤80 | >35 and ≤50 | F |
| F | >80 | >50 | F |

Note: [a]For approach-based and intersection-wide assessments, LOS is defined solely by control delay.

Source: *Highway Capacity Manual, 6th Edition: A Guide for Multimodal Mobility Analysis.* Washington, D.C.: Transportation Research Board, 2016. Exhibit 19-8, Pg. 19-16.

For signalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to the entire intersection. For unsignalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups on the minor street approaches or to the left turns from the major street approaches.

# APPENDIX H

Capacity Analysis Worksheets

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 3 | 90 | 6 | 1166 | 583 | 129 | 8 | 5 | 270 | 6 | 2 | 2 |
| Future Volume (vph) | 3 | 90 | 6 | 1166 | 583 | 129 | 8 | 5 | 270 | 6 | 2 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | 1805 | 3511 | | 3467 | 3469 | | | 1783 | 2682 | | 2035 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.87 | 1.00 | | 0.86 | |
| Satd. Flow (perm) | 1805 | 3511 | | 3467 | 3469 | | | 1597 | 2682 | | 1810 | |
| Peak-hour factor, PHF | 0.84 | 0.84 | 0.84 | 0.83 | 1.00 | 0.83 | 0.88 | 0.88 | 0.88 | 0.63 | 0.63 | 0.63 |
| Adj. Flow (vph) | 4 | 107 | 7 | 1405 | 583 | 155 | 9 | 6 | 307 | 10 | 3 | 3 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 4 | 110 | 0 | 1405 | 727 | 0 | 0 | 15 | 307 | 0 | 14 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 1% | 1% | 0% | 0% | 0% | 6% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | 5.5 | 12.5 | | 44.0 | 52.0 | | | 15.4 | 15.4 | | 15.4 | |
| Effective Green, g (s) | 5.5 | 12.5 | | 44.0 | 52.0 | | | 15.4 | 15.4 | | 15.4 | |
| Actuated g/C Ratio | 0.06 | 0.14 | | 0.49 | 0.58 | | | 0.17 | 0.17 | | 0.17 | |
| Clearance Time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | 2.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 110 | 488 | | 1696 | 2006 | | | 273 | 459 | | 310 | |
| v/s Ratio Prot | 0.00 | c0.03 | | c0.41 | c0.21 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.11 | | 0.01 | |
| v/c Ratio | 0.04 | 0.22 | | 0.83 | 0.36 | | | 0.05 | 0.67 | | 0.04 | |
| Uniform Delay, d1 | 39.7 | 34.4 | | 19.7 | 10.1 | | | 31.2 | 34.9 | | 31.1 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.2 | | 3.5 | 0.1 | | | 0.1 | 3.7 | | 0.1 | |
| Delay (s) | 39.8 | 34.6 | | 23.2 | 10.2 | | | 31.2 | 38.5 | | 31.2 | |
| Level of Service | D | C | | C | B | | | C | D | | C | |
| Approach Delay (s) | | 34.8 | | | 18.7 | | | 38.2 | | | 31.2 | |
| Approach LOS | | C | | | B | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 21.9 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 89.9 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 55.6% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 252 | 114 | 154 | 969 | 0 | 0 | 0 | 0 | 555 | 0 | 802 |
| Future Volume (vph) | 0 | 252 | 114 | 154 | 969 | 0 | 0 | 0 | 0 | 555 | 0 | 802 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Peak-hour factor, PHF | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.92 | 0.92 | 0.92 | 0.75 | 0.75 | 0.75 |
| Adj. Flow (vph) | 0 | 315 | 142 | 192 | 1211 | 0 | 0 | 0 | 0 | 740 | 0 | 1069 |
| RTOR Reduction (vph) | 0 | 0 | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 117 |
| Lane Group Flow (vph) | 0 | 315 | 46 | 193 | 1211 | 0 | 0 | 0 | 0 | 740 | 0 | 952 |
| Heavy Vehicles (%) | 0% | 2% | 10% | 12% | 1% | 0% | 2% | 2% | 2% | 1% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 32.7 | 32.7 | 25.0 | 63.7 | | | | | 25.0 | | 25.0 |
| Effective Green, g (s) | | 32.7 | 32.7 | 25.0 | 63.7 | | | | | 25.0 | | 25.0 |
| Actuated g/C Ratio | | 0.32 | 0.32 | 0.25 | 0.63 | | | | | 0.25 | | 0.25 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 1942 | 460 | 724 | 2185 | | | | | 860 | | 698 |
| v/s Ratio Prot | | 0.05 | 0.03 | 0.07 | c0.35 | | | | | 0.21 | | c0.34 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.16 | 0.10 | 0.27 | 0.55 | | | | | 0.86 | | 1.36 |
| Uniform Delay, d1 | | 24.2 | 23.7 | 30.5 | 10.5 | | | | | 36.2 | | 37.9 |
| Progression Factor | | 1.00 | 1.00 | 0.88 | 1.62 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 0.1 | 0.2 | 0.1 | 0.3 | | | | | 9.5 | | 172.7 |
| Delay (s) | | 24.3 | 23.9 | 26.8 | 17.2 | | | | | 45.7 | | 210.6 |
| Level of Service | | C | C | C | B | | | | | D | | F |
| Approach Delay (s) | | 24.2 | | | 18.5 | | | 0.0 | | | 143.2 | |
| Approach LOS | | C | | | B | | | A | | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 80.7 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 100.7 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 64.8% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 110 | 697 | 0 | 0 | 372 | 76 | 751 | 0 | 359 | 0 | 0 | 0 |
| Future Volume (vph) | 110 | 697 | 0 | 0 | 372 | 76 | 751 | 0 | 359 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.97 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3113 | 3421 | | | 4932 | | 3433 | | 2733 | | | |
| Flt Permitted | 0.45 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 1462 | 3421 | | | 4932 | | 3433 | | 2733 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.78 | 0.78 | 0.78 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 126 | 801 | 0 | 0 | 438 | 89 | 963 | 0 | 460 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 346 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 126 | 801 | 0 | 0 | 500 | 0 | 963 | 0 | 114 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 2% | 0% | 0% | 2% | 5% | 2% | 2% | 4% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 49.7 | 32.7 | | | 40.7 | | 25.0 | | 25.0 | | | |
| Effective Green, g (s) | 49.7 | 32.7 | | | 40.7 | | 25.0 | | 25.0 | | | |
| Actuated g/C Ratio | 0.49 | 0.32 | | | 0.40 | | 0.25 | | 0.25 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 1000 | 1110 | | | 1993 | | 852 | | 678 | | | |
| v/s Ratio Prot | c0.02 | c0.23 | | | c0.10 | | c0.28 | | 0.04 | | | |
| v/s Ratio Perm | 0.04 | | | | | | | | | | | |
| v/c Ratio | 0.13 | 0.72 | | | 0.25 | | 1.13 | | 0.17 | | | |
| Uniform Delay, d1 | 13.5 | 30.0 | | | 19.9 | | 37.9 | | 29.7 | | | |
| Progression Factor | 1.16 | 1.31 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 0.1 | 2.2 | | | 0.1 | | 73.3 | | 0.2 | | | |
| Delay (s) | 15.7 | 41.5 | | | 20.0 | | 111.1 | | 29.9 | | | |
| Level of Service | B | D | | | C | | F | | C | | | |
| Approach Delay (s) | | 38.0 | | | 20.0 | | | 84.9 | | | 0.0 | |
| Approach LOS | | D | | | C | | | F | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 57.9 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 100.7 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 64.8% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 608 | 1990 | 717 | 536 | 148 | 175 |
| Future Volume (vph) | 608 | 1990 | 717 | 536 | 148 | 175 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.96 | 0.96 | 0.76 | 0.76 |
| Adj. Flow (vph) | 707 | 2314 | 747 | 558 | 195 | 230 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 388 | 0 | 179 |
| Lane Group Flow (vph) | 707 | 2314 | 747 | 170 | 195 | 51 |
| Heavy Vehicles (%) | 1% | 4% | 8% | 2% | 5% | 5% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 9.9 | 33.9 | 18.0 | 18.0 | 13.1 | 13.1 |
| Effective Green, g (s) | 9.9 | 33.9 | 18.0 | 18.0 | 13.1 | 13.1 |
| Actuated g/C Ratio | 0.17 | 0.57 | 0.31 | 0.31 | 0.22 | 0.22 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 299 | 1994 | 1019 | 482 | 381 | 341 |
| v/s Ratio Prot | c0.40 | c0.67 | 0.22 | | c0.11 | 0.03 |
| v/s Ratio Perm | | | | 0.11 | | |
| v/c Ratio | 2.36 | 1.16 | 0.73 | 0.35 | 0.51 | 0.15 |
| Uniform Delay, d1 | 24.6 | 12.6 | 18.3 | 16.0 | 20.1 | 18.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 624.3 | 78.2 | 4.7 | 2.0 | 1.5 | 0.3 |
| Delay (s) | 648.9 | 90.8 | 23.0 | 18.0 | 21.7 | 18.7 |
| Level of Service | F | F | C | B | C | B |
| Approach Delay (s) | | 221.4 | 20.9 | | 20.1 | |
| Approach LOS | | F | C | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 148.3 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.31 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 76.9% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 115.4 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 68 | 43 | 30 | 14 | 13 | 71 | 8 | 99 | 63 | 573 | 440 | 134 |
| Future Vol, veh/h | 68 | 43 | 30 | 14 | 13 | 71 | 8 | 99 | 63 | 573 | 440 | 134 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.78 | 0.78 | 0.78 | 0.83 | 0.83 | 0.83 | 0.76 | 0.76 | 0.76 |
| Heavy Vehicles, % | 0 | 4 | 5 | 0 | 13 | 18 | 0 | 0 | 3 | 2 | 0 | 0 |
| Mvmt Flow | 89 | 57 | 39 | 18 | 17 | 91 | 10 | 119 | 76 | 754 | 579 | 176 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 14.2 | 13.5 | 13.7 | 150.1 |
| HCM LOS | B | B | B | F |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 34% | 0% | 59% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 66% | 0% | 41% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 8 | 66 | 96 | 68 | 73 | 14 | 13 | 71 | 573 | 440 | 134 |
| LT Vol | 8 | 0 | 0 | 68 | 0 | 14 | 0 | 0 | 573 | 0 | 0 |
| Through Vol | 0 | 66 | 33 | 0 | 43 | 0 | 13 | 0 | 0 | 440 | 0 |
| RT Vol | 0 | 0 | 63 | 0 | 30 | 0 | 0 | 71 | 0 | 0 | 134 |
| Lane Flow Rate | 10 | 80 | 116 | 89 | 96 | 18 | 17 | 91 | 754 | 579 | 176 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.024 | 0.185 | 0.256 | 0.225 | 0.222 | 0.046 | 0.042 | 0.213 | 1.468 | 1.04 | 0.282 |
| Departure Headway (Hd) | 9.296 | 8.789 | 8.375 | 9.319 | 8.6 | 9.688 | 9.406 | 8.786 | 7.111 | 6.572 | 5.865 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 387 | 411 | 431 | 387 | 420 | 372 | 383 | 411 | 520 | 556 | 617 |
| Service Time | 6.996 | 6.489 | 6.075 | 7.019 | 6.3 | 7.388 | 7.106 | 6.486 | 4.811 | 4.272 | 3.565 |
| HCM Lane V/C Ratio | 0.026 | 0.195 | 0.269 | 0.23 | 0.229 | 0.048 | 0.044 | 0.221 | 1.45 | 1.041 | 0.285 |
| HCM Control Delay | 12.2 | 13.5 | 13.9 | 14.7 | 13.7 | 12.9 | 12.5 | 13.8 | 240.8 | 74.5 | 10.9 |
| HCM Lane LOS | B | B | B | B | B | B | B | B | F | F | B |
| HCM 95th-tile Q | 0.1 | 0.7 | 1 | 0.9 | 0.8 | 0.1 | 0.1 | 0.8 | 37.1 | 16 | 1.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 433 | 246 | 22 | 79 | 19 | 0 |
| Future Vol, veh/h | 433 | 246 | 22 | 79 | 19 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 71 | 71 | 69 | 69 |
| Heavy Vehicles, % | 1 | 5 | 0 | 12 | 36 | 0 |
| Mvmt Flow | 555 | 315 | 31 | 111 | 28 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 870 | 0 | 886 | 713 |
| Stage 1 | - | - | - | - | 713 | - |
| Stage 2 | - | - | - | - | 173 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.76 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.76 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.76 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.824 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 783 | - | 275 | 435 |
| Stage 1 | - | - | - | - | 429 | - |
| Stage 2 | - | - | - | - | 781 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 783 | - | 263 | 435 |
| Mov Cap-2 Maneuver | - | - | - | - | 263 | - |
| Stage 1 | - | - | - | - | 429 | - |
| Stage 2 | - | - | - | - | 748 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.1 | 20.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 263 | - | - | 783 | - |
| HCM Lane V/C Ratio | 0.105 | - | - | 0.04 | - |
| HCM Control Delay (s) | 20.3 | - | - | 9.8 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 418 | 82 | 2 | 0 | 6 |
| Future Vol, veh/h | 17 | 418 | 82 | 2 | 0 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 71 | 71 | 50 | 50 |
| Heavy Vehicles, % | 0 | 1 | 8 | 0 | 0 | 25 |
| Mvmt Flow | 20 | 492 | 115 | 3 | 0 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 118 | 0 | - | 0 | 649 | 117 |
| Stage 1 | - | - | - | - | 117 | - |
| Stage 2 | - | - | - | - | 532 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.45 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.525 |
| Pot Cap-1 Maneuver | 1483 | - | - | - | 438 | 876 |
| Stage 1 | - | - | - | - | 913 | - |
| Stage 2 | - | - | - | - | 593 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1483 | - | - | - | 432 | 876 |
| Mov Cap-2 Maneuver | - | - | - | - | 432 | - |
| Stage 1 | - | - | - | - | 901 | - |
| Stage 2 | - | - | - | - | 593 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 9.2 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1483 | - | - | - | 876 |
| HCM Lane V/C Ratio | 0.013 | - | - | - | 0.014 |
| HCM Control Delay (s) | 7.5 | - | - | - | 9.2 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.4 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 222 | 7 | 7 | 102 | 9 | 5 |
| Future Vol, veh/h | 222 | 7 | 7 | 102 | 9 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 82 | 82 | 25 | 40 |
| Heavy Vehicles, % | 1 | 0 | 0 | 5 | 20 | 0 |
| Mvmt Flow | 234 | 7 | 9 | 124 | 36 | 13 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 241 | 0 | 380 | 238 |
| Stage 1 | - | - | - | - | 238 | - |
| Stage 2 | - | - | - | - | 142 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.6 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.6 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.68 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1337 | - | 588 | 806 |
| Stage 1 | - | - | - | - | 761 | - |
| Stage 2 | - | - | - | - | 843 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1337 | - | 584 | 806 |
| Mov Cap-2 Maneuver | - | - | - | - | 584 | - |
| Stage 1 | - | - | - | - | 761 | - |
| Stage 2 | - | - | - | - | 837 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.5 | 11.2 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 629 | - | - | 1337 | - |
| HCM Lane V/C Ratio | 0.077 | - | - | 0.006 | - |
| HCM Control Delay (s) | 11.2 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 14 | 13 | 6 | 8 |
| Future Vol, veh/h | 0 | 0 | 14 | 13 | 6 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 53 | 53 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 0 | 13 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 26 | 25 | 12 | 16 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 79 | 39 | 0 | 0 | 51 | 0 |
| Stage 1 | 39 | - | - | - | - | - |
| Stage 2 | 40 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 929 | 1038 | - | - | 1568 | - |
| Stage 1 | 989 | - | - | - | - | - |
| Stage 2 | 988 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 922 | 1038 | - | - | 1568 | - |
| Mov Cap-2 Maneuver | 922 | - | - | - | - | - |
| Stage 1 | 989 | - | - | - | - | - |
| Stage 2 | 980 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 3.1 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 1568 | - |
| HCM Lane V/C Ratio | - | - | - | 0.008 | - |
| HCM Control Delay (s) | - | - | 0 | 7.3 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 0 | 0 | 8 | 27 | 8 |
| Future Vol, veh/h | 6 | 0 | 0 | 8 | 27 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 50 | 50 | 42 | 42 | 69 | 69 |
| Heavy Vehicles, % | 75 | 0 | 0 | 0 | 6 | 80 |
| Mvmt Flow | 12 | 0 | 0 | 19 | 39 | 12 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 64 | 45 | 51 | 0 | - | 0 |
| Stage 1 | 45 | - | - | - | - | - |
| Stage 2 | 19 | - | - | - | - | - |
| Critical Hdwy | 7.15 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 6.15 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.15 | - | - | - | - | - |
| Follow-up Hdwy | 4.175 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 788 | 1031 | 1568 | - | - | - |
| Stage 1 | 819 | - | - | - | - | - |
| Stage 2 | 844 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 788 | 1031 | 1568 | - | - | - |
| Mov Cap-2 Maneuver | 788 | - | - | - | - | - |
| Stage 1 | 819 | - | - | - | - | - |
| Stage 2 | 844 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.6 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1568 | - | 788 | - | - |
| HCM Lane V/C Ratio | - | - | 0.015 | - | - |
| HCM Control Delay (s) | 0 | - | 9.6 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 19 | 0 | 0 | 52 | 216 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 19 | 0 | 0 | 52 | 216 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 88 | 88 | 92 | 92 | 69 | 69 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 18 | 2 | 2 | 15 | 1 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 22 | 0 | 0 | 75 | 313 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 266 | 266 | 232 | 266 | 422 | 22 | 388 | 0 | 0 | 22 | 0 | 0 |
| Stage 1 | 232 | 232 | - | 34 | 34 | - | - | - | - | - | - | - |
| Stage 2 | 34 | 34 | - | 232 | 388 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 687 | 640 | 807 | 687 | 523 | 1055 | 1182 | - | - | 1593 | - | - |
| Stage 1 | 771 | 713 | - | 982 | 867 | - | - | - | - | - | - | - |
| Stage 2 | 982 | 867 | - | 771 | 609 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 684 | 637 | 807 | 684 | 520 | 1055 | 1182 | - | - | 1593 | - | - |
| Mov Cap-2 Maneuver | 684 | 637 | - | 684 | 520 | - | - | - | - | - | - | - |
| Stage 1 | 767 | 713 | - | 977 | 863 | - | - | - | - | - | - | - |
| Stage 2 | 977 | 863 | - | 771 | 609 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 1.7 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1182 | - | - | - | - | 1593 | - | - |
| HCM Lane V/C Ratio | 0.005 | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | A | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 2 | 156 | 13 | 13 | 430 |
| Future Vol, veh/h | 6 | 2 | 156 | 13 | 13 | 430 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 63 | 63 | 81 | 81 | 84 | 84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 |
| Mvmt Flow | 10 | 3 | 193 | 16 | 15 | 512 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 743 | 201 | 0 | 0 | 209 | 0 |
| Stage 1 | 201 | - | - | - | - | - |
| Stage 2 | 542 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 386 | 845 | - | - | 1374 | - |
| Stage 1 | 838 | - | - | - | - | - |
| Stage 2 | 587 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 380 | 845 | - | - | 1374 | - |
| Mov Cap-2 Maneuver | 380 | - | - | - | - | - |
| Stage 1 | 838 | - | - | - | - | - |
| Stage 2 | 578 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.4 | 0 | 0.2 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 441 | 1374 | - |
| HCM Lane V/C Ratio | - | - | 0.029 | 0.011 | - |
| HCM Control Delay (s) | - | - | 13.4 | 7.7 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 14 | 19 | 150 | 13 | 20 | 416 |
| Future Vol, veh/h | 14 | 19 | 150 | 13 | 20 | 416 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 86 | 86 | 83 | 83 |
| Heavy Vehicles, % | 44 | 0 | 1 | 63 | 0 | 1 |
| Mvmt Flow | 16 | 22 | 174 | 15 | 24 | 501 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 731 | 182 | 0 | 0 | 189 | 0 |
| Stage 1 | 182 | - | - | - | - | - |
| Stage 2 | 549 | - | - | - | - | - |
| Critical Hdwy | 6.84 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - |
| Follow-up Hdwy | 3.896 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 333 | 866 | - | - | 1397 | - |
| Stage 1 | 758 | - | - | - | - | - |
| Stage 2 | 503 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 325 | 866 | - | - | 1397 | - |
| Mov Cap-2 Maneuver | 325 | - | - | - | - | - |
| Stage 1 | 758 | - | - | - | - | - |
| Stage 2 | 491 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 12.7 | 0 | 0.3 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 508 | 1397 | - |
| HCM Lane V/C Ratio | - | - | 0.074 | 0.017 | - |
| HCM Control Delay (s) | - | - | 12.7 | 7.6 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.2 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 5 | 183 | 2 | 8 | 331 |
| Future Vol, veh/h | 0 | 5 | 183 | 2 | 8 | 331 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 89 | 89 | 81 | 81 |
| Heavy Vehicles, % | 0 | 0 | 5 | 100 | 0 | 2 |
| Mvmt Flow | 0 | 7 | 206 | 2 | 10 | 409 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 636 | 207 | 0 | 0 | 208 | 0 |
| Stage 1 | 207 | - | - | - | - | - |
| Stage 2 | 429 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 445 | 839 | - | - | 1375 | - |
| Stage 1 | 832 | - | - | - | - | - |
| Stage 2 | 661 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 441 | 839 | - | - | 1375 | - |
| Mov Cap-2 Maneuver | 441 | - | - | - | - | - |
| Stage 1 | 832 | - | - | - | - | - |
| Stage 2 | 655 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.3 | 0 | 0.2 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 839 | 1375 | - |
| HCM Lane V/C Ratio | - | - | 0.008 | 0.007 | - |
| HCM Control Delay (s) | - | - | 9.3 | 7.6 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 8 | 9 | 2 | 84 | 5 | 6 | 0 | 392 | 383 | 25 | 269 | 28 |
| Future Vol, veh/h | 8 | 9 | 2 | 84 | 5 | 6 | 0 | 392 | 383 | 25 | 269 | 28 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 65 | 65 | 65 | 90 | 90 | 90 | 87 | 87 | 87 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 3 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 12 | 3 | 129 | 8 | 9 | 0 | 436 | 426 | 29 | 309 | 32 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1041 | 1245 | 325 | 1040 | 1048 | 649 | 341 | 0 | 0 | 862 | 0 | 0 |
| Stage 1 | 383 | 383 | - | 649 | 649 | - | - | - | - | - | - | - |
| Stage 2 | 658 | 862 | - | 391 | 399 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.3 | 6.5 | 6.2 | 7.14 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 4 | 3.3 | 3.536 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 193 | 176 | 721 | 207 | 230 | 473 | 1229 | - | - | 789 | - | - |
| Stage 1 | 605 | 616 | - | 455 | 469 | - | - | - | - | - | - | - |
| Stage 2 | 425 | 375 | - | 629 | 606 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 178 | 168 | 721 | 188 | 219 | 473 | 1229 | - | - | 789 | - | - |
| Mov Cap-2 Maneuver | 178 | 168 | - | 188 | 219 | - | - | - | - | - | - | - |
| Stage 1 | 605 | 588 | - | 455 | 469 | - | - | - | - | - | - | - |
| Stage 2 | 410 | 375 | - | 586 | 578 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 27.1 | 62.5 | 0 | 0.8 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1229 | - | - | 188 | 197 | 789 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.135 | 0.742 | 0.036 | - | - |
| HCM Control Delay (s) | 0 | - | - | 27.1 | 62.5 | 9.7 | 0 | - |
| HCM Lane LOS | A | - | - | D | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.5 | 4.9 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 60 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 794 | 348 | 47 | 14 | 54 | 213 |
| Future Vol, veh/h | 794 | 348 | 47 | 14 | 54 | 213 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 70 | 70 | 90 | 90 |
| Heavy Vehicles, % | 1 | 1 | 3 | 11 | 0 | 4 |
| Mvmt Flow | 854 | 374 | 67 | 20 | 60 | 237 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 214 | 60 | 297 | 0 | - | 0 |
| Stage 1 | 60 | - | - | - | - | - |
| Stage 2 | 154 | - | - | - | - | - |
| Critical Hdwy | 6.41 | 6.21 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.41 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.41 | - | - | - | - | - |
| Follow-up Hdwy | 3.509 | 3.309 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | ~ 777 | 1008 | 1259 | - | - | - |
| Stage 1 | 965 | - | - | - | - | - |
| Stage 2 | 877 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 736 | 1008 | 1259 | - | - | - |
| Mov Cap-2 Maneuver | ~ 736 | - | - | - | - | - |
| Stage 1 | 914 | - | - | - | - | - |
| Stage 2 | 877 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 78.3 | 6.2 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1259 | - | 736 | 1008 | - | - |
| HCM Lane V/C Ratio | 0.053 | - | 1.16 | 0.371 | - | - |
| HCM Control Delay (s) | 8 | - | 107.9 | 10.7 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 26.7 | 1.7 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 67.5 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 199 | 1144 | 0 | 0 | 323 |
| Future Vol, veh/h | 0 | 199 | 1144 | 0 | 0 | 323 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 70 | 70 | 80 | 80 |
| Heavy Vehicles, % | 2 | 3 | 2 | 2 | 2 | 4 |
| Mvmt Flow | 0 | 262 | 1634 | 0 | 0 | 404 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 1634 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.245 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.3285 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | ~ 123 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | ~ 123 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 592.5 | 0 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 123 | - |
| HCM Lane V/C Ratio | - | 2.129 | - |
| HCM Control Delay (s) | - | $ 592.5 | - |
| HCM Lane LOS | - | F | - |
| HCM 95th %tile Q(veh) | - | 21.8 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 420 | 3 | 287 | 160 | 24 | 11 | 3 | 1200 | 56 | 3 | 3 |
| Future Volume (vph) | 0 | 420 | 3 | 287 | 160 | 24 | 11 | 3 | 1200 | 56 | 3 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | | 1.00 | | 1.00 | 0.98 | | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | 0.96 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3571 | | 3433 | 3539 | | | 1766 | 2814 | | 2047 | |
| Flt Permitted | | 1.00 | | 0.95 | 1.00 | | | 0.83 | 1.00 | | 0.74 | |
| Satd. Flow (perm) | | 3571 | | 3433 | 3539 | | | 1529 | 2814 | | 1594 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.96 | 0.96 | 0.96 | 0.91 | 0.91 | 0.91 | 0.68 | 0.68 | 0.68 |
| Adj. Flow (vph) | 0 | 477 | 3 | 299 | 167 | 25 | 12 | 3 | 1319 | 82 | 4 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 480 | 0 | 299 | 185 | 0 | 0 | 15 | 1319 | 0 | 89 | 0 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | | 13.9 | | 11.6 | 31.5 | | | 20.1 | 20.1 | | 20.1 | |
| Effective Green, g (s) | | 13.9 | | 11.6 | 31.5 | | | 20.1 | 20.1 | | 20.1 | |
| Actuated g/C Ratio | | 0.22 | | 0.18 | 0.50 | | | 0.32 | 0.32 | | 0.32 | |
| Clearance Time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | | 780 | | 626 | 1752 | | | 483 | 889 | | 503 | |
| v/s Ratio Prot | | c0.13 | | c0.09 | 0.05 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.47 | | 0.06 | |
| v/c Ratio | | 0.62 | | 0.48 | 0.11 | | | 0.03 | 1.48 | | 0.18 | |
| Uniform Delay, d1 | | 22.4 | | 23.3 | 8.5 | | | 15.0 | 21.8 | | 15.8 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | 0.6 | 0.0 | | | 0.0 | 223.7 | | 0.2 | |
| Delay (s) | | 23.9 | | 23.9 | 8.6 | | | 15.0 | 245.5 | | 15.9 | |
| Level of Service | | C | | C | A | | | B | F | | B | |
| Approach Delay (s) | | 23.9 | | | 17.9 | | | 242.9 | | | 15.9 | |
| Approach LOS | | C | | | B | | | F | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 144.3 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.96 | | |
| Actuated Cycle Length (s) | 63.6 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 73.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 1091 | 585 | 671 | 453 | 0 | 0 | 0 | 0 | 381 | 0 | 139 |
| Future Volume (vph) | 0 | 1091 | 585 | 671 | 453 | 0 | 0 | 0 | 0 | 381 | 0 | 139 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 1284 | 688 | 714 | 482 | 0 | 0 | 0 | 0 | 423 | 0 | 154 |
| RTOR Reduction (vph) | 0 | 0 | 364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 118 |
| Lane Group Flow (vph) | 0 | 1284 | 324 | 714 | 482 | 0 | 0 | 0 | 0 | 423 | 0 | 36 |
| Heavy Vehicles (%) | 0% | 1% | 1% | 1% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 35.0 | 35.0 | 25.0 | 61.4 | | | | | 23.8 | | 23.8 |
| Effective Green, g (s) | | 35.0 | 35.0 | 25.0 | 61.4 | | | | | 23.8 | | 23.8 |
| Actuated g/C Ratio | | 0.34 | 0.34 | 0.25 | 0.60 | | | | | 0.23 | | 0.23 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 2076 | 531 | 794 | 2083 | | | | | 818 | | 657 |
| v/s Ratio Prot | | c0.21 | 0.21 | c0.22 | 0.14 | | | | | c0.12 | | 0.01 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.62 | 0.61 | 0.90 | 0.23 | | | | | 0.52 | | 0.05 |
| Uniform Delay, d1 | | 27.8 | 27.7 | 37.2 | 9.3 | | | | | 34.0 | | 30.3 |
| Progression Factor | | 1.00 | 1.00 | 1.37 | 1.08 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 0.8 | 2.9 | 10.0 | 0.1 | | | | | 1.1 | | 0.1 |
| Delay (s) | | 28.6 | 30.6 | 61.0 | 10.2 | | | | | 35.1 | | 30.3 |
| Level of Service | | C | C | E | B | | | | | D | | C |
| Approach Delay (s) | | 29.3 | | | 40.5 | | | 0.0 | | | 33.8 | |
| Approach LOS | | C | | | D | | | A | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 33.6 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 101.8 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 81.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 659 | 813 | 0 | 0 | 902 | 399 | 222 | 0 | 613 | 0 | 0 | 0 |
| Future Volume (vph) | 659 | 813 | 0 | 0 | 902 | 399 | 222 | 0 | 613 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.95 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3236 | 3455 | | | 4914 | | 3433 | | 2814 | | | |
| Flt Permitted | 0.11 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 389 | 3455 | | | 4914 | | 3433 | | 2814 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.92 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 757 | 934 | 0 | 0 | 1002 | 443 | 236 | 0 | 652 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 500 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 757 | 934 | 0 | 0 | 1370 | 0 | 236 | 0 | 152 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 1% | 0% | 2% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 58.6 | 35.0 | | | 36.4 | | 23.8 | | 23.8 | | | |
| Effective Green, g (s) | 58.6 | 35.0 | | | 36.4 | | 23.8 | | 23.8 | | | |
| Actuated g/C Ratio | 0.58 | 0.34 | | | 0.36 | | 0.23 | | 0.23 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 883 | 1187 | | | 1757 | | 802 | | 657 | | | |
| v/s Ratio Prot | c0.20 | 0.27 | | | 0.28 | | c0.07 | | 0.05 | | | |
| v/s Ratio Perm | c0.29 | | | | | | | | | | | |
| v/c Ratio | 0.86 | 0.79 | | | 0.78 | | 0.29 | | 0.23 | | | |
| Uniform Delay, d1 | 26.5 | 30.0 | | | 29.1 | | 32.1 | | 31.6 | | | |
| Progression Factor | 1.68 | 0.56 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 7.1 | 3.3 | | | 2.6 | | 0.4 | | 0.4 | | | |
| Delay (s) | 51.5 | 20.1 | | | 31.8 | | 32.5 | | 32.0 | | | |
| Level of Service | D | C | | | C | | C | | C | | | |
| Approach Delay (s) | | 34.1 | | | 31.8 | | | 32.1 | | | 0.0 | |
| Approach LOS | | C | | | C | | | C | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 32.8 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.68 | | |
| Actuated Cycle Length (s) | 101.8 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 81.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 303 | 1620 | 1258 | 202 | 375 | 806 |
| Future Volume (vph) | 303 | 1620 | 1258 | 202 | 375 | 806 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.93 | 0.93 | 0.87 | 0.87 |
| Adj. Flow (vph) | 344 | 1841 | 1353 | 217 | 431 | 926 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 151 | 0 | 166 |
| Lane Group Flow (vph) | 344 | 1841 | 1353 | 66 | 431 | 760 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 2% | 1% | 1% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Effective Green, g (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Actuated g/C Ratio | 0.08 | 0.49 | 0.31 | 0.31 | 0.31 | 0.31 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 151 | 1739 | 1079 | 482 | 545 | 487 |
| v/s Ratio Prot | c0.19 | 0.52 | c0.38 | | 0.24 | c0.48 |
| v/s Ratio Perm | | | | 0.04 | | |
| v/c Ratio | 2.28 | 1.06 | 1.25 | 0.14 | 0.79 | 1.56 |
| Uniform Delay, d1 | 27.0 | 15.0 | 20.5 | 14.9 | 18.8 | 20.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 595.7 | 39.0 | 122.0 | 0.6 | 8.1 | 262.1 |
| Delay (s) | 622.7 | 54.0 | 142.5 | 15.5 | 26.9 | 282.6 |
| Level of Service | F | D | F | B | C | F |
| Approach Delay (s) | | 143.6 | 124.9 | | 201.4 | |
| Approach LOS | | F | F | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 153.2 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.51 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 94.7% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 95.7 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 137 | 4 | 15 | 9 | 24 | 487 | 15 | 555 | 7 | 60 | 88 | 85 |
| Future Vol, veh/h | 137 | 4 | 15 | 9 | 24 | 487 | 15 | 555 | 7 | 60 | 88 | 85 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.77 | 0.77 | 0.77 | 0.89 | 0.89 | 0.89 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 1 | 0 | 4 | 3 | 0 |
| Mvmt Flow | 163 | 5 | 18 | 12 | 31 | 632 | 17 | 624 | 8 | 65 | 95 | 91 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 19.9 | 191.8 | 48.3 | 15.6 |
| HCM LOS | C | F | E | C |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 96% | 0% | 21% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 4% | 0% | 79% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 15 | 370 | 192 | 137 | 19 | 9 | 24 | 487 | 60 | 88 | 85 |
| LT Vol | 15 | 0 | 0 | 137 | 0 | 9 | 0 | 0 | 60 | 0 | 0 |
| Through Vol | 0 | 370 | 185 | 0 | 4 | 0 | 24 | 0 | 0 | 88 | 0 |
| RT Vol | 0 | 0 | 7 | 0 | 15 | 0 | 0 | 487 | 0 | 0 | 85 |
| Lane Flow Rate | 17 | 416 | 216 | 163 | 23 | 12 | 31 | 632 | 65 | 95 | 91 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.041 | 0.953 | 0.492 | 0.442 | 0.055 | 0.029 | 0.075 | 1.374 | 0.176 | 0.245 | 0.218 |
| Departure Headway (Hd) | 9.567 | 9.069 | 9.026 | 10.281 | 9.228 | 9.02 | 8.617 | 7.822 | 10.805 | 10.267 | 9.486 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 377 | 403 | 401 | 352 | 390 | 397 | 416 | 468 | 334 | 352 | 381 |
| Service Time | 7.267 | 6.769 | 6.726 | 7.981 | 6.928 | 6.765 | 6.362 | 5.567 | 8.505 | 7.967 | 7.186 |
| HCM Lane V/C Ratio | 0.045 | 1.032 | 0.539 | 0.463 | 0.059 | 0.03 | 0.075 | 1.35 | 0.195 | 0.27 | 0.239 |
| HCM Control Delay | 12.7 | 64.4 | 20.2 | 20.9 | 12.5 | 12 | 12.1 | 204 | 15.8 | 16.3 | 14.8 |
| HCM Lane LOS | B | F | C | C | B | B | B | F | C | C | B |
| HCM 95th-tile Q | 0.1 | 10.8 | 2.6 | 2.2 | 0.2 | 0.1 | 0.2 | 29.4 | 0.6 | 0.9 | 0.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 21.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 63 | 8 | 2 | 351 | 169 | 9 |
| Future Vol, veh/h | 63 | 8 | 2 | 351 | 169 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 70 | 70 | 73 | 73 | 40 | 40 |
| Heavy Vehicles, % | 4 | 0 | 0 | 2 | 0 | 0 |
| Mvmt Flow | 90 | 11 | 3 | 481 | 423 | 23 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 101 | 0 | 583 | 96 |
| Stage 1 | - | - | - | - | 96 | - |
| Stage 2 | - | - | - | - | 487 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1504 | - | 478 | 966 |
| Stage 1 | - | - | - | - | 933 | - |
| Stage 2 | - | - | - | - | 622 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1504 | - | 477 | 966 |
| Mov Cap-2 Maneuver | - | - | - | - | 477 | - |
| Stage 1 | - | - | - | - | 933 | - |
| Stage 2 | - | - | - | - | 620 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 50.2 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 490 | - | - | 1504 | - |
| HCM Lane V/C Ratio | 0.908 | - | - | 0.002 | - |
| HCM Control Delay (s) | 50.2 | - | - | 7.4 | 0 |
| HCM Lane LOS | F | - | - | A | A |
| HCM 95th %tile Q(veh) | 10.4 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 65 | 342 | 3 | 1 | 12 |
| Future Vol, veh/h | 7 | 65 | 342 | 3 | 1 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 63 | 63 | 77 | 77 | 36 | 36 |
| Heavy Vehicles, % | 40 | 0 | 0 | 1 | 0 | 11 |
| Mvmt Flow | 11 | 103 | 444 | 4 | 3 | 33 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 448 | 0 | - | 0 | 571 | 446 |
| Stage 1 | - | - | - | - | 446 | - |
| Stage 2 | - | - | - | - | 125 | - |
| Critical Hdwy | 4.5 | - | - | - | 6.4 | 6.31 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.56 | - | - | - | 3.5 | 3.399 |
| Pot Cap-1 Maneuver | 938 | - | - | - | 486 | 594 |
| Stage 1 | - | - | - | - | 649 | - |
| Stage 2 | - | - | - | - | 906 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 938 | - | - | - | 480 | 594 |
| Mov Cap-2 Maneuver | - | - | - | - | 480 | - |
| Stage 1 | - | - | - | - | 641 | - |
| Stage 2 | - | - | - | - | 906 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.9 | 0 | 11.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 938 | - | - | - | 583 |
| HCM Lane V/C Ratio | 0.012 | - | - | - | 0.062 |
| HCM Control Delay (s) | 8.9 | - | - | - | 11.6 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 73 | 1 | 5 | 189 | 12 | 11 |
| Future Vol, veh/h | 73 | 1 | 5 | 189 | 12 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 81 | 81 | 71 | 71 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 11 | 0 |
| Mvmt Flow | 94 | 1 | 6 | 233 | 17 | 15 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 95 | 0 | 340 | 95 |
| Stage 1 | - | - | - | - | 95 | - |
| Stage 2 | - | - | - | - | 245 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.51 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.51 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.51 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.599 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1512 | - | 638 | 967 |
| Stage 1 | - | - | - | - | 907 | - |
| Stage 2 | - | - | - | - | 775 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1512 | - | 635 | 967 |
| Mov Cap-2 Maneuver | - | - | - | - | 635 | - |
| Stage 1 | - | - | - | - | 907 | - |
| Stage 2 | - | - | - | - | 771 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 9.9 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 760 | - | - | 1512 | - |
| HCM Lane V/C Ratio | 0.043 | - | - | 0.004 | - |
| HCM Control Delay (s) | 9.9 | - | - | 7.4 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 10 | 13 | 1 | 0 | 6 |
| Future Vol, veh/h | 1 | 10 | 13 | 1 | 0 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 67 | 67 | 69 | 69 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 10 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 15 | 19 | 1 | 0 | 12 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 32 | 20 | 0 | 0 | 20 | 0 |
| Stage 1 | 20 | - | - | - | - | - |
| Stage 2 | 12 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 987 | 1064 | - | - | 1609 | - |
| Stage 1 | 1008 | - | - | - | - | - |
| Stage 2 | 1016 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 987 | 1064 | - | - | 1609 | - |
| Mov Cap-2 Maneuver | 987 | - | - | - | - | - |
| Stage 1 | 1008 | - | - | - | - | - |
| Stage 2 | 1016 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.5 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1057 | 1609 | - |
| HCM Lane V/C Ratio | - | - | 0.016 | - | - |
| HCM Control Delay (s) | - | - | 8.5 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 7 | 14 | 0 |
| Future Vol, veh/h | 3 | 0 | 0 | 7 | 14 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 25 | 25 | 63 | 63 | 63 | 63 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 10 | 0 |
| Mvmt Flow | 12 | 0 | 0 | 11 | 22 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 33 | 22 | 22 | 0 | - | 0 |
| Stage 1 | 22 | - | - | - | - | - |
| Stage 2 | 11 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 986 | 1061 | 1607 | - | - | - |
| Stage 1 | 1006 | - | - | - | - | - |
| Stage 2 | 1017 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 986 | 1061 | 1607 | - | - | - |
| Mov Cap-2 Maneuver | 986 | - | - | - | - | - |
| Stage 1 | 1006 | - | - | - | - | - |
| Stage 2 | 1017 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.7 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1607 | - | 986 | - | - |
| HCM Lane V/C Ratio | - | - | 0.012 | - | - |
| HCM Control Delay (s) | 0 | - | 8.7 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 178 | 0 | 0 | 5 | 5 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 178 | 0 | 0 | 5 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 39 | 39 | 92 | 92 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 456 | 0 | 0 | 7 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 467 | 467 | 11 | 467 | 470 | 456 | 14 | 0 | 0 | 456 | 0 | 0 |
| Stage 1 | 11 | 11 | - | 456 | 456 | - | - | - | - | - | - | - |
| Stage 2 | 456 | 456 | - | 11 | 14 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 506 | 493 | 1070 | 506 | 492 | 604 | 1617 | - | - | 1105 | - | - |
| Stage 1 | 1010 | 886 | - | 584 | 568 | - | - | - | - | - | - | - |
| Stage 2 | 584 | 568 | - | 1010 | 884 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 506 | 493 | 1070 | 506 | 492 | 604 | 1617 | - | - | 1105 | - | - |
| Mov Cap-2 Maneuver | 506 | 493 | - | 506 | 492 | - | - | - | - | - | - | - |
| Stage 1 | 1010 | 886 | - | 584 | 568 | - | - | - | - | - | - | - |
| Stage 2 | 584 | 568 | - | 1010 | 884 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1617 | - | - | - | - | 1105 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | - | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 3 | 574 | 1 | 4 | 101 |
| Future Vol, veh/h | 7 | 3 | 574 | 1 | 4 | 101 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 78 | 78 | 76 | 76 |
| Heavy Vehicles, % | 0 | 0 | 1 | 0 | 0 | 4 |
| Mvmt Flow | 8 | 3 | 736 | 1 | 5 | 133 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 880 | 737 | 0 | 0 | 737 | 0 |
| Stage 1 | 737 | - | - | - | - | - |
| Stage 2 | 143 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 320 | 422 | - | - | 878 | - |
| Stage 1 | 477 | - | - | - | - | - |
| Stage 2 | 889 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 318 | 422 | - | - | 878 | - |
| Mov Cap-2 Maneuver | 318 | - | - | - | - | - |
| Stage 1 | 477 | - | - | - | - | - |
| Stage 2 | 884 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 15.9 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 343 | 878 | - |
| HCM Lane V/C Ratio | - | - | 0.033 | 0.006 | - |
| HCM Control Delay (s) | - | - | 15.9 | 9.1 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 48 | 147 | 428 | 15 | 13 | 95 |
| Future Vol, veh/h | 48 | 147 | 428 | 15 | 13 | 95 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 72 | 72 | 67 | 67 | 81 | 81 |
| Heavy Vehicles, % | 14 | 0 | 1 | 46 | 0 | 3 |
| Mvmt Flow | 67 | 204 | 639 | 22 | 16 | 117 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 799 | 650 | 0 | 0 | 661 | 0 |
| Stage 1 | 650 | - | - | - | - | - |
| Stage 2 | 149 | - | - | - | - | - |
| Critical Hdwy | 6.54 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.54 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.54 | - | - | - | - | - |
| Follow-up Hdwy | 3.626 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 339 | 473 | - | - | 937 | - |
| Stage 1 | 498 | - | - | - | - | - |
| Stage 2 | 850 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 333 | 473 | - | - | 937 | - |
| Mov Cap-2 Maneuver | 333 | - | - | - | - | - |
| Stage 1 | 498 | - | - | - | - | - |
| Stage 2 | 835 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 26.7 | 0 | 1.1 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 429 | 937 | - |
| HCM Lane V/C Ratio | - | - | 0.631 | 0.017 | - |
| HCM Control Delay (s) | - | - | 26.7 | 8.9 | 0 |
| HCM Lane LOS | - | - | D | A | A |
| HCM 95th %tile Q(veh) | - | - | 4.2 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 4 | 351 | 0 | 0 | 161 |
| Future Vol, veh/h | 0 | 4 | 351 | 0 | 0 | 161 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 68 | 68 | 74 | 74 |
| Heavy Vehicles, % | 0 | 0 | 3 | 0 | 0 | 7 |
| Mvmt Flow | 0 | 16 | 516 | 0 | 0 | 218 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 734 | 516 | 0 | 0 | 516 | 0 |
| Stage 1 | 516 | - | - | - | - | - |
| Stage 2 | 218 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 390 | 563 | - | - | 1060 | - |
| Stage 1 | 603 | - | - | - | - | - |
| Stage 2 | 823 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 390 | 563 | - | - | 1060 | - |
| Mov Cap-2 Maneuver | 390 | - | - | - | - | - |
| Stage 1 | 603 | - | - | - | - | - |
| Stage 2 | 823 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.6 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 563 | 1060 | - |
| HCM Lane V/C Ratio | - | - | 0.028 | - | - |
| HCM Control Delay (s) | - | - | 11.6 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 86.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 27 | 20 | 3 | 279 | 19 | 20 | 1 | 265 | 101 | 3 | 443 | 12 |
| Future Vol, veh/h | 27 | 20 | 3 | 279 | 19 | 20 | 1 | 265 | 101 | 3 | 443 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 54 | 54 | 54 | 85 | 85 | 85 | 84 | 84 | 84 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 2 | 1 | 0 | 1 | 11 |
| Mvmt Flow | 50 | 37 | 6 | 328 | 22 | 24 | 1 | 315 | 120 | 3 | 503 | 14 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 916 | 953 | 510 | 915 | 900 | 375 | 517 | 0 | 0 | 435 | 0 | 0 |
| Stage 1 | 516 | 516 | - | 377 | 377 | - | - | - | - | - | - | - |
| Stage 2 | 400 | 437 | - | 538 | 523 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.63 | 6.2 | 7.1 | 6.64 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.117 | 3.3 | 3.5 | 4.126 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 255 | 248 | 567 | ~ 256 | 266 | 676 | 1059 | - | - | 1135 | - | - |
| Stage 1 | 546 | 517 | - | 649 | 595 | - | - | - | - | - | - | - |
| Stage 2 | 630 | 561 | - | 531 | 511 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 230 | 247 | 567 | ~ 223 | 265 | 676 | 1059 | - | - | 1135 | - | - |
| Mov Cap-2 Maneuver | 230 | 247 | - | ~ 223 | 265 | - | - | - | - | - | - | - |
| Stage 1 | 545 | 515 | - | 648 | 594 | - | - | - | - | - | - | - |
| Stage 2 | 585 | 560 | - | 486 | 509 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 28.2 | $ 323 | 0 | 0.1 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1059 | - | - | 246 | 235 | 1135 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.376 | 1.592 | 0.003 | - | - |
| HCM Control Delay (s) | 8.4 | 0 | - | 28.2 | $ 323 | 8.2 | 0 | - |
| HCM Lane LOS | A | A | - | D | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.7 | 23.4 | 0 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 34.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 307 | 72 | 199 | 45 | 24 | 718 |
| Future Vol, veh/h | 307 | 72 | 199 | 45 | 24 | 718 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 76 | 76 | 83 | 83 |
| Heavy Vehicles, % | 2 | 2 | 1 | 3 | 0 | 1 |
| Mvmt Flow | 357 | 84 | 262 | 59 | 29 | 865 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 612 | 29 | 894 | 0 | - | 0 |
| Stage 1 | 29 | - | - | - | - | - |
| Stage 2 | 583 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | 456 | 1046 | 763 | - | - | - |
| Stage 1 | 994 | - | - | - | - | - |
| Stage 2 | 558 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 300 | 1046 | 763 | - | - | - |
| Mov Cap-2 Maneuver | ~ 300 | - | - | - | - | - |
| Stage 1 | 653 | - | - | - | - | - |
| Stage 2 | 558 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 123.6 | 9.9 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 763 | - | 300 | 1046 | - | - |
| HCM Lane V/C Ratio | 0.343 | - | 1.19 | 0.08 | - | - |
| HCM Control Delay (s) | 12.2 | - | 150.6 | 8.7 | - | - |
| HCM Lane LOS | B | - | F | A | - | - |
| HCM 95th %tile Q(veh) | 1.5 | - | 15.7 | 0.3 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 55 | 505 | 0 | 0 | 1181 |
| Future Vol, veh/h | 0 | 55 | 505 | 0 | 0 | 1181 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 73 | 73 | 95 | 95 | 89 | 89 |
| Heavy Vehicles, % | 0 | 13 | 0 | 1 | 0 | 1 |
| Mvmt Flow | 0 | 75 | 532 | 0 | 0 | 1327 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 532 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.395 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.4235 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 521 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | 521 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.1 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 521 | - |
| HCM Lane V/C Ratio | - | 0.145 | - |
| HCM Control Delay (s) | - | 13.1 | - |
| HCM Lane LOS | - | B | - |
| HCM 95th %tile Q(veh) | - | 0.5 | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 3 | 106 | 6 | 1189 | 642 | 132 | 8 | 5 | 275 | 6 | 2 | 2 |
| Future Volume (vph) | 3 | 106 | 6 | 1189 | 642 | 132 | 8 | 5 | 275 | 6 | 2 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | 1805 | 3515 | | 3467 | 3475 | | | 1783 | 2682 | | 2035 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.87 | 1.00 | | 0.86 | |
| Satd. Flow (perm) | 1805 | 3515 | | 3467 | 3475 | | | 1598 | 2682 | | 1811 | |
| Peak-hour factor, PHF | 0.84 | 0.84 | 0.84 | 0.83 | 1.00 | 0.83 | 0.88 | 0.88 | 0.88 | 0.63 | 0.63 | 0.63 |
| Adj. Flow (vph) | 4 | 126 | 7 | 1433 | 642 | 159 | 9 | 6 | 312 | 10 | 3 | 3 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 4 | 129 | 0 | 1433 | 791 | 0 | 0 | 15 | 313 | 0 | 14 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 1% | 1% | 0% | 0% | 0% | 6% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | 5.8 | 13.0 | | 46.0 | 54.2 | | | 15.7 | 15.7 | | 15.7 | |
| Effective Green, g (s) | 5.8 | 13.0 | | 46.0 | 54.2 | | | 15.7 | 15.7 | | 15.7 | |
| Actuated g/C Ratio | 0.06 | 0.14 | | 0.50 | 0.58 | | | 0.17 | 0.17 | | 0.17 | |
| Clearance Time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | 2.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 112 | 492 | | 1720 | 2031 | | | 270 | 454 | | 306 | |
| v/s Ratio Prot | 0.00 | c0.04 | | c0.41 | c0.23 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.12 | | 0.01 | |
| v/c Ratio | 0.04 | 0.26 | | 0.83 | 0.39 | | | 0.06 | 0.69 | | 0.04 | |
| Uniform Delay, d1 | 40.8 | 35.6 | | 20.1 | 10.4 | | | 32.3 | 36.2 | | 32.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.3 | | 3.6 | 0.1 | | | 0.1 | 4.3 | | 0.1 | |
| Delay (s) | 40.9 | 35.9 | | 23.7 | 10.5 | | | 32.4 | 40.5 | | 32.3 | |
| Level of Service | D | D | | C | B | | | C | D | | C | |
| Approach Delay (s) | | 36.0 | | | 18.9 | | | 40.2 | | | 32.3 | |
| Approach LOS | | D | | | B | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 22.4 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.71 | | |
| Actuated Cycle Length (s) | 92.7 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 56.3% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 271 | 116 | 157 | 1014 | 0 | 0 | 0 | 0 | 566 | 0 | 839 |
| Future Volume (vph) | 0 | 271 | 116 | 157 | 1014 | 0 | 0 | 0 | 0 | 566 | 0 | 839 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Peak-hour factor, PHF | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.92 | 0.92 | 0.92 | 0.75 | 0.75 | 0.75 |
| Adj. Flow (vph) | 0 | 339 | 145 | 196 | 1268 | 0 | 0 | 0 | 0 | 755 | 0 | 1119 |
| RTOR Reduction (vph) | 0 | 0 | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 104 |
| Lane Group Flow (vph) | 0 | 339 | 48 | 196 | 1268 | 0 | 0 | 0 | 0 | 755 | 0 | 1015 |
| Heavy Vehicles (%) | 0% | 2% | 10% | 12% | 1% | 0% | 2% | 2% | 2% | 1% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 33.3 | 33.3 | 25.0 | 64.3 | | | | | 25.0 | | 25.0 |
| Effective Green, g (s) | | 33.3 | 33.3 | 25.0 | 64.3 | | | | | 25.0 | | 25.0 |
| Actuated g/C Ratio | | 0.33 | 0.33 | 0.25 | 0.63 | | | | | 0.25 | | 0.25 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 1966 | 466 | 720 | 2193 | | | | | 855 | | 694 |
| v/s Ratio Prot | | 0.06 | 0.03 | 0.07 | c0.37 | | | | | 0.22 | | c0.36 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.17 | 0.10 | 0.27 | 0.58 | | | | | 0.88 | | 1.46 |
| Uniform Delay, d1 | | 24.2 | 23.6 | 30.8 | 10.7 | | | | | 36.7 | | 38.1 |
| Progression Factor | | 1.00 | 1.00 | 0.90 | 1.58 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 0.1 | 0.2 | 0.1 | 0.3 | | | | | 11.4 | | 216.1 |
| Delay (s) | | 24.3 | 23.8 | 27.7 | 17.2 | | | | | 48.2 | | 254.2 |
| Level of Service | | C | C | C | B | | | | | D | | F |
| Approach Delay (s) | | 24.1 | | | 18.6 | | | 0.0 | | | 171.2 | |
| Approach LOS | | C | | | B | | | A | | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 94.1 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.88 | | |
| Actuated Cycle Length (s) | 101.3 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 67.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 118 | 719 | 0 | 0 | 405 | 78 | 766 | 0 | 366 | 0 | 0 | 0 |
| Future Volume (vph) | 118 | 719 | 0 | 0 | 405 | 78 | 766 | 0 | 366 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3113 | 3421 | | | 4938 | | 3433 | | 2733 | | | |
| Flt Permitted | 0.43 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 1402 | 3421 | | | 4938 | | 3433 | | 2733 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.78 | 0.78 | 0.78 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 136 | 826 | 0 | 0 | 476 | 92 | 982 | 0 | 469 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 353 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 136 | 826 | 0 | 0 | 543 | 0 | 982 | 0 | 116 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 2% | 0% | 0% | 2% | 5% | 2% | 2% | 4% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 50.3 | 33.3 | | | 41.3 | | 25.0 | | 25.0 | | | |
| Effective Green, g (s) | 50.3 | 33.3 | | | 41.3 | | 25.0 | | 25.0 | | | |
| Actuated g/C Ratio | 0.50 | 0.33 | | | 0.41 | | 0.25 | | 0.25 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 983 | 1124 | | | 2013 | | 847 | | 674 | | | |
| v/s Ratio Prot | c0.02 | c0.24 | | | c0.11 | | c0.29 | | 0.04 | | | |
| v/s Ratio Perm | 0.05 | | | | | | | | | | | |
| v/c Ratio | 0.14 | 0.73 | | | 0.27 | | 1.16 | | 0.17 | | | |
| Uniform Delay, d1 | 13.4 | 30.1 | | | 20.0 | | 38.1 | | 30.0 | | | |
| Progression Factor | 1.14 | 1.29 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 0.1 | 2.3 | | | 0.2 | | 84.8 | | 0.3 | | | |
| Delay (s) | 15.4 | 41.2 | | | 20.1 | | 122.9 | | 30.3 | | | |
| Level of Service | B | D | | | C | | F | | C | | | |
| Approach Delay (s) | | 37.6 | | | 20.1 | | | 93.0 | | | 0.0 | |
| Approach LOS | | D | | | C | | | F | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 61.2 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 101.3 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 67.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 620 | 2030 | 731 | 586 | 162 | 189 |
| Future Volume (vph) | 620 | 2030 | 731 | 586 | 162 | 189 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.96 | 0.96 | 0.76 | 0.76 |
| Adj. Flow (vph) | 721 | 2360 | 761 | 610 | 213 | 249 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 424 | 0 | 192 |
| Lane Group Flow (vph) | 721 | 2360 | 761 | 186 | 213 | 57 |
| Heavy Vehicles (%) | 1% | 4% | 8% | 2% | 5% | 5% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 9.5 | 33.5 | 18.0 | 18.0 | 13.5 | 13.5 |
| Effective Green, g (s) | 9.5 | 33.5 | 18.0 | 18.0 | 13.5 | 13.5 |
| Actuated g/C Ratio | 0.16 | 0.57 | 0.31 | 0.31 | 0.23 | 0.23 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 287 | 1970 | 1019 | 482 | 393 | 351 |
| v/s Ratio Prot | c0.40 | c0.68 | 0.23 | | c0.12 | 0.04 |
| v/s Ratio Perm | | | | 0.12 | | |
| v/c Ratio | 2.51 | 1.20 | 0.75 | 0.39 | 0.54 | 0.16 |
| Uniform Delay, d1 | 24.8 | 12.8 | 18.4 | 16.1 | 20.0 | 18.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 690.8 | 94.3 | 5.0 | 2.3 | 1.9 | 0.3 |
| Delay (s) | 715.5 | 107.1 | 23.4 | 18.5 | 21.9 | 18.5 |
| Level of Service | F | F | C | B | C | B |
| Approach Delay (s) | | 249.4 | 21.2 | | 20.1 | |
| Approach LOS | | F | C | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 164.2 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.36 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 80.6% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 124.5 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 69 | 44 | 31 | 14 | 13 | 73 | 8 | 101 | 64 | 585 | 449 | 137 |
| Future Vol, veh/h | 69 | 44 | 31 | 14 | 13 | 73 | 8 | 101 | 64 | 585 | 449 | 137 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.78 | 0.78 | 0.78 | 0.83 | 0.83 | 0.83 | 0.76 | 0.76 | 0.76 |
| Heavy Vehicles, % | 0 | 4 | 5 | 0 | 13 | 18 | 0 | 0 | 3 | 2 | 0 | 0 |
| Mvmt Flow | 91 | 58 | 41 | 18 | 17 | 94 | 10 | 122 | 77 | 770 | 591 | 180 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 14.3 | 13.7 | 13.8 | 162.3 |
| HCM LOS | B | B | B | F |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 34% | 0% | 59% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 66% | 0% | 41% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 8 | 67 | 98 | 69 | 75 | 14 | 13 | 73 | 585 | 449 | 137 |
| LT Vol | 8 | 0 | 0 | 69 | 0 | 14 | 0 | 0 | 585 | 0 | 0 |
| Through Vol | 0 | 67 | 34 | 0 | 44 | 0 | 13 | 0 | 0 | 449 | 0 |
| RT Vol | 0 | 0 | 64 | 0 | 31 | 0 | 0 | 73 | 0 | 0 | 137 |
| Lane Flow Rate | 10 | 81 | 118 | 91 | 99 | 18 | 17 | 94 | 770 | 591 | 180 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.024 | 0.188 | 0.26 | 0.227 | 0.228 | 0.046 | 0.042 | 0.218 | 1.509 | 1.069 | 0.291 |
| Departure Headway (Hd) | 9.374 | 8.867 | 8.453 | 9.385 | 8.663 | 9.761 | 9.48 | 8.859 | 7.056 | 6.517 | 5.81 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 384 | 407 | 427 | 385 | 417 | 369 | 380 | 408 | 516 | 555 | 613 |
| Service Time | 7.074 | 6.567 | 6.153 | 7.085 | 6.363 | 7.461 | 7.18 | 6.559 | 4.843 | 4.304 | 3.597 |
| HCM Lane V/C Ratio | 0.026 | 0.199 | 0.276 | 0.236 | 0.237 | 0.049 | 0.045 | 0.23 | 1.492 | 1.065 | 0.294 |
| HCM Control Delay | 12.3 | 13.6 | 14.1 | 14.8 | 13.9 | 12.9 | 12.6 | 14 | 258.4 | 83.3 | 11 |
| HCM Lane LOS | B | B | B | B | B | B | B | B | F | F | B |
| HCM 95th-tile Q | 0.1 | 0.7 | 1 | 0.9 | 0.9 | 0.1 | 0.1 | 0.8 | 39.3 | 17.3 | 1.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 442 | 251 | 22 | 81 | 19 | 0 |
| Future Vol, veh/h | 442 | 251 | 22 | 81 | 19 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 71 | 71 | 69 | 69 |
| Heavy Vehicles, % | 1 | 5 | 0 | 12 | 36 | 0 |
| Mvmt Flow | 567 | 322 | 31 | 114 | 28 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 889 | 0 | 904 | 728 |
| Stage 1 | - | - | - | - | 728 | - |
| Stage 2 | - | - | - | - | 176 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.76 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.76 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.76 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.824 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 771 | - | 268 | 427 |
| Stage 1 | - | - | - | - | 422 | - |
| Stage 2 | - | - | - | - | 779 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 771 | - | 256 | 427 |
| Mov Cap-2 Maneuver | - | - | - | - | 256 | - |
| Stage 1 | - | - | - | - | 422 | - |
| Stage 2 | - | - | - | - | 746 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.1 | 20.8 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 256 | - | - | 771 | - |
| HCM Lane V/C Ratio | 0.108 | - | - | 0.04 | - |
| HCM Control Delay (s) | 20.8 | - | - | 9.9 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 426 | 84 | 2 | 0 | 6 |
| Future Vol, veh/h | 17 | 426 | 84 | 2 | 0 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 71 | 71 | 50 | 50 |
| Heavy Vehicles, % | 0 | 1 | 8 | 0 | 0 | 25 |
| Mvmt Flow | 20 | 501 | 118 | 3 | 0 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 121 | 0 | - | 0 | 661 | 120 |
| Stage 1 | - | - | - | - | 120 | - |
| Stage 2 | - | - | - | - | 541 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.45 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.525 |
| Pot Cap-1 Maneuver | 1479 | - | - | - | 431 | 873 |
| Stage 1 | - | - | - | - | 910 | - |
| Stage 2 | - | - | - | - | 588 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1479 | - | - | - | 425 | 873 |
| Mov Cap-2 Maneuver | - | - | - | - | 425 | - |
| Stage 1 | - | - | - | - | 897 | - |
| Stage 2 | - | - | - | - | 588 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 9.2 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1479 | - | - | - | 873 |
| HCM Lane V/C Ratio | 0.014 | - | - | - | 0.014 |
| HCM Control Delay (s) | 7.5 | - | - | - | 9.2 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 226 | 7 | 7 | 104 | 10 | 5 |
| Future Vol, veh/h | 226 | 7 | 7 | 104 | 10 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 82 | 82 | 25 | 40 |
| Heavy Vehicles, % | 1 | 0 | 0 | 5 | 20 | 0 |
| Mvmt Flow | 238 | 7 | 9 | 127 | 40 | 13 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 245 | 0 | 387 | 242 |
| Stage 1 | - | - | - | - | 242 | - |
| Stage 2 | - | - | - | - | 145 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.6 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.6 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.68 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1333 | - | 583 | 802 |
| Stage 1 | - | - | - | - | 758 | - |
| Stage 2 | - | - | - | - | 840 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1333 | - | 579 | 802 |
| Mov Cap-2 Maneuver | - | - | - | - | 579 | - |
| Stage 1 | - | - | - | - | 758 | - |
| Stage 2 | - | - | - | - | 834 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.5 | 11.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 620 | - | - | 1333 | - |
| HCM Lane V/C Ratio | 0.085 | - | - | 0.006 | - |
| HCM Control Delay (s) | 11.3 | - | - | 7.7 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 15 | 13 | 6 | 8 |
| Future Vol, veh/h | 0 | 0 | 15 | 13 | 6 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 53 | 53 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 0 | 13 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 28 | 25 | 12 | 16 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 81 | 41 | 0 | 0 | 53 | 0 |
| Stage 1 | 41 | - | - | - | - | - |
| Stage 2 | 40 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 926 | 1036 | - | - | 1566 | - |
| Stage 1 | 987 | - | - | - | - | - |
| Stage 2 | 988 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 919 | 1036 | - | - | 1566 | - |
| Mov Cap-2 Maneuver | 919 | - | - | - | - | - |
| Stage 1 | 987 | - | - | - | - | - |
| Stage 2 | 980 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 3.1 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 1566 | - |
| HCM Lane V/C Ratio | - | - | - | 0.008 | - |
| HCM Control Delay (s) | - | - | 0 | 7.3 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 0 | 0 | 8 | 28 | 8 |
| Future Vol, veh/h | 6 | 0 | 0 | 8 | 28 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 50 | 50 | 42 | 42 | 69 | 69 |
| Heavy Vehicles, % | 75 | 0 | 0 | 0 | 6 | 80 |
| Mvmt Flow | 12 | 0 | 0 | 19 | 41 | 12 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 66 | 47 | 53 | 0 | - | 0 |
| Stage 1 | 47 | - | - | - | - | - |
| Stage 2 | 19 | - | - | - | - | - |
| Critical Hdwy | 7.15 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 6.15 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.15 | - | - | - | - | - |
| Follow-up Hdwy | 4.175 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 786 | 1028 | 1566 | - | - | - |
| Stage 1 | 818 | - | - | - | - | - |
| Stage 2 | 844 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 786 | 1028 | 1566 | - | - | - |
| Mov Cap-2 Maneuver | 786 | - | - | - | - | - |
| Stage 1 | 818 | - | - | - | - | - |
| Stage 2 | 844 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.7 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1566 | - | 786 | - | - |
| HCM Lane V/C Ratio | - | - | 0.015 | - | - |
| HCM Control Delay (s) | 0 | - | 9.7 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 19 | 0 | 0 | 53 | 220 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 19 | 0 | 0 | 53 | 220 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 88 | 88 | 92 | 92 | 69 | 69 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 18 | 2 | 2 | 15 | 1 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 22 | 0 | 0 | 77 | 319 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 271 | 271 | 237 | 271 | 430 | 22 | 396 | 0 | 0 | 22 | 0 | 0 |
| Stage 1 | 237 | 237 | - | 34 | 34 | - | - | - | - | - | - | - |
| Stage 2 | 34 | 34 | - | 237 | 396 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 682 | 636 | 802 | 682 | 518 | 1055 | 1174 | - | - | 1593 | - | - |
| Stage 1 | 766 | 709 | - | 982 | 867 | - | - | - | - | - | - | - |
| Stage 2 | 982 | 867 | - | 766 | 604 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 679 | 633 | 802 | 679 | 515 | 1055 | 1174 | - | - | 1593 | - | - |
| Mov Cap-2 Maneuver | 679 | 633 | - | 679 | 515 | - | - | - | - | - | - | - |
| Stage 1 | 762 | 709 | - | 977 | 863 | - | - | - | - | - | - | - |
| Stage 2 | 977 | 863 | - | 766 | 604 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 1.7 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1174 | - | - | - | - | 1593 | - | - |
| HCM Lane V/C Ratio | 0.005 | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | A | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 2 | 159 | 13 | 13 | 439 |
| Future Vol, veh/h | 6 | 2 | 159 | 13 | 13 | 439 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 63 | 63 | 81 | 81 | 84 | 84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 |
| Mvmt Flow | 10 | 3 | 196 | 16 | 15 | 523 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 757 | 204 | 0 | 0 | 212 | 0 |
| Stage 1 | 204 | - | - | - | - | - |
| Stage 2 | 553 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 378 | 842 | - | - | 1370 | - |
| Stage 1 | 835 | - | - | - | - | - |
| Stage 2 | 580 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 372 | 842 | - | - | 1370 | - |
| Mov Cap-2 Maneuver | 372 | - | - | - | - | - |
| Stage 1 | 835 | - | - | - | - | - |
| Stage 2 | 571 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.6 | 0 | 0.2 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 432 | 1370 | - |
| HCM Lane V/C Ratio | - | - | 0.029 | 0.011 | - |
| HCM Control Delay (s) | - | - | 13.6 | 7.7 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 14 | 19 | 153 | 13 | 20 | 425 |
| Future Vol, veh/h | 14 | 19 | 153 | 13 | 20 | 425 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 86 | 86 | 83 | 83 |
| Heavy Vehicles, % | 44 | 0 | 1 | 63 | 0 | 1 |
| Mvmt Flow | 16 | 22 | 178 | 15 | 24 | 512 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 746 | 186 | 0 | 0 | 193 | 0 |
| Stage 1 | 186 | - | - | - | - | - |
| Stage 2 | 560 | - | - | - | - | - |
| Critical Hdwy | 6.84 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - |
| Follow-up Hdwy | 3.896 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 326 | 861 | - | - | 1392 | - |
| Stage 1 | 754 | - | - | - | - | - |
| Stage 2 | 497 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 318 | 861 | - | - | 1392 | - |
| Mov Cap-2 Maneuver | 318 | - | - | - | - | - |
| Stage 1 | 754 | - | - | - | - | - |
| Stage 2 | 485 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 12.8 | 0 | 0.3 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 499 | 1392 | - |
| HCM Lane V/C Ratio | - | - | 0.075 | 0.017 | - |
| HCM Control Delay (s) | - | - | 12.8 | 7.6 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.2 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 5 | 187 | 2 | 8 | 338 |
| Future Vol, veh/h | 0 | 5 | 187 | 2 | 8 | 338 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 89 | 89 | 81 | 81 |
| Heavy Vehicles, % | 0 | 0 | 5 | 100 | 0 | 2 |
| Mvmt Flow | 0 | 7 | 210 | 2 | 10 | 417 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 648 | 211 | 0 | 0 | 212 | 0 |
| Stage 1 | 211 | - | - | - | - | - |
| Stage 2 | 437 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 438 | 834 | - | - | 1370 | - |
| Stage 1 | 829 | - | - | - | - | - |
| Stage 2 | 655 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 434 | 834 | - | - | 1370 | - |
| Mov Cap-2 Maneuver | 434 | - | - | - | - | - |
| Stage 1 | 829 | - | - | - | - | - |
| Stage 2 | 648 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.4 | 0 | 0.2 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 834 | 1370 | - |
| HCM Lane V/C Ratio | - | - | 0.008 | 0.007 | - |
| HCM Control Delay (s) | - | - | 9.4 | 7.6 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 11.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 8 | 9 | 2 | 86 | 5 | 6 | 0 | 461 | 391 | 26 | 295 | 29 |
| Future Vol, veh/h | 8 | 9 | 2 | 86 | 5 | 6 | 0 | 461 | 391 | 26 | 295 | 29 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 65 | 65 | 65 | 90 | 90 | 90 | 87 | 87 | 87 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 3 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 12 | 3 | 132 | 8 | 9 | 0 | 512 | 434 | 30 | 339 | 33 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1154 | 1362 | 356 | 1152 | 1161 | 729 | 372 | 0 | 0 | 946 | 0 | 0 |
| Stage 1 | 416 | 416 | - | 729 | 729 | - | - | - | - | - | - | - |
| Stage 2 | 738 | 946 | - | 423 | 432 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.3 | 6.5 | 6.2 | 7.14 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 4 | 3.3 | 3.536 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 160 | 149 | 693 | 173 | 197 | 426 | 1198 | - | - | 734 | - | - |
| Stage 1 | 580 | 595 | - | 411 | 431 | - | - | - | - | - | - | - |
| Stage 2 | 383 | 343 | - | 605 | 586 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 146 | 141 | 693 | 155 | 187 | 426 | 1198 | - | - | 734 | - | - |
| Mov Cap-2 Maneuver | 146 | 141 | - | 155 | 187 | - | - | - | - | - | - | - |
| Stage 1 | 580 | 564 | - | 411 | 431 | - | - | - | - | - | - | - |
| Stage 2 | 368 | 343 | - | 559 | 556 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 32.5 | 105.3 | 0 | 0.8 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1198 | - | - | 156 | 163 | 734 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.162 | 0.916 | 0.041 | - | - |
| HCM Control Delay (s) | 0 | - | - | 32.5 | 105.3 | 10.1 | 0 | - |
| HCM Lane LOS | A | - | - | D | F | B | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.6 | 6.7 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 88.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 871 | 355 | 48 | 14 | 55 | 238 |
| Future Vol, veh/h | 871 | 355 | 48 | 14 | 55 | 238 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 70 | 70 | 90 | 90 |
| Heavy Vehicles, % | 1 | 1 | 3 | 11 | 0 | 4 |
| Mvmt Flow | 937 | 382 | 69 | 20 | 61 | 264 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 219 | 61 | 325 | 0 | - | 0 |
| Stage 1 | 61 | - | - | - | - | - |
| Stage 2 | 158 | - | - | - | - | - |
| Critical Hdwy | 6.41 | 6.21 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.41 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.41 | - | - | - | - | - |
| Follow-up Hdwy | 3.509 | 3.309 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | ~ 771 | 1007 | 1229 | - | - | - |
| Stage 1 | 964 | - | - | - | - | - |
| Stage 2 | ~ 873 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 728 | 1007 | 1229 | - | - | - |
| Mov Cap-2 Maneuver | ~ 728 | - | - | - | - | - |
| Stage 1 | ~ 910 | - | - | - | - | - |
| Stage 2 | ~ 873 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 115.5 | 6.3 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1229 | - | 728 | 1007 | - | - |
| HCM Lane V/C Ratio | 0.056 | - | 1.286 | 0.379 | - | - |
| HCM Control Delay (s) | 8.1 | - | 158.2 | 10.7 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 35.9 | 1.8 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 103.5 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 225 | 1206 | 0 | 0 | 351 |
| Future Vol, veh/h | 0 | 225 | 1206 | 0 | 0 | 351 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 70 | 70 | 80 | 80 |
| Heavy Vehicles, % | 2 | 3 | 2 | 2 | 2 | 4 |
| Mvmt Flow | 0 | 296 | 1723 | 0 | 0 | 439 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 1723 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.245 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.3285 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | ~ 109 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | ~ 109 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 859.4 | 0 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 109 | - |
| HCM Lane V/C Ratio | - | 2.716 | - |
| HCM Control Delay (s) | - | $ 859.4 | - |
| HCM Lane LOS | - | F | - |
| HCM 95th %tile Q(veh) | - | 27.4 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 474 | 3 | 293 | 184 | 24 | 11 | 3 | 1225 | 57 | 3 | 3 |
| Future Volume (vph) | 0 | 474 | 3 | 293 | 184 | 24 | 11 | 3 | 1225 | 57 | 3 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | | 1.00 | | 1.00 | 0.98 | | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | 0.96 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3571 | | 3433 | 3548 | | | 1766 | 2814 | | 2047 | |
| Flt Permitted | | 1.00 | | 0.95 | 1.00 | | | 0.83 | 1.00 | | 0.74 | |
| Satd. Flow (perm) | | 3571 | | 3433 | 3548 | | | 1526 | 2814 | | 1587 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.96 | 0.96 | 0.96 | 0.91 | 0.91 | 0.91 | 0.68 | 0.68 | 0.68 |
| Adj. Flow (vph) | 0 | 539 | 3 | 305 | 192 | 25 | 12 | 3 | 1346 | 84 | 4 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 542 | 0 | 305 | 212 | 0 | 0 | 15 | 1346 | 0 | 91 | 0 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | | 15.2 | | 11.9 | 33.1 | | | 20.1 | 20.1 | | 20.1 | |
| Effective Green, g (s) | | 15.2 | | 11.9 | 33.1 | | | 20.1 | 20.1 | | 20.1 | |
| Actuated g/C Ratio | | 0.23 | | 0.18 | 0.51 | | | 0.31 | 0.31 | | 0.31 | |
| Clearance Time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | | 832 | | 626 | 1801 | | | 470 | 867 | | 489 | |
| v/s Ratio Prot | | c0.15 | | c0.09 | 0.06 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.48 | | 0.06 | |
| v/c Ratio | | 0.65 | | 0.49 | 0.12 | | | 0.03 | 1.55 | | 0.19 | |
| Uniform Delay, d1 | | 22.6 | | 23.9 | 8.4 | | | 15.8 | 22.6 | | 16.5 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.8 | | 0.6 | 0.0 | | | 0.0 | 254.3 | | 0.2 | |
| Delay (s) | | 24.4 | | 24.5 | 8.4 | | | 15.8 | 276.9 | | 16.7 | |
| Level of Service | | C | | C | A | | | B | F | | B | |
| Approach Delay (s) | | 24.4 | | | 17.8 | | | 274.0 | | | 16.7 | |
| Approach LOS | | C | | | B | | | F | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 157.7 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.99 | | |
| Actuated Cycle Length (s) | 65.2 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 76.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 1159 | 597 | 684 | 474 | 0 | 0 | 0 | 0 | 389 | 0 | 151 |
| Future Volume (vph) | 0 | 1159 | 597 | 684 | 474 | 0 | 0 | 0 | 0 | 389 | 0 | 151 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 1364 | 702 | 728 | 504 | 0 | 0 | 0 | 0 | 432 | 0 | 168 |
| RTOR Reduction (vph) | 0 | 0 | 365 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 128 |
| Lane Group Flow (vph) | 0 | 1364 | 337 | 728 | 504 | 0 | 0 | 0 | 0 | 432 | 0 | 40 |
| Heavy Vehicles (%) | 0% | 1% | 1% | 1% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 35.0 | 35.0 | 25.0 | 60.9 | | | | | 24.0 | | 24.0 |
| Effective Green, g (s) | | 35.0 | 35.0 | 25.0 | 60.9 | | | | | 24.0 | | 24.0 |
| Actuated g/C Ratio | | 0.34 | 0.34 | 0.25 | 0.60 | | | | | 0.24 | | 0.24 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 2072 | 530 | 793 | 2062 | | | | | 824 | | 662 |
| v/s Ratio Prot | | c0.23 | 0.22 | c0.22 | 0.15 | | | | | c0.12 | | 0.01 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.66 | 0.64 | 0.92 | 0.24 | | | | | 0.52 | | 0.06 |
| Uniform Delay, d1 | | 28.4 | 28.2 | 37.5 | 9.7 | | | | | 34.0 | | 30.2 |
| Progression Factor | | 1.00 | 1.00 | 1.37 | 1.12 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 1.0 | 3.5 | 11.4 | 0.1 | | | | | 1.1 | | 0.1 |
| Delay (s) | | 29.5 | 31.6 | 62.6 | 10.9 | | | | | 35.2 | | 30.3 |
| Level of Service | | C | C | E | B | | | | | D | | C |
| Approach Delay (s) | | 30.2 | | | 41.5 | | | 0.0 | | | 33.8 | |
| Approach LOS | | C | | | D | | | A | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 34.3 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 102.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 82.6% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 693 | 855 | 0 | 0 | 932 | 407 | 226 | 0 | 625 | 0 | 0 | 0 |
| Future Volume (vph) | 693 | 855 | 0 | 0 | 932 | 407 | 226 | 0 | 625 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.95 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3236 | 3455 | | | 4916 | | 3433 | | 2814 | | | |
| Flt Permitted | 0.11 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 389 | 3455 | | | 4916 | | 3433 | | 2814 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.92 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 797 | 983 | 0 | 0 | 1036 | 452 | 240 | 0 | 665 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 509 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 797 | 983 | 0 | 0 | 1413 | 0 | 240 | 0 | 156 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 1% | 0% | 2% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 59.1 | 35.0 | | | 35.9 | | 24.0 | | 24.0 | | | |
| Effective Green, g (s) | 59.1 | 35.0 | | | 35.9 | | 24.0 | | 24.0 | | | |
| Actuated g/C Ratio | 0.58 | 0.34 | | | 0.35 | | 0.24 | | 0.24 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 898 | 1185 | | | 1730 | | 807 | | 662 | | | |
| v/s Ratio Prot | c0.21 | 0.28 | | | 0.29 | | c0.07 | | 0.06 | | | |
| v/s Ratio Perm | c0.30 | | | | | | | | | | | |
| v/c Ratio | 0.89 | 0.83 | | | 0.82 | | 0.30 | | 0.24 | | | |
| Uniform Delay, d1 | 27.4 | 30.8 | | | 30.1 | | 32.1 | | 31.6 | | | |
| Progression Factor | 1.67 | 0.54 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 8.8 | 4.4 | | | 3.5 | | 0.4 | | 0.4 | | | |
| Delay (s) | 54.6 | 20.9 | | | 33.6 | | 32.5 | | 32.0 | | | |
| Level of Service | D | C | | | C | | C | | C | | | |
| Approach Delay (s) | | 36.0 | | | 33.6 | | | 32.1 | | | 0.0 | |
| Approach LOS | | D | | | C | | | C | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 34.3 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.71 | | |
| Actuated Cycle Length (s) | 102.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 82.6% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 309 | 1653 | 1283 | 223 | 416 | 850 |
| Future Volume (vph) | 309 | 1653 | 1283 | 223 | 416 | 850 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.93 | 0.93 | 0.87 | 0.87 |
| Adj. Flow (vph) | 351 | 1878 | 1380 | 240 | 478 | 977 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 167 | 0 | 166 |
| Lane Group Flow (vph) | 351 | 1878 | 1380 | 73 | 478 | 811 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 2% | 1% | 1% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Effective Green, g (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Actuated g/C Ratio | 0.08 | 0.49 | 0.31 | 0.31 | 0.31 | 0.31 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 151 | 1739 | 1079 | 482 | 545 | 487 |
| v/s Ratio Prot | c0.20 | 0.53 | c0.39 | | 0.27 | c0.51 |
| v/s Ratio Perm | | | | 0.05 | | |
| v/c Ratio | 2.32 | 1.08 | 1.28 | 0.15 | 0.88 | 1.67 |
| Uniform Delay, d1 | 27.0 | 15.0 | 20.5 | 14.9 | 19.5 | 20.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 616.3 | 46.7 | 132.8 | 0.7 | 15.1 | 308.3 |
| Delay (s) | 643.3 | 61.7 | 153.3 | 15.6 | 34.6 | 328.8 |
| Level of Service | F | E | F | B | C | F |
| Approach Delay (s) | | 153.3 | 132.9 | | 232.1 | |
| Approach LOS | | F | F | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 168.7 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.57 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 98.1% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 104.3 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 140 | 4 | 15 | 9 | 24 | 497 | 15 | 566 | 7 | 61 | 90 | 87 |
| Future Vol, veh/h | 140 | 4 | 15 | 9 | 24 | 497 | 15 | 566 | 7 | 61 | 90 | 87 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.77 | 0.77 | 0.77 | 0.89 | 0.89 | 0.89 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 1 | 0 | 4 | 3 | 0 |
| Mvmt Flow | 167 | 5 | 18 | 12 | 31 | 645 | 17 | 636 | 8 | 66 | 97 | 94 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 20.4 | 210 | 52.5 | 15.9 |
| HCM LOS | C | F | F | C |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 96% | 0% | 21% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 4% | 0% | 79% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 15 | 377 | 196 | 140 | 19 | 9 | 24 | 497 | 61 | 90 | 87 |
| LT Vol | 15 | 0 | 0 | 140 | 0 | 9 | 0 | 0 | 61 | 0 | 0 |
| Through Vol | 0 | 377 | 189 | 0 | 4 | 0 | 24 | 0 | 0 | 90 | 0 |
| RT Vol | 0 | 0 | 7 | 0 | 15 | 0 | 0 | 497 | 0 | 0 | 87 |
| Lane Flow Rate | 17 | 424 | 220 | 167 | 23 | 12 | 31 | 645 | 66 | 97 | 94 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.041 | 0.977 | 0.504 | 0.455 | 0.055 | 0.03 | 0.075 | 1.419 | 0.18 | 0.252 | 0.225 |
| Departure Headway (Hd) | 9.697 | 9.199 | 9.155 | 10.415 | 9.363 | 9.112 | 8.708 | 7.913 | 10.964 | 10.426 | 9.643 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 371 | 399 | 396 | 348 | 385 | 393 | 412 | 465 | 329 | 346 | 375 |
| Service Time | 7.397 | 6.899 | 6.855 | 8.115 | 7.063 | 6.854 | 6.451 | 5.655 | 8.664 | 8.126 | 7.343 |
| HCM Lane V/C Ratio | 0.046 | 1.063 | 0.556 | 0.48 | 0.06 | 0.031 | 0.075 | 1.387 | 0.201 | 0.28 | 0.251 |
| HCM Control Delay | 12.8 | 70.5 | 20.8 | 21.5 | 12.6 | 12.1 | 12.2 | 223.1 | 16.1 | 16.6 | 15.1 |
| HCM Lane LOS | B | F | C | C | B | B | B | F | C | C | C |
| HCM 95th-tile Q | 0.1 | 11.4 | 2.7 | 2.3 | 0.2 | 0.1 | 0.2 | 31.4 | 0.6 | 1 | 0.9 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 24.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 64 | 8 | 2 | 358 | 172 | 10 |
| Future Vol, veh/h | 64 | 8 | 2 | 358 | 172 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 70 | 70 | 73 | 73 | 40 | 40 |
| Heavy Vehicles, % | 4 | 0 | 0 | 2 | 0 | 0 |
| Mvmt Flow | 91 | 11 | 3 | 490 | 430 | 25 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 102 | 0 | 593 | 97 |
| Stage 1 | - | - | - | - | 97 | - |
| Stage 2 | - | - | - | - | 496 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1503 | - | 472 | 965 |
| Stage 1 | - | - | - | - | 932 | - |
| Stage 2 | - | - | - | - | 616 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1503 | - | 471 | 965 |
| Mov Cap-2 Maneuver | - | - | - | - | 471 | - |
| Stage 1 | - | - | - | - | 932 | - |
| Stage 2 | - | - | - | - | 614 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 56.2 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 485 | - | - | 1503 | - |
| HCM Lane V/C Ratio | 0.938 | - | - | 0.002 | - |
| HCM Control Delay (s) | 56.2 | - | - | 7.4 | 0 |
| HCM Lane LOS | F | - | - | A | A |
| HCM 95th %tile Q(veh) | 11.3 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 66 | 349 | 3 | 1 | 12 |
| Future Vol, veh/h | 7 | 66 | 349 | 3 | 1 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 63 | 63 | 77 | 77 | 36 | 36 |
| Heavy Vehicles, % | 40 | 0 | 0 | 1 | 0 | 11 |
| Mvmt Flow | 11 | 105 | 453 | 4 | 3 | 33 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 457 | 0 | - | 0 | 582 | 455 |
| Stage 1 | - | - | - | - | 455 | - |
| Stage 2 | - | - | - | - | 127 | - |
| Critical Hdwy | 4.5 | - | - | - | 6.4 | 6.31 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.56 | - | - | - | 3.5 | 3.399 |
| Pot Cap-1 Maneuver | 930 | - | - | - | 479 | 587 |
| Stage 1 | - | - | - | - | 643 | - |
| Stage 2 | - | - | - | - | 904 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 930 | - | - | - | 473 | 587 |
| Mov Cap-2 Maneuver | - | - | - | - | 473 | - |
| Stage 1 | - | - | - | - | 635 | - |
| Stage 2 | - | - | - | - | 904 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.9 | 0 | 11.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 930 | - | - | - | 576 |
| HCM Lane V/C Ratio | 0.012 | - | - | - | 0.063 |
| HCM Control Delay (s) | 8.9 | - | - | - | 11.7 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 74 | 1 | 6 | 193 | 13 | 11 |
| Future Vol, veh/h | 74 | 1 | 6 | 193 | 13 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 81 | 81 | 71 | 71 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 11 | 0 |
| Mvmt Flow | 95 | 1 | 7 | 238 | 18 | 15 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 96 | 0 | 348 | 96 |
| Stage 1 | - | - | - | - | 96 | - |
| Stage 2 | - | - | - | - | 252 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.51 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.51 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.51 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.599 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1510 | - | 631 | 966 |
| Stage 1 | - | - | - | - | 906 | - |
| Stage 2 | - | - | - | - | 769 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1510 | - | 628 | 966 |
| Mov Cap-2 Maneuver | - | - | - | - | 628 | - |
| Stage 1 | - | - | - | - | 906 | - |
| Stage 2 | - | - | - | - | 765 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 10 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 748 | - | - | 1510 | - |
| HCM Lane V/C Ratio | 0.045 | - | - | 0.005 | - |
| HCM Control Delay (s) | 10 | - | - | 7.4 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 11 | 13 | 1 | 0 | 7 |
| Future Vol, veh/h | 1 | 11 | 13 | 1 | 0 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 67 | 67 | 69 | 69 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 10 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 16 | 19 | 1 | 0 | 14 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 34 | 20 | 0 | 0 | 20 | 0 |
| Stage 1 | 20 | - | - | - | - | - |
| Stage 2 | 14 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 984 | 1064 | - | - | 1609 | - |
| Stage 1 | 1008 | - | - | - | - | - |
| Stage 2 | 1014 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 984 | 1064 | - | - | 1609 | - |
| Mov Cap-2 Maneuver | 984 | - | - | - | - | - |
| Stage 1 | 1008 | - | - | - | - | - |
| Stage 2 | 1014 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.5 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1057 | 1609 | - |
| HCM Lane V/C Ratio | - | - | 0.017 | - | - |
| HCM Control Delay (s) | - | - | 8.5 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 8 | 14 | 0 |
| Future Vol, veh/h | 3 | 0 | 0 | 8 | 14 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 25 | 25 | 63 | 63 | 63 | 63 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 10 | 0 |
| Mvmt Flow | 12 | 0 | 0 | 13 | 22 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 35 | 22 | 22 | 0 | - | 0 |
| Stage 1 | 22 | - | - | - | - | - |
| Stage 2 | 13 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 983 | 1061 | 1607 | - | - | - |
| Stage 1 | 1006 | - | - | - | - | - |
| Stage 2 | 1015 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 983 | 1061 | 1607 | - | - | - |
| Mov Cap-2 Maneuver | 983 | - | - | - | - | - |
| Stage 1 | 1006 | - | - | - | - | - |
| Stage 2 | 1015 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.7 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1607 | - | 983 | - | - |
| HCM Lane V/C Ratio | - | - | 0.012 | - | - |
| HCM Control Delay (s) | 0 | - | 8.7 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 182 | 0 | 0 | 5 | 5 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 182 | 0 | 0 | 5 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 39 | 39 | 92 | 92 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 467 | 0 | 0 | 7 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 478 | 478 | 11 | 478 | 481 | 467 | 14 | 0 | 0 | 467 | 0 | 0 |
| Stage 1 | 11 | 11 | - | 467 | 467 | - | - | - | - | - | - | - |
| Stage 2 | 467 | 467 | - | 11 | 14 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 498 | 486 | 1070 | 498 | 485 | 596 | 1617 | - | - | 1094 | - | - |
| Stage 1 | 1010 | 886 | - | 576 | 562 | - | - | - | - | - | - | - |
| Stage 2 | 576 | 562 | - | 1010 | 884 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 498 | 486 | 1070 | 498 | 485 | 596 | 1617 | - | - | 1094 | - | - |
| Mov Cap-2 Maneuver | 498 | 486 | - | 498 | 485 | - | - | - | - | - | - | - |
| Stage 1 | 1010 | 886 | - | 576 | 562 | - | - | - | - | - | - | - |
| Stage 2 | 576 | 562 | - | 1010 | 884 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1617 | - | - | - | - | 1094 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | - | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 3 | 586 | 1 | 4 | 103 |
| Future Vol, veh/h | 7 | 3 | 586 | 1 | 4 | 103 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 78 | 78 | 76 | 76 |
| Heavy Vehicles, % | 0 | 0 | 1 | 0 | 0 | 4 |
| Mvmt Flow | 8 | 3 | 751 | 1 | 5 | 136 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 898 | 752 | 0 | 0 | 752 | 0 |
| Stage 1 | 752 | - | - | - | - | - |
| Stage 2 | 146 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 312 | 413 | - | - | 867 | - |
| Stage 1 | 469 | - | - | - | - | - |
| Stage 2 | 886 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 310 | 413 | - | - | 867 | - |
| Mov Cap-2 Maneuver | 310 | - | - | - | - | - |
| Stage 1 | 469 | - | - | - | - | - |
| Stage 2 | 881 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.1 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 335 | 867 | - |
| HCM Lane V/C Ratio | - | - | 0.034 | 0.006 | - |
| HCM Control Delay (s) | - | - | 16.1 | 9.2 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 49 | 150 | 437 | 15 | 13 | 97 |
| Future Vol, veh/h | 49 | 150 | 437 | 15 | 13 | 97 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 72 | 72 | 67 | 67 | 81 | 81 |
| Heavy Vehicles, % | 14 | 0 | 1 | 46 | 0 | 3 |
| Mvmt Flow | 68 | 208 | 652 | 22 | 16 | 120 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 815 | 663 | 0 | 0 | 674 | 0 |
| Stage 1 | 663 | - | - | - | - | - |
| Stage 2 | 152 | - | - | - | - | - |
| Critical Hdwy | 6.54 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.54 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.54 | - | - | - | - | - |
| Follow-up Hdwy | 3.626 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 331 | 465 | - | - | 927 | - |
| Stage 1 | 491 | - | - | - | - | - |
| Stage 2 | 847 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 325 | 465 | - | - | 927 | - |
| Mov Cap-2 Maneuver | 325 | - | - | - | - | - |
| Stage 1 | 491 | - | - | - | - | - |
| Stage 2 | 832 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 28.6 | 0 | 1.1 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 420 | 927 | - |
| HCM Lane V/C Ratio | - | - | 0.658 | 0.017 | - |
| HCM Control Delay (s) | - | - | 28.6 | 9 | 0 |
| HCM Lane LOS | - | - | D | A | A |
| HCM 95th %tile Q(veh) | - | - | 4.6 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 4 | 358 | 0 | 0 | 164 |
| Future Vol, veh/h | 0 | 4 | 358 | 0 | 0 | 164 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 68 | 68 | 74 | 74 |
| Heavy Vehicles, % | 0 | 0 | 3 | 0 | 0 | 7 |
| Mvmt Flow | 0 | 16 | 526 | 0 | 0 | 222 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 748 | 526 | 0 | 0 | 526 | 0 |
| Stage 1 | 526 | - | - | - | - | - |
| Stage 2 | 222 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 383 | 556 | - | - | 1051 | - |
| Stage 1 | 597 | - | - | - | - | - |
| Stage 2 | 820 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 383 | 556 | - | - | 1051 | - |
| Mov Cap-2 Maneuver | 383 | - | - | - | - | - |
| Stage 1 | 597 | - | - | - | - | - |
| Stage 2 | 820 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.7 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 556 | 1051 | - |
| HCM Lane V/C Ratio | - | - | 0.029 | - | - |
| HCM Control Delay (s) | - | - | 11.7 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 126.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 28 | 20 | 3 | 285 | 19 | 20 | 1 | 297 | 103 | 3 | 513 | 12 |
| Future Vol, veh/h | 28 | 20 | 3 | 285 | 19 | 20 | 1 | 297 | 103 | 3 | 513 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 54 | 54 | 54 | 85 | 85 | 85 | 84 | 84 | 84 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 2 | 1 | 0 | 1 | 11 |
| Mvmt Flow | 52 | 37 | 6 | 335 | 22 | 24 | 1 | 354 | 123 | 3 | 583 | 14 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1037 | 1075 | 590 | 1036 | 1021 | 416 | 597 | 0 | 0 | 477 | 0 | 0 |
| Stage 1 | 596 | 596 | - | 418 | 418 | - | - | - | - | - | - | - |
| Stage 2 | 441 | 479 | - | 618 | 603 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.63 | 6.2 | 7.1 | 6.64 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.117 | 3.3 | 3.5 | 4.126 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 211 | 210 | 511 | ~ 212 | 225 | 641 | 989 | - | - | 1096 | - | - |
| Stage 1 | 494 | 475 | - | 616 | 570 | - | - | - | - | - | - | - |
| Stage 2 | 599 | 537 | - | 480 | 470 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 187 | 209 | 511 | ~ 180 | 224 | 641 | 989 | - | - | 1096 | - | - |
| Mov Cap-2 Maneuver | 187 | 209 | - | ~ 180 | 224 | - | - | - | - | - | - | - |
| Stage 1 | 494 | 473 | - | 615 | 569 | - | - | - | - | - | - | - |
| Stage 2 | 554 | 536 | - | 436 | 468 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 37.3 | $ 506.9 | 0 | 0 |
| HCM LOS | E | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 989 | - | - | 203 | 191 | 1096 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.465 | 1.996 | 0.003 | - | - |
| HCM Control Delay (s) | 8.6 | 0 | - | 37.3 | $ 506.9 | 8.3 | 0 | - |
| HCM Lane LOS | A | A | - | E | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 2.2 | 28.7 | 0 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 55.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 340 | 73 | 203 | 46 | 24 | 793 |
| Future Vol, veh/h | 340 | 73 | 203 | 46 | 24 | 793 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 76 | 76 | 83 | 83 |
| Heavy Vehicles, % | 2 | 2 | 1 | 3 | 0 | 1 |
| Mvmt Flow | 395 | 85 | 267 | 61 | 29 | 955 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 624 | 29 | 984 | 0 | - | 0 |
| Stage 1 | 29 | - | - | - | - | - |
| Stage 2 | 595 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | 449 | 1046 | 706 | - | - | - |
| Stage 1 | 994 | - | - | - | - | - |
| Stage 2 | 551 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 279 | 1046 | 706 | - | - | - |
| Mov Cap-2 Maneuver | ~ 279 | - | - | - | - | - |
| Stage 1 | 618 | - | - | - | - | - |
| Stage 2 | 551 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 200.9 | 10.7 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 706 | - | 279 | 1046 | - | - |
| HCM Lane V/C Ratio | 0.378 | - | 1.417 | 0.081 | - | - |
| HCM Control Delay (s) | 13.2 | - | 242.2 | 8.7 | - | - |
| HCM Lane LOS | B | - | F | A | - | - |
| HCM 95th %tile Q(veh) | 1.8 | - | 21.5 | 0.3 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

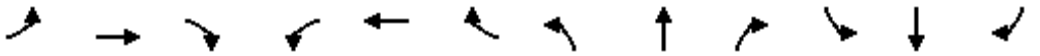
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 66 | 532 | 0 | 0 | 1266 |
| Future Vol, veh/h | 0 | 66 | 532 | 0 | 0 | 1266 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 73 | 73 | 95 | 95 | 89 | 89 |
| Heavy Vehicles, % | 0 | 13 | 0 | 1 | 0 | 1 |
| Mvmt Flow | 0 | 90 | 560 | 0 | 0 | 1422 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 560 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.395 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.4235 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 502 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | 502 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.7 | 0 | 0 |
| HCM LOS | B | | |

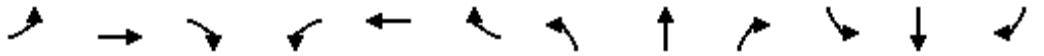
| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 502 | - |
| HCM Lane V/C Ratio | - | 0.18 | - |
| HCM Control Delay (s) | - | 13.7 | - |
| HCM Lane LOS | - | B | - |
| HCM 95th %tile Q(veh) | - | 0.7 | - |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 3 | 106 | 6 | 1286 | 642 | 132 | 8 | 5 | 323 | 6 | 2 | 2 |
| Future Volume (vph) | 3 | 106 | 6 | 1286 | 642 | 132 | 8 | 5 | 323 | 6 | 2 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | 1805 | 3515 | | 3467 | 3475 | | | 1783 | 2682 | | 2035 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.88 | 1.00 | | 0.87 | |
| Satd. Flow (perm) | 1805 | 3515 | | 3467 | 3475 | | | 1609 | 2682 | | 1824 | |
| Peak-hour factor, PHF | 0.84 | 0.84 | 0.84 | 0.83 | 1.00 | 0.83 | 0.88 | 0.88 | 0.88 | 0.63 | 0.63 | 0.63 |
| Adj. Flow (vph) | 4 | 126 | 7 | 1549 | 642 | 159 | 9 | 6 | 367 | 10 | 3 | 3 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 4 | 129 | 0 | 1549 | 791 | 0 | 0 | 15 | 367 | 0 | 14 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 1% | 1% | 0% | 0% | 0% | 6% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | 6.1 | 12.8 | | 50.1 | 57.8 | | | 17.6 | 17.6 | | 17.6 | |
| Effective Green, g (s) | 6.1 | 12.8 | | 50.1 | 57.8 | | | 17.6 | 17.6 | | 17.6 | |
| Actuated g/C Ratio | 0.06 | 0.13 | | 0.51 | 0.59 | | | 0.18 | 0.18 | | 0.18 | |
| Clearance Time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | 2.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 111 | 456 | | 1763 | 2039 | | | 287 | 479 | | 325 | |
| v/s Ratio Prot | 0.00 | c0.04 | | c0.45 | c0.23 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.14 | | 0.01 | |
| v/c Ratio | 0.04 | 0.28 | | 0.88 | 0.39 | | | 0.05 | 0.77 | | 0.04 | |
| Uniform Delay, d1 | 43.4 | 38.7 | | 21.5 | 10.9 | | | 33.5 | 38.5 | | 33.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.3 | | 5.3 | 0.1 | | | 0.1 | 7.2 | | 0.1 | |
| Delay (s) | 43.5 | 39.0 | | 26.8 | 11.0 | | | 33.6 | 45.7 | | 33.5 | |
| Level of Service | D | D | | C | B | | | C | D | | C | |
| Approach Delay (s) | | 39.2 | | | 21.4 | | | 45.2 | | | 33.5 | |
| Approach LOS | | D | | | C | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 25.5 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.76 | | |
| Actuated Cycle Length (s) | 98.5 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 59.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 302 | 133 | 157 | 1056 | 0 | 0 | 0 | 0 | 566 | 0 | 894 |
| Future Volume (vph) | 0 | 302 | 133 | 157 | 1056 | 0 | 0 | 0 | 0 | 566 | 0 | 894 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Peak-hour factor, PHF | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.92 | 0.92 | 0.92 | 0.75 | 0.75 | 0.75 |
| Adj. Flow (vph) | 0 | 378 | 166 | 196 | 1320 | 0 | 0 | 0 | 0 | 755 | 0 | 1192 |
| RTOR Reduction (vph) | 0 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 93 |
| Lane Group Flow (vph) | 0 | 378 | 55 | 196 | 1320 | 0 | 0 | 0 | 0 | 755 | 0 | 1099 |
| Heavy Vehicles (%) | 0% | 2% | 10% | 12% | 1% | 0% | 2% | 2% | 2% | 1% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 33.5 | 33.5 | 25.0 | 64.5 | | | | | 25.0 | | 25.0 |
| Effective Green, g (s) | | 33.5 | 33.5 | 25.0 | 64.5 | | | | | 25.0 | | 25.0 |
| Actuated g/C Ratio | | 0.33 | 0.33 | 0.25 | 0.64 | | | | | 0.25 | | 0.25 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 1974 | 468 | 718 | 2195 | | | | | 853 | | 693 |
| v/s Ratio Prot | | 0.06 | 0.04 | 0.07 | c0.38 | | | | | 0.22 | | c0.39 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.19 | 0.12 | 0.27 | 0.60 | | | | | 0.89 | | 1.59 |
| Uniform Delay, d1 | | 24.3 | 23.7 | 30.9 | 10.9 | | | | | 36.9 | | 38.2 |
| Progression Factor | | 1.00 | 1.00 | 0.89 | 1.59 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 0.1 | 0.2 | 0.1 | 0.3 | | | | | 11.6 | | 270.7 |
| Delay (s) | | 24.4 | 23.9 | 27.5 | 17.7 | | | | | 48.5 | | 308.9 |
| Level of Service | | C | C | C | B | | | | | D | | F |
| Approach Delay (s) | | 24.3 | | | 18.9 | | | 0.0 | | | 207.9 | |
| Approach LOS | | C | | | B | | | A | | | F | |

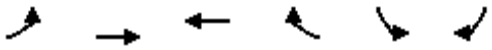
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 111.5 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.94 | | |
| Actuated Cycle Length (s) | 101.5 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 76.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 145 | 723 | 0 | 0 | 412 | 78 | 801 | 0 | 366 | 0 | 0 | 0 |
| Future Volume (vph) | 145 | 723 | 0 | 0 | 412 | 78 | 801 | 0 | 366 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3113 | 3421 | | | 4941 | | 3433 | | 2733 | | | |
| Flt Permitted | 0.42 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 1390 | 3421 | | | 4941 | | 3433 | | 2733 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.78 | 0.78 | 0.78 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 167 | 831 | 0 | 0 | 485 | 92 | 1027 | 0 | 469 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 339 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 167 | 831 | 0 | 0 | 553 | 0 | 1027 | 0 | 130 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 2% | 0% | 0% | 2% | 5% | 2% | 2% | 4% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 50.5 | 33.5 | | | 41.5 | | 25.0 | | 25.0 | | | |
| Effective Green, g (s) | 50.5 | 33.5 | | | 41.5 | | 25.0 | | 25.0 | | | |
| Actuated g/C Ratio | 0.50 | 0.33 | | | 0.41 | | 0.25 | | 0.25 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 980 | 1129 | | | 2020 | | 845 | | 673 | | | |
| v/s Ratio Prot | c0.03 | c0.24 | | | c0.11 | | c0.30 | | 0.05 | | | |
| v/s Ratio Perm | 0.06 | | | | | | | | | | | |
| v/c Ratio | 0.17 | 0.74 | | | 0.27 | | 1.22 | | 0.19 | | | |
| Uniform Delay, d1 | 13.5 | 30.1 | | | 20.0 | | 38.2 | | 30.3 | | | |
| Progression Factor | 1.13 | 1.26 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 0.1 | 2.3 | | | 0.2 | | 107.7 | | 0.3 | | | |
| Delay (s) | 15.4 | 40.1 | | | 20.1 | | 146.0 | | 30.6 | | | |
| Level of Service | B | D | | | C | | F | | C | | | |
| Approach Delay (s) | | 36.0 | | | 20.1 | | | 109.8 | | | 0.0 | |
| Approach LOS | | D | | | C | | | F | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 69.0 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.71 | | |
| Actuated Cycle Length (s) | 101.5 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 76.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 634 | 2030 | 731 | 613 | 165 | 206 |
| Future Volume (vph) | 634 | 2030 | 731 | 613 | 165 | 206 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.96 | 0.96 | 0.76 | 0.76 |
| Adj. Flow (vph) | 737 | 2360 | 761 | 639 | 217 | 271 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 444 | 0 | 205 |
| Lane Group Flow (vph) | 737 | 2360 | 761 | 195 | 217 | 66 |
| Heavy Vehicles (%) | 1% | 4% | 8% | 2% | 5% | 5% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 9.4 | 33.4 | 18.0 | 18.0 | 13.6 | 13.6 |
| Effective Green, g (s) | 9.4 | 33.4 | 18.0 | 18.0 | 13.6 | 13.6 |
| Actuated g/C Ratio | 0.16 | 0.57 | 0.31 | 0.31 | 0.23 | 0.23 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 284 | 1964 | 1019 | 482 | 396 | 354 |
| v/s Ratio Prot | c0.41 | c0.68 | 0.23 | | c0.13 | 0.04 |
| v/s Ratio Perm | | | | 0.12 | | |
| v/c Ratio | 2.60 | 1.20 | 0.75 | 0.40 | 0.55 | 0.19 |
| Uniform Delay, d1 | 24.8 | 12.8 | 18.4 | 16.3 | 20.0 | 18.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 727.9 | 95.9 | 5.0 | 2.5 | 1.9 | 0.3 |
| Delay (s) | 752.7 | 108.7 | 23.4 | 18.8 | 21.9 | 18.6 |
| Level of Service | F | F | C | B | C | B |
| Approach Delay (s) | | 262.0 | 21.3 | | 20.1 | |
| Approach LOS | | F | C | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 170.7 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.38 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 83.1% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 197.2 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 69 | 44 | 31 | 14 | 13 | 121 | 8 | 101 | 64 | 682 | 449 | 137 |
| Future Vol, veh/h | 69 | 44 | 31 | 14 | 13 | 121 | 8 | 101 | 64 | 682 | 449 | 137 |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.78 | 0.78 | 0.78 | 0.83 | 0.83 | 0.83 | 0.76 | 0.76 | 0.76 |
| Heavy Vehicles, % | 0 | 4 | 5 | 0 | 13 | 18 | 0 | 0 | 3 | 2 | 0 | 0 |
| Mvmt Flow | 91 | 58 | 41 | 18 | 17 | 155 | 10 | 122 | 77 | 897 | 591 | 180 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 15.1 | 16.4 | 14.8 | 261.2 |
| HCM LOS | C | C | B | F |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 34% | 0% | 59% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 66% | 0% | 41% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 8 | 67 | 98 | 69 | 75 | 14 | 13 | 121 | 682 | 449 | 137 |
| LT Vol | 8 | 0 | 0 | 69 | 0 | 14 | 0 | 0 | 682 | 0 | 0 |
| Through Vol | 0 | 67 | 34 | 0 | 44 | 0 | 13 | 0 | 0 | 449 | 0 |
| RT Vol | 0 | 0 | 64 | 0 | 31 | 0 | 0 | 121 | 0 | 0 | 137 |
| Lane Flow Rate | 10 | 81 | 118 | 91 | 99 | 18 | 17 | 155 | 897 | 591 | 180 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.025 | 0.195 | 0.27 | 0.234 | 0.235 | 0.047 | 0.042 | 0.364 | 1.86 | 1.136 | 0.311 |
| Departure Headway (Hd) | 9.996 | 9.488 | 9.073 | 9.913 | 9.192 | 10.089 | 9.808 | 9.187 | 7.461 | 6.921 | 6.212 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 360 | 380 | 399 | 365 | 393 | 357 | 367 | 394 | 494 | 532 | 582 |
| Service Time | 7.696 | 7.188 | 6.773 | 7.613 | 6.892 | 7.789 | 7.508 | 6.887 | 5.161 | 4.621 | 3.912 |
| HCM Lane V/C Ratio | 0.028 | 0.213 | 0.296 | 0.249 | 0.252 | 0.05 | 0.046 | 0.393 | 1.816 | 1.111 | 0.309 |
| HCM Control Delay | 13 | 14.5 | 15.1 | 15.6 | 14.7 | 13.3 | 12.9 | 17.1 | 412.7 | 107.1 | 11.7 |
| HCM Lane LOS | B | B | C | C | B | B | B | C | F | F | B |
| HCM 95th-tile Q | 0.1 | 0.7 | 1.1 | 0.9 | 0.9 | 0.1 | 0.1 | 1.6 | 57.7 | 19.9 | 1.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 451 | 339 | 67 | 71 | 77 | 25 |
| Future Vol, veh/h | 451 | 339 | 67 | 71 | 77 | 25 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 71 | 71 | 69 | 69 |
| Heavy Vehicles, % | 1 | 5 | 0 | 12 | 36 | 0 |
| Mvmt Flow | 578 | 435 | 94 | 100 | 112 | 36 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 1013 | 0 | 1084 | 796 |
| Stage 1 | - | - | - | - | 796 | - |
| Stage 2 | - | - | - | - | 288 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.76 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.76 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.76 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.824 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 692 | - | 207 | 390 |
| Stage 1 | - | - | - | - | 390 | - |
| Stage 2 | - | - | - | - | 689 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 692 | - | 177 | 390 |
| Mov Cap-2 Maneuver | - | - | - | - | 177 | - |
| Stage 1 | - | - | - | - | 390 | - |
| Stage 2 | - | - | - | - | 590 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 5.4 | 58.6 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 204 | - | - | 692 | - |
| HCM Lane V/C Ratio | 0.725 | - | - | 0.136 | - |
| HCM Control Delay (s) | 58.6 | - | - | 11 | 0 |
| HCM Lane LOS | F | - | - | B | A |
| HCM 95th %tile Q(veh) | 4.7 | - | - | 0.5 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 460 | 119 | 2 | 0 | 6 |
| Future Vol, veh/h | 17 | 460 | 119 | 2 | 0 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 71 | 71 | 50 | 50 |
| Heavy Vehicles, % | 0 | 1 | 8 | 0 | 0 | 25 |
| Mvmt Flow | 20 | 541 | 168 | 3 | 0 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 171 | 0 | - | 0 | 751 | 170 |
| Stage 1 | - | - | - | - | 170 | - |
| Stage 2 | - | - | - | - | 581 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.45 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.525 |
| Pot Cap-1 Maneuver | 1418 | - | - | - | 381 | 818 |
| Stage 1 | - | - | - | - | 865 | - |
| Stage 2 | - | - | - | - | 563 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1418 | - | - | - | 376 | 818 |
| Mov Cap-2 Maneuver | - | - | - | - | 376 | - |
| Stage 1 | - | - | - | - | 853 | - |
| Stage 2 | - | - | - | - | 563 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 9.5 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1418 | - | - | - | 818 |
| HCM Lane V/C Ratio | 0.014 | - | - | - | 0.015 |
| HCM Control Delay (s) | 7.6 | - | - | - | 9.5 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 251 | 16 | 3 | 149 | 0 | 0 |
| Future Vol, veh/h | 251 | 16 | 3 | 149 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 82 | 82 | 25 | 40 |
| Heavy Vehicles, % | 1 | 0 | 0 | 5 | 20 | 0 |
| Mvmt Flow | 264 | 17 | 4 | 182 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 281 | 0 | 463 | 273 |
| Stage 1 | - | - | - | - | 273 | - |
| Stage 2 | - | - | - | - | 190 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.6 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.6 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.68 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1293 | - | 525 | 771 |
| Stage 1 | - | - | - | - | 733 | - |
| Stage 2 | - | - | - | - | 801 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1293 | - | 523 | 771 |
| Mov Cap-2 Maneuver | - | - | - | - | 523 | - |
| Stage 1 | - | - | - | - | 733 | - |
| Stage 2 | - | - | - | - | 799 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 1293 | - |
| HCM Lane V/C Ratio | - | - | - | 0.003 | - |
| HCM Control Delay (s) | 0 | - | - | 7.8 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 19 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 19 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 53 | 53 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 0 | 13 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 38 | 0 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 76 | 0 | 0 | 0 | 0 | 0 |
| Stage 1 | 0 | - | - | - | - | - |
| Stage 2 | 76 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 932 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 952 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 932 | - | - | - | - | - |
| Mov Cap-2 Maneuver | 932 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 952 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | - | - |
| HCM Lane LOS | - | - | A | - | - |
| HCM 95th %tile Q(veh) | - | - | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 0 | 0 | 0 | 0 | 8 |
| Future Vol, veh/h | 6 | 0 | 0 | 0 | 0 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 50 | 50 | 42 | 42 | 69 | 69 |
| Heavy Vehicles, % | 75 | 0 | 0 | 0 | 6 | 80 |
| Mvmt Flow | 12 | 0 | 0 | 0 | 0 | 12 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 6 | 6 | 12 | 0 | - | 0 |
| Stage 1 | 6 | - | - | - | - | - |
| Stage 2 | 0 | - | - | - | - | - |
| Critical Hdwy | 7.15 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 6.15 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.15 | - | - | - | - | - |
| Follow-up Hdwy | 4.175 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 855 | 1083 | 1620 | - | - | - |
| Stage 1 | 856 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 855 | 1083 | 1620 | - | - | - |
| Mov Cap-2 Maneuver | 855 | - | - | - | - | - |
| Stage 1 | 856 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.3 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1620 | - | 855 | - | - |
| HCM Lane V/C Ratio | - | - | 0.014 | - | - |
| HCM Control Delay (s) | 0 | - | 9.3 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 68 | 5 | 34 | 0 | 138 | 48 | 220 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 68 | 5 | 34 | 0 | 138 | 48 | 220 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 88 | 88 | 92 | 92 | 69 | 69 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 18 | 2 | 2 | 15 | 1 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 74 | 6 | 39 | 0 | 150 | 70 | 319 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 618 | 581 | 230 | 581 | 740 | 39 | 389 | 0 | 0 | 39 | 0 | 0 |
| Stage 1 | 530 | 530 | - | 51 | 51 | - | - | - | - | - | - | - |
| Stage 2 | 88 | 51 | - | 530 | 689 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 402 | 425 | 809 | 425 | 345 | 1033 | 1181 | - | - | 1571 | - | - |
| Stage 1 | 533 | 527 | - | 962 | 852 | - | - | - | - | - | - | - |
| Stage 2 | 920 | 852 | - | 533 | 446 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 335 | 369 | 809 | 382 | 299 | 1033 | 1181 | - | - | 1571 | - | - |
| Mov Cap-2 Maneuver | 335 | 369 | - | 382 | 299 | - | - | - | - | - | - | - |
| Stage 1 | 530 | 460 | - | 957 | 848 | - | - | - | - | - | - | - |
| Stage 2 | 850 | 848 | - | 465 | 389 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 8.8 | 1 | 2.1 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1181 | - | - | - | 1033 | 1571 | - | - |
| HCM Lane V/C Ratio | 0.005 | - | - | - | 0.072 | 0.095 | - | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 0 | 8.8 | 7.5 | 0 | - |
| HCM Lane LOS | A | A | - | A | A | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.2 | 0.3 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 2 | 159 | 13 | 13 | 439 |
| Future Vol, veh/h | 6 | 2 | 159 | 13 | 13 | 439 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 63 | 63 | 81 | 81 | 84 | 84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 |
| Mvmt Flow | 10 | 3 | 196 | 16 | 15 | 523 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 757 | 204 | 0 | 0 | 212 | 0 |
| Stage 1 | 204 | - | - | - | - | - |
| Stage 2 | 553 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 378 | 842 | - | - | 1370 | - |
| Stage 1 | 835 | - | - | - | - | - |
| Stage 2 | 580 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 372 | 842 | - | - | 1370 | - |
| Mov Cap-2 Maneuver | 372 | - | - | - | - | - |
| Stage 1 | 835 | - | - | - | - | - |
| Stage 2 | 571 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.6 | 0 | 0.2 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 432 | 1370 | - |
| HCM Lane V/C Ratio | - | - | 0.029 | 0.011 | - |
| HCM Control Delay (s) | - | - | 13.6 | 7.7 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 14 | 19 | 153 | 13 | 20 | 425 |
| Future Vol, veh/h | 14 | 19 | 153 | 13 | 20 | 425 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 86 | 86 | 83 | 83 |
| Heavy Vehicles, % | 44 | 0 | 1 | 63 | 0 | 1 |
| Mvmt Flow | 16 | 22 | 178 | 15 | 24 | 512 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 746 | 186 | 0 | 0 | 193 | 0 |
| Stage 1 | 186 | - | - | - | - | - |
| Stage 2 | 560 | - | - | - | - | - |
| Critical Hdwy | 6.84 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - |
| Follow-up Hdwy | 3.896 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 326 | 861 | - | - | 1392 | - |
| Stage 1 | 754 | - | - | - | - | - |
| Stage 2 | 497 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 318 | 861 | - | - | 1392 | - |
| Mov Cap-2 Maneuver | 318 | - | - | - | - | - |
| Stage 1 | 754 | - | - | - | - | - |
| Stage 2 | 485 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 12.8 | 0 | 0.3 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 499 | 1392 | - |
| HCM Lane V/C Ratio | - | - | 0.075 | 0.017 | - |
| HCM Control Delay (s) | - | - | 12.8 | 7.6 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.2 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 5 | 187 | 2 | 8 | 338 |
| Future Vol, veh/h | 0 | 5 | 187 | 2 | 8 | 338 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 89 | 89 | 81 | 81 |
| Heavy Vehicles, % | 0 | 0 | 5 | 100 | 0 | 2 |
| Mvmt Flow | 0 | 7 | 210 | 2 | 10 | 417 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 648 | 211 | 0 | 0 | 212 | 0 |
| Stage 1 | 211 | - | - | - | - | - |
| Stage 2 | 437 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 438 | 834 | - | - | 1370 | - |
| Stage 1 | 829 | - | - | - | - | - |
| Stage 2 | 655 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 434 | 834 | - | - | 1370 | - |
| Mov Cap-2 Maneuver | 434 | - | - | - | - | - |
| Stage 1 | 829 | - | - | - | - | - |
| Stage 2 | 648 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.4 | 0 | 0.2 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 834 | 1370 | - |
| HCM Lane V/C Ratio | - | - | 0.008 | 0.007 | - |
| HCM Control Delay (s) | - | - | 9.4 | 7.6 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 11.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 8 | 9 | 2 | 86 | 5 | 6 | 0 | 461 | 391 | 26 | 295 | 29 |
| Future Vol, veh/h | 8 | 9 | 2 | 86 | 5 | 6 | 0 | 461 | 391 | 26 | 295 | 29 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 65 | 65 | 65 | 90 | 90 | 90 | 87 | 87 | 87 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 3 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 12 | 3 | 132 | 8 | 9 | 0 | 512 | 434 | 30 | 339 | 33 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1154 | 1362 | 356 | 1152 | 1161 | 729 | 372 | 0 | 0 | 946 | 0 | 0 |
| Stage 1 | 416 | 416 | - | 729 | 729 | - | - | - | - | - | - | - |
| Stage 2 | 738 | 946 | - | 423 | 432 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.3 | 6.5 | 6.2 | 7.14 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 4 | 3.3 | 3.536 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 160 | 149 | 693 | 173 | 197 | 426 | 1198 | - | - | 734 | - | - |
| Stage 1 | 580 | 595 | - | 411 | 431 | - | - | - | - | - | - | - |
| Stage 2 | 383 | 343 | - | 605 | 586 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 146 | 141 | 693 | 155 | 187 | 426 | 1198 | - | - | 734 | - | - |
| Mov Cap-2 Maneuver | 146 | 141 | - | 155 | 187 | - | - | - | - | - | - | - |
| Stage 1 | 580 | 564 | - | 411 | 431 | - | - | - | - | - | - | - |
| Stage 2 | 368 | 343 | - | 559 | 556 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 32.5 | 105.3 | 0 | 0.8 |
| HCM LOS | D | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1198 | - | - | 156 | 163 | 734 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.162 | 0.916 | 0.041 | - | - |
| HCM Control Delay (s) | 0 | - | - | 32.5 | 105.3 | 10.1 | 0 | - |
| HCM Lane LOS | A | - | - | D | F | B | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.6 | 6.7 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 115.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 871 | 396 | 68 | 14 | 55 | 238 |
| Future Vol, veh/h | 871 | 396 | 68 | 14 | 55 | 238 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 70 | 70 | 90 | 90 |
| Heavy Vehicles, % | 1 | 1 | 3 | 11 | 0 | 4 |
| Mvmt Flow | 937 | 426 | 97 | 20 | 61 | 264 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 275 | 61 | 325 | 0 | - | 0 |
| Stage 1 | 61 | - | - | - | - | - |
| Stage 2 | 214 | - | - | - | - | - |
| Critical Hdwy | 6.41 | 6.21 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.41 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.41 | - | - | - | - | - |
| Follow-up Hdwy | 3.509 | 3.309 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | ~ 717 | 1007 | 1229 | - | - | - |
| Stage 1 | 964 | - | - | - | - | - |
| Stage 2 | ~ 824 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 660 | 1007 | 1229 | - | - | - |
| Mov Cap-2 Maneuver | ~ 660 | - | - | - | - | - |
| Stage 1 | ~ 888 | - | - | - | - | - |
| Stage 2 | ~ 824 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 152 | 6.8 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1229 | - | 660 | 1007 | - | - |
| HCM Lane V/C Ratio | 0.079 | - | 1.419 | 0.423 | - | - |
| HCM Control Delay (s) | 8.2 | - | 216 | 11.2 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 42.8 | 2.1 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 113.5 |

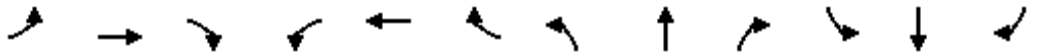
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 225 | 1247 | 0 | 0 | 371 |
| Future Vol, veh/h | 0 | 225 | 1247 | 0 | 0 | 371 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 70 | 70 | 80 | 80 |
| Heavy Vehicles, % | 2 | 3 | 2 | 2 | 2 | 4 |
| Mvmt Flow | 0 | 296 | 1781 | 0 | 0 | 464 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 1781 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.245 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.3285 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | ~ 100 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | ~ 100 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 974.6 | 0 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 100 | - |
| HCM Lane V/C Ratio | - | 2.961 | - |
| HCM Control Delay (s) | - | $ 974.6 | - |
| HCM Lane LOS | - | F | - |
| HCM 95th %tile Q(veh) | - | 28.4 | - |

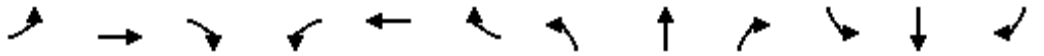
| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 474 | 3 | 302 | 184 | 24 | 11 | 3 | 1326 | 57 | 3 | 3 |
| Future Volume (vph) | 0 | 474 | 3 | 302 | 184 | 24 | 11 | 3 | 1326 | 57 | 3 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | | 1.00 | | 1.00 | 0.98 | | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | 0.96 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3571 | | 3433 | 3548 | | | 1766 | 2814 | | 2047 | |
| Flt Permitted | | 1.00 | | 0.95 | 1.00 | | | 0.83 | 1.00 | | 0.74 | |
| Satd. Flow (perm) | | 3571 | | 3433 | 3548 | | | 1525 | 2814 | | 1586 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.96 | 0.96 | 0.96 | 0.91 | 0.91 | 0.91 | 0.68 | 0.68 | 0.68 |
| Adj. Flow (vph) | 0 | 539 | 3 | 315 | 192 | 25 | 12 | 3 | 1457 | 84 | 4 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 542 | 0 | 315 | 212 | 0 | 0 | 15 | 1457 | 0 | 91 | 0 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | | 15.3 | | 12.1 | 33.4 | | | 20.1 | 20.1 | | 20.1 | |
| Effective Green, g (s) | | 15.3 | | 12.1 | 33.4 | | | 20.1 | 20.1 | | 20.1 | |
| Actuated g/C Ratio | | 0.23 | | 0.18 | 0.51 | | | 0.31 | 0.31 | | 0.31 | |
| Clearance Time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | | 834 | | 634 | 1809 | | | 467 | 863 | | 486 | |
| v/s Ratio Prot | | c0.15 | | c0.09 | 0.06 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.52 | | 0.06 | |
| v/c Ratio | | 0.65 | | 0.50 | 0.12 | | | 0.03 | 1.69 | | 0.19 | |
| Uniform Delay, d1 | | 22.7 | | 24.0 | 8.4 | | | 15.9 | 22.7 | | 16.7 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.8 | | 0.6 | 0.0 | | | 0.0 | 314.8 | | 0.2 | |
| Delay (s) | | 24.4 | | 24.6 | 8.4 | | | 15.9 | 337.5 | | 16.9 | |
| Level of Service | | C | | C | A | | | B | F | | B | |
| Approach Delay (s) | | 24.4 | | | 18.0 | | | 334.2 | | | 16.9 | |
| Approach LOS | | C | | | B | | | F | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 195.7 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.05 | | |
| Actuated Cycle Length (s) | 65.5 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 79.6% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 1224 | 633 | 684 | 478 | 0 | 0 | 0 | 0 | 389 | 0 | 156 |
| Future Volume (vph) | 0 | 1224 | 633 | 684 | 478 | 0 | 0 | 0 | 0 | 389 | 0 | 156 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 1440 | 745 | 728 | 509 | 0 | 0 | 0 | 0 | 432 | 0 | 173 |
| RTOR Reduction (vph) | 0 | 0 | 365 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 132 |
| Lane Group Flow (vph) | 0 | 1440 | 380 | 728 | 509 | 0 | 0 | 0 | 0 | 432 | 0 | 41 |
| Heavy Vehicles (%) | 0% | 1% | 1% | 1% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 35.0 | 35.0 | 25.0 | 60.2 | | | | | 24.0 | | 24.0 |
| Effective Green, g (s) | | 35.0 | 35.0 | 25.0 | 60.2 | | | | | 24.0 | | 24.0 |
| Actuated g/C Ratio | | 0.34 | 0.34 | 0.25 | 0.59 | | | | | 0.24 | | 0.24 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 2072 | 530 | 793 | 2039 | | | | | 824 | | 662 |
| v/s Ratio Prot | | 0.24 | c0.25 | c0.22 | 0.15 | | | | | c0.12 | | 0.01 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.69 | 0.72 | 0.92 | 0.25 | | | | | 0.52 | | 0.06 |
| Uniform Delay, d1 | | 28.9 | 29.2 | 37.5 | 10.0 | | | | | 34.0 | | 30.3 |
| Progression Factor | | 1.00 | 1.00 | 1.35 | 1.12 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 1.3 | 5.7 | 11.2 | 0.1 | | | | | 1.1 | | 0.1 |
| Delay (s) | | 30.2 | 34.9 | 62.0 | 11.4 | | | | | 35.2 | | 30.3 |
| Level of Service | | C | C | E | B | | | | | D | | C |
| Approach Delay (s) | | 31.8 | | | 41.2 | | | 0.0 | | | 33.8 | |
| Approach LOS | | C | | | D | | | A | | | C | |

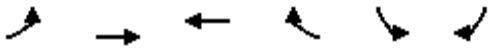
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 35.0 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 102.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 84.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 751 | 862 | 0 | 0 | 933 | 407 | 229 | 0 | 625 | 0 | 0 | 0 |
| Future Volume (vph) | 751 | 862 | 0 | 0 | 933 | 407 | 229 | 0 | 625 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.95 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3236 | 3455 | | | 4917 | | 3433 | | 2814 | | | |
| Flt Permitted | 0.11 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 389 | 3455 | | | 4917 | | 3433 | | 2814 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.92 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 863 | 991 | 0 | 0 | 1037 | 452 | 244 | 0 | 665 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 76 | 0 | 0 | 0 | 509 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 863 | 991 | 0 | 0 | 1413 | 0 | 244 | 0 | 156 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 1% | 0% | 2% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 59.8 | 35.0 | | | 35.2 | | 24.0 | | 24.0 | | | |
| Effective Green, g (s) | 59.8 | 35.0 | | | 35.2 | | 24.0 | | 24.0 | | | |
| Actuated g/C Ratio | 0.59 | 0.34 | | | 0.35 | | 0.24 | | 0.24 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 920 | 1185 | | | 1696 | | 807 | | 662 | | | |
| v/s Ratio Prot | c0.23 | 0.29 | | | 0.29 | | c0.07 | | 0.06 | | | |
| v/s Ratio Perm | c0.32 | | | | | | | | | | | |
| v/c Ratio | 0.94 | 0.84 | | | 0.83 | | 0.30 | | 0.24 | | | |
| Uniform Delay, d1 | 28.5 | 30.9 | | | 30.7 | | 32.1 | | 31.6 | | | |
| Progression Factor | 1.67 | 0.54 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 13.6 | 4.5 | | | 4.1 | | 0.4 | | 0.4 | | | |
| Delay (s) | 61.2 | 21.2 | | | 34.8 | | 32.6 | | 32.0 | | | |
| Level of Service | E | C | | | C | | C | | C | | | |
| Approach Delay (s) | | 39.8 | | | 34.8 | | | 32.1 | | | 0.0 | |
| Approach LOS | | D | | | C | | | C | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 36.4 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.75 | | |
| Actuated Cycle Length (s) | 102.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 84.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 310 | 1653 | 1283 | 226 | 423 | 886 |
| Future Volume (vph) | 310 | 1653 | 1283 | 226 | 423 | 886 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.93 | 0.93 | 0.87 | 0.87 |
| Adj. Flow (vph) | 352 | 1878 | 1380 | 243 | 486 | 1018 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 169 | 0 | 166 |
| Lane Group Flow (vph) | 352 | 1878 | 1380 | 74 | 486 | 852 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 2% | 1% | 1% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Effective Green, g (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Actuated g/C Ratio | 0.08 | 0.49 | 0.31 | 0.31 | 0.31 | 0.31 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 151 | 1739 | 1079 | 482 | 545 | 487 |
| v/s Ratio Prot | c0.20 | 0.53 | c0.39 | | 0.27 | c0.53 |
| v/s Ratio Perm | | | | 0.05 | | |
| v/c Ratio | 2.33 | 1.08 | 1.28 | 0.15 | 0.89 | 1.75 |
| Uniform Delay, d1 | 27.0 | 15.0 | 20.5 | 14.9 | 19.6 | 20.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 619.2 | 46.7 | 132.8 | 0.7 | 17.0 | 345.6 |
| Delay (s) | 646.2 | 61.7 | 153.3 | 15.6 | 36.6 | 366.1 |
| Level of Service | F | E | F | B | D | F |
| Approach Delay (s) | | 154.0 | 132.7 | | 259.6 | |
| Approach LOS | | F | F | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 177.2 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.61 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 100.3% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 164.8 |
| Intersection LOS | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 140 | 4 | 15 | 9 | 24 | 598 | 15 | 566 | 7 | 70 | 90 | 87 |
| Future Vol, veh/h | 140 | 4 | 15 | 9 | 24 | 598 | 15 | 566 | 7 | 70 | 90 | 87 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.77 | 0.77 | 0.77 | 0.89 | 0.89 | 0.89 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 1 | 0 | 4 | 3 | 0 |
| Mvmt Flow | 167 | 5 | 18 | 12 | 31 | 777 | 17 | 636 | 8 | 75 | 97 | 94 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 1 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 3 | 2 | 3 | 3 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 3 | 3 | 2 | 3 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 3 | 3 | 3 | 2 |
| HCM Control Delay | 21.3 | 334.1 | 55.3 | 16.8 |
| HCM LOS | C | F | F | C |

| Lane | NBLn1 | NBLn2 | NBLn3 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 | SBLn3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 100% | 0% | 100% | 0% | 0% | 100% | 0% | 0% |
| Vol Thru, % | 0% | 100% | 96% | 0% | 21% | 0% | 100% | 0% | 0% | 100% | 0% |
| Vol Right, % | 0% | 0% | 4% | 0% | 79% | 0% | 0% | 100% | 0% | 0% | 100% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 15 | 377 | 196 | 140 | 19 | 9 | 24 | 598 | 70 | 90 | 87 |
| LT Vol | 15 | 0 | 0 | 140 | 0 | 9 | 0 | 0 | 70 | 0 | 0 |
| Through Vol | 0 | 377 | 189 | 0 | 4 | 0 | 24 | 0 | 0 | 90 | 0 |
| RT Vol | 0 | 0 | 7 | 0 | 15 | 0 | 0 | 598 | 0 | 0 | 87 |
| Lane Flow Rate | 17 | 424 | 220 | 167 | 23 | 12 | 31 | 777 | 75 | 97 | 94 |
| Geometry Grp | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Degree of Util (X) | 0.041 | 0.982 | 0.507 | 0.456 | 0.055 | 0.03 | 0.076 | 1.718 | 0.207 | 0.253 | 0.225 |
| Departure Headway (Hd) | 10.284 | 9.784 | 9.74 | 10.904 | 9.851 | 9.161 | 8.757 | 7.962 | 11.565 | 11.023 | 10.236 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 350 | 373 | 374 | 333 | 366 | 391 | 410 | 458 | 312 | 328 | 353 |
| Service Time | 7.984 | 7.484 | 7.44 | 8.604 | 7.551 | 6.905 | 6.501 | 5.705 | 9.265 | 8.723 | 7.936 |
| HCM Lane V/C Ratio | 0.049 | 1.137 | 0.588 | 0.502 | 0.063 | 0.031 | 0.076 | 1.697 | 0.24 | 0.296 | 0.266 |
| HCM Control Delay | 13.4 | 74.3 | 22 | 22.4 | 13.1 | 12.2 | 12.2 | 351.9 | 17.3 | 17.4 | 15.9 |
| HCM Lane LOS | B | F | C | C | B | B | B | F | C | C | C |
| HCM 95th-tile Q | 0.1 | 11.2 | 2.8 | 2.3 | 0.2 | 0.1 | 0.2 | 46.6 | 0.8 | 1 | 0.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 201 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 64 | 17 | 12 | 356 | 275 | 64 |
| Future Vol, veh/h | 64 | 17 | 12 | 356 | 275 | 64 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 70 | 70 | 73 | 73 | 40 | 40 |
| Heavy Vehicles, % | 4 | 0 | 0 | 2 | 0 | 0 |
| Mvmt Flow | 91 | 24 | 16 | 488 | 688 | 160 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 115 | 0 | 623 | 103 |
| Stage 1 | - | - | - | - | 103 | - |
| Stage 2 | - | - | - | - | 520 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1487 | - | ~ 453 | 957 |
| Stage 1 | - | - | - | - | 926 | - |
| Stage 2 | - | - | - | - | ~ 601 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1487 | - | ~ 446 | 957 |
| Mov Cap-2 Maneuver | - | - | - | - | ~ 446 | - |
| Stage 1 | - | - | - | - | 926 | - |
| Stage 2 | - | - | - | - | ~ 592 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | $ 347.8 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 496 | - | - | 1487 | - |
| HCM Lane V/C Ratio | 1.709 | - | - | 0.011 | - |
| HCM Control Delay (s) | $ 347.8 | - | - | 7.4 | 0 |
| HCM Lane LOS | F | - | - | A | A |
| HCM 95th %tile Q(veh) | 50.3 | - | - | 0 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 121 | 358 | 3 | 1 | 12 |
| Future Vol, veh/h | 7 | 121 | 358 | 3 | 1 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 63 | 63 | 77 | 77 | 36 | 36 |
| Heavy Vehicles, % | 40 | 0 | 0 | 1 | 0 | 11 |
| Mvmt Flow | 11 | 192 | 465 | 4 | 3 | 33 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 469 | 0 | - | 0 | 681 | 467 |
| Stage 1 | - | - | - | - | 467 | - |
| Stage 2 | - | - | - | - | 214 | - |
| Critical Hdwy | 4.5 | - | - | - | 6.4 | 6.31 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.56 | - | - | - | 3.5 | 3.399 |
| Pot Cap-1 Maneuver | 920 | - | - | - | 419 | 578 |
| Stage 1 | - | - | - | - | 635 | - |
| Stage 2 | - | - | - | - | 826 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 920 | - | - | - | 414 | 578 |
| Mov Cap-2 Maneuver | - | - | - | - | 414 | - |
| Stage 1 | - | - | - | - | 627 | - |
| Stage 2 | - | - | - | - | 826 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.5 | 0 | 11.9 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 920 | - | - | - | 561 |
| HCM Lane V/C Ratio | 0.012 | - | - | - | 0.064 |
| HCM Control Delay (s) | 9 | - | - | - | 11.9 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 128 | 1 | 0 | 203 | 11 | 0 |
| Future Vol, veh/h | 128 | 1 | 0 | 203 | 11 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 81 | 81 | 71 | 71 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 11 | 0 |
| Mvmt Flow | 164 | 1 | 0 | 251 | 15 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 165 | 0 | 416 | 165 |
| Stage 1 | - | - | - | - | 165 | - |
| Stage 2 | - | - | - | - | 251 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.51 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.51 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.51 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.599 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1426 | - | 576 | 885 |
| Stage 1 | - | - | - | - | 843 | - |
| Stage 2 | - | - | - | - | 770 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1426 | - | 576 | 885 |
| Mov Cap-2 Maneuver | - | - | - | - | 576 | - |
| Stage 1 | - | - | - | - | 843 | - |
| Stage 2 | - | - | - | - | 770 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 576 | - | - | 1426 | - |
| HCM Lane V/C Ratio | 0.027 | - | - | - | - |
| HCM Control Delay (s) | 11.4 | - | - | 0 | - |
| HCM Lane LOS | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 11 | 0 | 0 | 1 | 0 |
| Future Vol, veh/h | 1 | 11 | 0 | 0 | 1 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 67 | 67 | 69 | 69 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 10 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 16 | 0 | 0 | 2 | 0 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 4 | 0 | 0 | 0 | 0 | 0 |
| Stage 1 | 0 | - | - | - | - | - |
| Stage 2 | 4 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 1023 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 1024 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 1023 | - | - | - | - | - |
| Mov Cap-2 Maneuver | 1023 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 1024 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | | 0 | |
| HCM LOS | - | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | - | - | - |
| HCM Lane LOS | - | - | - | - | - |
| HCM 95th %tile Q(veh) | - | - | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 1 | 0 | 0 |
| Future Vol, veh/h | 3 | 0 | 0 | 1 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 25 | 25 | 63 | 63 | 63 | 63 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 10 | 0 |
| Mvmt Flow | 12 | 0 | 0 | 2 | 0 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 4 | 2 | 2 | 0 | - | 0 |
| Stage 1 | 2 | - | - | - | - | - |
| Stage 2 | 2 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 1023 | 1088 | 1634 | - | - | - |
| Stage 1 | 1026 | - | - | - | - | - |
| Stage 2 | 1026 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 1023 | 1088 | 1634 | - | - | - |
| Mov Cap-2 Maneuver | 1023 | - | - | - | - | - |
| Stage 1 | 1026 | - | - | - | - | - |
| Stage 2 | 1026 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.6 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1634 | - | 1023 | - | - |
| HCM Lane V/C Ratio | - | - | 0.012 | - | - |
| HCM Control Delay (s) | 0 | - | 8.6 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 144 | 0 | 195 | 0 | 13 | 11 | 5 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 144 | 0 | 195 | 0 | 13 | 11 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 39 | 39 | 92 | 92 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 157 | 0 | 500 | 0 | 14 | 16 | 7 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 627 | 548 | 20 | 548 | 551 | 500 | 23 | 0 | 0 | 500 | 0 | 0 |
| Stage 1 | 48 | 48 | - | 500 | 500 | - | - | - | - | - | - | - |
| Stage 2 | 579 | 500 | - | 48 | 51 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 396 | 444 | 1058 | 447 | 442 | 571 | 1605 | - | - | 1064 | - | - |
| Stage 1 | 965 | 855 | - | 553 | 543 | - | - | - | - | - | - | - |
| Stage 2 | 501 | 543 | - | 965 | 852 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 285 | 438 | 1058 | 443 | 436 | 571 | 1605 | - | - | 1064 | - | - |
| Mov Cap-2 Maneuver | 285 | 438 | - | 443 | 436 | - | - | - | - | - | - | - |
| Stage 1 | 965 | 844 | - | 553 | 543 | - | - | - | - | - | - | - |
| Stage 2 | 364 | 543 | - | 952 | 841 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 13.7 | 0 | 3.1 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1605 | - | - | - | 571 | 1064 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | 0.274 | 0.013 | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 13.7 | 8.4 | 0 | - |
| HCM Lane LOS | A | - | - | A | B | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 3 | 586 | 1 | 4 | 103 |
| Future Vol, veh/h | 7 | 3 | 586 | 1 | 4 | 103 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 78 | 78 | 76 | 76 |
| Heavy Vehicles, % | 0 | 0 | 1 | 0 | 0 | 4 |
| Mvmt Flow | 8 | 3 | 751 | 1 | 5 | 136 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 898 | 752 | 0 | 0 | 752 | 0 |
| Stage 1 | 752 | - | - | - | - | - |
| Stage 2 | 146 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 312 | 413 | - | - | 867 | - |
| Stage 1 | 469 | - | - | - | - | - |
| Stage 2 | 886 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 310 | 413 | - | - | 867 | - |
| Mov Cap-2 Maneuver | 310 | - | - | - | - | - |
| Stage 1 | 469 | - | - | - | - | - |
| Stage 2 | 881 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.1 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 335 | 867 | - |
| HCM Lane V/C Ratio | - | - | 0.034 | 0.006 | - |
| HCM Control Delay (s) | - | - | 16.1 | 9.2 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 49 | 150 | 437 | 15 | 13 | 97 |
| Future Vol, veh/h | 49 | 150 | 437 | 15 | 13 | 97 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 72 | 72 | 67 | 67 | 81 | 81 |
| Heavy Vehicles, % | 14 | 0 | 1 | 46 | 0 | 3 |
| Mvmt Flow | 68 | 208 | 652 | 22 | 16 | 120 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 815 | 663 | 0 | 0 | 674 | 0 |
| Stage 1 | 663 | - | - | - | - | - |
| Stage 2 | 152 | - | - | - | - | - |
| Critical Hdwy | 6.54 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.54 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.54 | - | - | - | - | - |
| Follow-up Hdwy | 3.626 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 331 | 465 | - | - | 927 | - |
| Stage 1 | 491 | - | - | - | - | - |
| Stage 2 | 847 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 325 | 465 | - | - | 927 | - |
| Mov Cap-2 Maneuver | 325 | - | - | - | - | - |
| Stage 1 | 491 | - | - | - | - | - |
| Stage 2 | 832 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 28.6 | 0 | 1.1 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 420 | 927 | - |
| HCM Lane V/C Ratio | - | - | 0.658 | 0.017 | - |
| HCM Control Delay (s) | - | - | 28.6 | 9 | 0 |
| HCM Lane LOS | - | - | D | A | A |
| HCM 95th %tile Q(veh) | - | - | 4.6 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 4 | 358 | 0 | 0 | 164 |
| Future Vol, veh/h | 0 | 4 | 358 | 0 | 0 | 164 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 68 | 68 | 74 | 74 |
| Heavy Vehicles, % | 0 | 0 | 3 | 0 | 0 | 7 |
| Mvmt Flow | 0 | 16 | 526 | 0 | 0 | 222 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 748 | 526 | 0 | 0 | 526 | 0 |
| Stage 1 | 526 | - | - | - | - | - |
| Stage 2 | 222 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 383 | 556 | - | - | 1051 | - |
| Stage 1 | 597 | - | - | - | - | - |
| Stage 2 | 820 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 383 | 556 | - | - | 1051 | - |
| Mov Cap-2 Maneuver | 383 | - | - | - | - | - |
| Stage 1 | 597 | - | - | - | - | - |
| Stage 2 | 820 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.7 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 556 | 1051 | - |
| HCM Lane V/C Ratio | - | - | 0.029 | - | - |
| HCM Control Delay (s) | - | - | 11.7 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 126.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 28 | 20 | 3 | 285 | 19 | 20 | 1 | 297 | 103 | 3 | 513 | 12 |
| Future Vol, veh/h | 28 | 20 | 3 | 285 | 19 | 20 | 1 | 297 | 103 | 3 | 513 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 54 | 54 | 54 | 85 | 85 | 85 | 84 | 84 | 84 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 2 | 1 | 0 | 1 | 11 |
| Mvmt Flow | 52 | 37 | 6 | 335 | 22 | 24 | 1 | 354 | 123 | 3 | 583 | 14 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1037 | 1075 | 590 | 1036 | 1021 | 416 | 597 | 0 | 0 | 477 | 0 | 0 |
| Stage 1 | 596 | 596 | - | 418 | 418 | - | - | - | - | - | - | - |
| Stage 2 | 441 | 479 | - | 618 | 603 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.63 | 6.2 | 7.1 | 6.64 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.117 | 3.3 | 3.5 | 4.126 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 211 | 210 | 511 | ~ 212 | 225 | 641 | 989 | - | - | 1096 | - | - |
| Stage 1 | 494 | 475 | - | 616 | 570 | - | - | - | - | - | - | - |
| Stage 2 | 599 | 537 | - | 480 | 470 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 187 | 209 | 511 | ~ 180 | 224 | 641 | 989 | - | - | 1096 | - | - |
| Mov Cap-2 Maneuver | 187 | 209 | - | ~ 180 | 224 | - | - | - | - | - | - | - |
| Stage 1 | 494 | 473 | - | 615 | 569 | - | - | - | - | - | - | - |
| Stage 2 | 554 | 536 | - | 436 | 468 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 37.3 | $ 506.9 | 0 | 0 |
| HCM LOS | E | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 989 | - | - | 203 | 191 | 1096 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.465 | 1.996 | 0.003 | - | - |
| HCM Control Delay (s) | 8.6 | 0 | - | 37.3 | $ 506.9 | 8.3 | 0 | - |
| HCM Lane LOS | A | A | - | E | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 2.2 | 28.7 | 0 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 101.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 340 | 77 | 246 | 46 | 24 | 793 |
| Future Vol, veh/h | 340 | 77 | 246 | 46 | 24 | 793 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 76 | 76 | 83 | 83 |
| Heavy Vehicles, % | 2 | 2 | 1 | 3 | 0 | 1 |
| Mvmt Flow | 395 | 90 | 324 | 61 | 29 | 955 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 738 | 29 | 984 | 0 | - | 0 |
| Stage 1 | 29 | - | - | - | - | - |
| Stage 2 | 709 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | ~ 385 | 1046 | 706 | - | - | - |
| Stage 1 | 994 | - | - | - | - | - |
| Stage 2 | 488 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 208 | 1046 | 706 | - | - | - |
| Mov Cap-2 Maneuver | ~ 208 | - | - | - | - | - |
| Stage 1 | 538 | - | - | - | - | - |
| Stage 2 | 488 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 377.7 | 12.1 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 706 | - | 208 | 1046 | - | - |
| HCM Lane V/C Ratio | 0.458 | - | 1.901 | 0.086 | - | - |
| HCM Control Delay (s) | 14.3 | - | $ 461.3 | 8.8 | - | - |
| HCM Lane LOS | B | - | F | A | - | - |
| HCM 95th %tile Q(veh) | 2.4 | - | 28.6 | 0.3 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 66 | 536 | 0 | 0 | 1309 |
| Future Vol, veh/h | 0 | 66 | 536 | 0 | 0 | 1309 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 73 | 73 | 95 | 95 | 89 | 89 |
| Heavy Vehicles, % | 0 | 13 | 0 | 1 | 0 | 1 |
| Mvmt Flow | 0 | 90 | 564 | 0 | 0 | 1471 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 564 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.395 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.4235 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 499 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | 499 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.8 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 499 | - |
| HCM Lane V/C Ratio | - | 0.181 | - |
| HCM Control Delay (s) | - | 13.8 | - |
| HCM Lane LOS | - | B | - |
| HCM 95th %tile Q(veh) | - | 0.7 | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 3 | 115 | 7 | 1405 | 704 | 145 | 9 | 6 | 356 | 7 | 2 | 2 |
| Future Volume (vph) | 3 | 115 | 7 | 1405 | 704 | 145 | 9 | 6 | 356 | 7 | 2 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | 1805 | 3514 | | 3467 | 3474 | | | 1784 | 2682 | | 2036 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.88 | 1.00 | | 0.87 | |
| Satd. Flow (perm) | 1805 | 3514 | | 3467 | 3474 | | | 1613 | 2682 | | 1819 | |
| Peak-hour factor, PHF | 0.84 | 0.84 | 0.84 | 0.83 | 1.00 | 0.83 | 0.88 | 0.88 | 0.88 | 0.63 | 0.63 | 0.63 |
| Adj. Flow (vph) | 4 | 137 | 8 | 1693 | 704 | 175 | 10 | 7 | 405 | 11 | 3 | 3 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 4 | 141 | 0 | 1693 | 868 | 0 | 0 | 17 | 405 | 0 | 15 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 1% | 1% | 0% | 0% | 0% | 6% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | 6.3 | 13.2 | | 50.1 | 58.0 | | | 18.8 | 18.8 | | 18.8 | |
| Effective Green, g (s) | 6.3 | 13.2 | | 50.1 | 58.0 | | | 18.8 | 18.8 | | 18.8 | |
| Actuated g/C Ratio | 0.06 | 0.13 | | 0.50 | 0.58 | | | 0.19 | 0.19 | | 0.19 | |
| Clearance Time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | 2.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 113 | 463 | | 1735 | 2012 | | | 302 | 503 | | 341 | |
| v/s Ratio Prot | 0.00 | c0.04 | | c0.49 | c0.25 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.15 | | 0.01 | |
| v/c Ratio | 0.04 | 0.30 | | 0.98 | 0.43 | | | 0.06 | 0.81 | | 0.04 | |
| Uniform Delay, d1 | 44.0 | 39.3 | | 24.4 | 11.8 | | | 33.4 | 38.9 | | 33.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.4 | | 16.1 | 0.1 | | | 0.1 | 9.1 | | 0.1 | |
| Delay (s) | 44.1 | 39.7 | | 40.5 | 12.0 | | | 33.4 | 48.0 | | 33.3 | |
| Level of Service | D | D | | D | B | | | C | D | | C | |
| Approach Delay (s) | | 39.8 | | | 30.7 | | | 47.4 | | | 33.3 | |
| Approach LOS | | D | | | C | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 33.4 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.83 | | |
| Actuated Cycle Length (s) | 100.1 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 66.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 334 | 144 | 174 | 1172 | 0 | 0 | 0 | 0 | 625 | 0 | 961 |
| Future Volume (vph) | 0 | 334 | 144 | 174 | 1172 | 0 | 0 | 0 | 0 | 625 | 0 | 961 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Peak-hour factor, PHF | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.92 | 0.92 | 0.92 | 0.75 | 0.75 | 0.75 |
| Adj. Flow (vph) | 0 | 418 | 180 | 218 | 1465 | 0 | 0 | 0 | 0 | 833 | 0 | 1281 |
| RTOR Reduction (vph) | 0 | 0 | 119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 72 |
| Lane Group Flow (vph) | 0 | 418 | 61 | 218 | 1465 | 0 | 0 | 0 | 0 | 833 | 0 | 1209 |
| Heavy Vehicles (%) | 0% | 2% | 10% | 12% | 1% | 0% | 2% | 2% | 2% | 1% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 34.5 | 34.5 | 25.0 | 65.5 | | | | | 25.0 | | 25.0 |
| Effective Green, g (s) | | 34.5 | 34.5 | 25.0 | 65.5 | | | | | 25.0 | | 25.0 |
| Actuated g/C Ratio | | 0.34 | 0.34 | 0.24 | 0.64 | | | | | 0.24 | | 0.24 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 2013 | 477 | 711 | 2207 | | | | | 845 | | 686 |
| v/s Ratio Prot | | 0.07 | 0.04 | 0.07 | c0.42 | | | | | 0.24 | | c0.43 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.21 | 0.13 | 0.31 | 0.66 | | | | | 0.99 | | 1.76 |
| Uniform Delay, d1 | | 24.3 | 23.6 | 31.7 | 11.6 | | | | | 38.6 | | 38.8 |
| Progression Factor | | 1.00 | 1.00 | 0.90 | 1.55 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 0.1 | 0.3 | 0.1 | 0.2 | | | | | 27.4 | | 349.1 |
| Delay (s) | | 24.4 | 23.8 | 28.6 | 18.2 | | | | | 66.0 | | 387.9 |
| Level of Service | | C | C | C | B | | | | | E | | F |
| Approach Delay (s) | | 24.2 | | | 19.6 | | | 0.0 | | | 261.0 | |
| Approach LOS | | C | | | B | | | A | | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 136.4 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.04 | | |
| Actuated Cycle Length (s) | 102.5 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 82.7% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 150 | 809 | 0 | 0 | 472 | 86 | 874 | 0 | 405 | 0 | 0 | 0 |
| Future Volume (vph) | 150 | 809 | 0 | 0 | 472 | 86 | 874 | 0 | 405 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3113 | 3421 | | | 4945 | | 3433 | | 2733 | | | |
| Flt Permitted | 0.39 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 1282 | 3421 | | | 4945 | | 3433 | | 2733 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.78 | 0.78 | 0.78 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 172 | 930 | 0 | 0 | 555 | 101 | 1121 | 0 | 519 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 345 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 172 | 930 | 0 | 0 | 634 | 0 | 1121 | 0 | 174 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 2% | 0% | 0% | 2% | 5% | 2% | 2% | 4% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 51.5 | 34.5 | | | 42.5 | | 25.0 | | 25.0 | | | |
| Effective Green, g (s) | 51.5 | 34.5 | | | 42.5 | | 25.0 | | 25.0 | | | |
| Actuated g/C Ratio | 0.50 | 0.34 | | | 0.41 | | 0.24 | | 0.24 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 947 | 1151 | | | 2050 | | 837 | | 666 | | | |
| v/s Ratio Prot | c0.03 | c0.27 | | | c0.13 | | c0.33 | | 0.06 | | | |
| v/s Ratio Perm | 0.06 | | | | | | | | | | | |
| v/c Ratio | 0.18 | 0.81 | | | 0.31 | | 1.34 | | 0.26 | | | |
| Uniform Delay, d1 | 13.4 | 31.0 | | | 20.1 | | 38.8 | | 31.3 | | | |
| Progression Factor | 1.10 | 1.25 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 0.1 | 3.3 | | | 0.2 | | 160.8 | | 0.4 | | | |
| Delay (s) | 14.8 | 41.9 | | | 20.3 | | 199.5 | | 31.7 | | | |
| Level of Service | B | D | | | C | | F | | C | | | |
| Approach Delay (s) | | 37.7 | | | 20.3 | | | 146.4 | | | 0.0 | |
| Approach LOS | | D | | | C | | | F | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 86.8 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 102.5 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 82.7% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 685 | 2242 | 808 | 643 | 178 | 207 |
| Future Volume (vph) | 685 | 2242 | 808 | 643 | 178 | 207 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.96 | 0.96 | 0.76 | 0.76 |
| Adj. Flow (vph) | 797 | 2607 | 842 | 670 | 234 | 272 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 466 | 0 | 195 |
| Lane Group Flow (vph) | 797 | 2607 | 842 | 204 | 234 | 77 |
| Heavy Vehicles (%) | 1% | 4% | 8% | 2% | 5% | 5% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 8.8 | 32.8 | 18.0 | 18.0 | 14.2 | 14.2 |
| Effective Green, g (s) | 8.8 | 32.8 | 18.0 | 18.0 | 14.2 | 14.2 |
| Actuated g/C Ratio | 0.15 | 0.56 | 0.31 | 0.31 | 0.24 | 0.24 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 266 | 1929 | 1019 | 482 | 413 | 370 |
| v/s Ratio Prot | c0.45 | c0.75 | 0.25 | | c0.14 | 0.05 |
| v/s Ratio Perm | | | | 0.13 | | |
| v/c Ratio | 3.00 | 1.35 | 0.83 | 0.42 | 0.57 | 0.21 |
| Uniform Delay, d1 | 25.1 | 13.1 | 19.0 | 16.4 | 19.7 | 17.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 908.4 | 161.7 | 7.7 | 2.7 | 2.2 | 0.4 |
| Delay (s) | 933.5 | 174.8 | 26.7 | 19.1 | 21.9 | 18.3 |
| Level of Service | F | F | C | B | C | B |
| Approach Delay (s) | | 352.4 | 23.3 | | 19.9 | |
| Approach LOS | | F | C | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 229.6 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.51 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 87.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 77 | 48 | 34 | 16 | 15 | 84 | 9 | 159 | 71 | 718 | 515 | 151 |
| Future Volume (vph) | 77 | 48 | 34 | 16 | 15 | 84 | 9 | 159 | 71 | 718 | 515 | 151 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.95 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1805 | 1706 | | 1805 | 1681 | 1369 | 1805 | 3411 | | 1770 | 1900 | 1615 |
| Flt Permitted | 0.75 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.41 | 1.00 | | 0.42 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1416 | 1706 | | 1306 | 1681 | 1369 | 774 | 3411 | | 791 | 1900 | 1615 |
| Peak-hour factor, PHF | 0.76 | 0.76 | 0.76 | 0.78 | 0.78 | 0.78 | 0.83 | 0.83 | 0.83 | 0.76 | 0.76 | 0.76 |
| Adj. Flow (vph) | 101 | 63 | 45 | 21 | 19 | 108 | 11 | 192 | 86 | 945 | 678 | 199 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 0 | 91 | 0 | 47 | 0 | 0 | 0 | 61 |
| Lane Group Flow (vph) | 101 | 84 | 0 | 21 | 19 | 17 | 11 | 231 | 0 | 945 | 678 | 138 |
| Heavy Vehicles (%) | 0% | 4% | 5% | 0% | 13% | 18% | 0% | 0% | 3% | 2% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Perm | NA | | pm+pt | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 13.3 | 13.3 | | 13.3 | 13.3 | 13.3 | 13.0 | 13.0 | | 57.8 | 57.8 | 57.8 |
| Effective Green, g (s) | 13.3 | 13.3 | | 13.3 | 13.3 | 13.3 | 13.0 | 13.0 | | 57.8 | 57.8 | 57.8 |
| Actuated g/C Ratio | 0.16 | 0.16 | | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | | 0.70 | 0.70 | 0.70 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 226 | 273 | | 209 | 269 | 219 | 121 | 533 | | 1024 | 1321 | 1123 |
| v/s Ratio Prot | | 0.05 | | | 0.01 | | | 0.07 | | c0.45 | 0.36 | |
| v/s Ratio Perm | c0.07 | | | 0.02 | | 0.01 | 0.01 | | | c0.19 | | 0.09 |
| v/c Ratio | 0.45 | 0.31 | | 0.10 | 0.07 | 0.08 | 0.09 | 0.43 | | 0.92 | 0.51 | 0.12 |
| Uniform Delay, d1 | 31.6 | 30.8 | | 29.8 | 29.6 | 29.7 | 30.0 | 31.7 | | 10.9 | 6.0 | 4.2 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.4 | 0.6 | | 0.2 | 0.1 | 0.2 | 0.3 | 0.6 | | 13.3 | 0.3 | 0.0 |
| Delay (s) | 33.0 | 31.5 | | 30.0 | 29.8 | 29.8 | 30.3 | 32.3 | | 24.2 | 6.3 | 4.3 |
| Level of Service | C | C | | C | C | C | C | C | | C | A | A |
| Approach Delay (s) | | 32.2 | | | 29.9 | | | 32.2 | | | 15.4 | |
| Approach LOS | | C | | | C | | | C | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 19.6 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.87 | | |
| Actuated Cycle Length (s) | 83.1 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 73.6% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 560 | 277 | 25 | 94 | 21 | 0 |
| Future Vol, veh/h | 560 | 277 | 25 | 94 | 21 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 71 | 71 | 69 | 69 |
| Heavy Vehicles, % | 1 | 5 | 0 | 12 | 36 | 0 |
| Mvmt Flow | 718 | 355 | 35 | 132 | 30 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 1073 | 0 | 1098 | 896 |
| Stage 1 | - | - | - | - | 896 | - |
| Stage 2 | - | - | - | - | 202 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.76 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.76 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.76 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.824 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 657 | - | 203 | 342 |
| Stage 1 | - | - | - | - | 348 | - |
| Stage 2 | - | - | - | - | 757 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 657 | - | 191 | 342 |
| Mov Cap-2 Maneuver | - | - | - | - | 191 | - |
| Stage 1 | - | - | - | - | 348 | - |
| Stage 2 | - | - | - | - | 713 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.3 | 27.4 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 191 | - | - | 657 | - |
| HCM Lane V/C Ratio | 0.159 | - | - | 0.054 | - |
| HCM Control Delay (s) | 27.4 | - | - | 10.8 | 0 |
| HCM Lane LOS | D | - | - | B | A |
| HCM 95th %tile Q(veh) | 0.6 | - | - | 0.2 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 19 | 543 | 96 | 2 | 0 | 7 |
| Future Vol, veh/h | 19 | 543 | 96 | 2 | 0 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 71 | 71 | 50 | 50 |
| Heavy Vehicles, % | 0 | 1 | 8 | 0 | 0 | 25 |
| Mvmt Flow | 22 | 639 | 135 | 3 | 0 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 138 | 0 | - | 0 | 820 | 137 |
| Stage 1 | - | - | - | - | 137 | - |
| Stage 2 | - | - | - | - | 683 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.45 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.525 |
| Pot Cap-1 Maneuver | 1458 | - | - | - | 347 | 854 |
| Stage 1 | - | - | - | - | 895 | - |
| Stage 2 | - | - | - | - | 505 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1458 | - | - | - | 342 | 854 |
| Mov Cap-2 Maneuver | - | - | - | - | 342 | - |
| Stage 1 | - | - | - | - | 882 | - |
| Stage 2 | - | - | - | - | 505 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 9.3 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1458 | - | - | - | 854 |
| HCM Lane V/C Ratio | 0.015 | - | - | - | 0.016 |
| HCM Control Delay (s) | 7.5 | - | - | - | 9.3 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.4 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 322 | 8 | 8 | 119 | 10 | 6 |
| Future Vol, veh/h | 322 | 8 | 8 | 119 | 10 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 82 | 82 | 25 | 40 |
| Heavy Vehicles, % | 1 | 0 | 0 | 5 | 20 | 0 |
| Mvmt Flow | 339 | 8 | 10 | 145 | 40 | 15 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 347 | 0 | 508 | 343 |
| Stage 1 | - | - | - | - | 343 | - |
| Stage 2 | - | - | - | - | 165 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.6 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.6 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.68 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1223 | - | 494 | 704 |
| Stage 1 | - | - | - | - | 680 | - |
| Stage 2 | - | - | - | - | 822 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1223 | - | 490 | 704 |
| Mov Cap-2 Maneuver | - | - | - | - | 490 | - |
| Stage 1 | - | - | - | - | 680 | - |
| Stage 2 | - | - | - | - | 815 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.5 | 12.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 534 | - | - | 1223 | - |
| HCM Lane V/C Ratio | 0.103 | - | - | 0.008 | - |
| HCM Control Delay (s) | 12.5 | - | - | 8 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 16 | 15 | 7 | 9 |
| Future Vol, veh/h | 0 | 0 | 16 | 15 | 7 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 53 | 53 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 0 | 13 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 30 | 28 | 14 | 18 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 90 | 44 | 0 | 0 | 58 | 0 |
| Stage 1 | 44 | - | - | - | - | - |
| Stage 2 | 46 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 915 | 1032 | - | - | 1559 | - |
| Stage 1 | 984 | - | - | - | - | - |
| Stage 2 | 982 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 907 | 1032 | - | - | 1559 | - |
| Mov Cap-2 Maneuver | 907 | - | - | - | - | - |
| Stage 1 | 984 | - | - | - | - | - |
| Stage 2 | 973 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 3.2 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 1559 | - |
| HCM Lane V/C Ratio | - | - | - | 0.009 | - |
| HCM Control Delay (s) | - | - | 0 | 7.3 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 0 | 0 | 9 | 31 | 9 |
| Future Vol, veh/h | 7 | 0 | 0 | 9 | 31 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 50 | 50 | 42 | 42 | 69 | 69 |
| Heavy Vehicles, % | 75 | 0 | 0 | 0 | 6 | 80 |
| Mvmt Flow | 14 | 0 | 0 | 21 | 45 | 13 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 73 | 52 | 58 | 0 | - | 0 |
| Stage 1 | 52 | - | - | - | - | - |
| Stage 2 | 21 | - | - | - | - | - |
| Critical Hdwy | 7.15 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 6.15 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.15 | - | - | - | - | - |
| Follow-up Hdwy | 4.175 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 778 | 1021 | 1559 | - | - | - |
| Stage 1 | 813 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 778 | 1021 | 1559 | - | - | - |
| Mov Cap-2 Maneuver | 778 | - | - | - | - | - |
| Stage 1 | 813 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.7 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1559 | - | 778 | - | - |
| HCM Lane V/C Ratio | - | - | 0.018 | - | - |
| HCM Control Delay (s) | 0 | - | 9.7 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 21 | 0 | 0 | 59 | 243 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 21 | 0 | 0 | 59 | 243 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 88 | 88 | 92 | 92 | 69 | 69 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 18 | 2 | 2 | 15 | 1 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 24 | 0 | 0 | 86 | 352 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 300 | 300 | 262 | 300 | 476 | 24 | 438 | 0 | 0 | 24 | 0 | 0 |
| Stage 1 | 262 | 262 | - | 38 | 38 | - | - | - | - | - | - | - |
| Stage 2 | 38 | 38 | - | 262 | 438 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 652 | 612 | 777 | 652 | 488 | 1052 | 1133 | - | - | 1591 | - | - |
| Stage 1 | 743 | 691 | - | 977 | 863 | - | - | - | - | - | - | - |
| Stage 2 | 977 | 863 | - | 743 | 579 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 649 | 608 | 777 | 649 | 485 | 1052 | 1133 | - | - | 1591 | - | - |
| Mov Cap-2 Maneuver | 649 | 608 | - | 649 | 485 | - | - | - | - | - | - | - |
| Stage 1 | 739 | 691 | - | 971 | 858 | - | - | - | - | - | - | - |
| Stage 2 | 971 | 858 | - | 743 | 579 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 1.8 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1133 | - | - | - | - | 1591 | - | - |
| HCM Lane V/C Ratio | 0.006 | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 8.2 | 0 | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | A | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 2 | 223 | 15 | 15 | 504 |
| Future Vol, veh/h | 7 | 2 | 223 | 15 | 15 | 504 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 63 | 63 | 81 | 81 | 84 | 84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 |
| Mvmt Flow | 11 | 3 | 275 | 19 | 18 | 600 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 921 | 285 | 0 | 0 | 294 | 0 |
| Stage 1 | 285 | - | - | - | - | - |
| Stage 2 | 636 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 303 | 759 | - | - | 1279 | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 531 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 297 | 759 | - | - | 1279 | - |
| Mov Cap-2 Maneuver | 297 | - | - | - | - | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 520 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16 | 0 | 0.2 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 343 | 1279 | - |
| HCM Lane V/C Ratio | - | - | 0.042 | 0.014 | - |
| HCM Control Delay (s) | - | - | 16 | 7.9 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 16 | 21 | 217 | 15 | 23 | 488 |
| Future Vol, veh/h | 16 | 21 | 217 | 15 | 23 | 488 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 86 | 86 | 83 | 83 |
| Heavy Vehicles, % | 44 | 0 | 1 | 63 | 0 | 1 |
| Mvmt Flow | 18 | 24 | 252 | 17 | 28 | 588 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 905 | 261 | 0 | 0 | 269 | 0 |
| Stage 1 | 261 | - | - | - | - | - |
| Stage 2 | 644 | - | - | - | - | - |
| Critical Hdwy | 6.84 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - |
| Follow-up Hdwy | 3.896 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 260 | 783 | - | - | 1306 | - |
| Stage 1 | 695 | - | - | - | - | - |
| Stage 2 | 451 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 252 | 783 | - | - | 1306 | - |
| Mov Cap-2 Maneuver | 252 | - | - | - | - | - |
| Stage 1 | 695 | - | - | - | - | - |
| Stage 2 | 437 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14.8 | 0 | 0.4 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 410 | 1306 | - |
| HCM Lane V/C Ratio | - | - | 0.103 | 0.021 | - |
| HCM Control Delay (s) | - | - | 14.8 | 7.8 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.3 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 6 | 253 | 2 | 9 | 392 |
| Future Vol, veh/h | 0 | 6 | 253 | 2 | 9 | 392 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 89 | 89 | 81 | 81 |
| Heavy Vehicles, % | 0 | 0 | 5 | 100 | 0 | 2 |
| Mvmt Flow | 0 | 8 | 284 | 2 | 11 | 484 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 791 | 285 | 0 | 0 | 286 | 0 |
| Stage 1 | 285 | - | - | - | - | - |
| Stage 2 | 506 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 361 | 759 | - | - | 1288 | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 610 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 357 | 759 | - | - | 1288 | - |
| Mov Cap-2 Maneuver | 357 | - | - | - | - | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 603 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.8 | 0 | 0.2 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 759 | 1288 | - |
| HCM Lane V/C Ratio | - | - | 0.011 | 0.009 | - |
| HCM Control Delay (s) | - | - | 9.8 | 7.8 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 23.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 9 | 10 | 2 | 95 | 6 | 7 | 0 | 503 | 432 | 28 | 324 | 32 |
| Future Vol, veh/h | 9 | 10 | 2 | 95 | 6 | 7 | 0 | 503 | 432 | 28 | 324 | 32 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 65 | 65 | 65 | 90 | 90 | 90 | 87 | 87 | 87 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 3 | 0 | 3 | 0 |
| Mvmt Flow | 12 | 13 | 3 | 146 | 9 | 11 | 0 | 559 | 480 | 32 | 372 | 37 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1264 | 1494 | 391 | 1262 | 1272 | 799 | 409 | 0 | 0 | 1039 | 0 | 0 |
| Stage 1 | 455 | 455 | - | 799 | 799 | - | - | - | - | - | - | - |
| Stage 2 | 809 | 1039 | - | 463 | 473 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.3 | 6.5 | 6.2 | 7.14 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 4 | 3.3 | 3.536 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 134 | 124 | 662 | ~ 145 | 169 | 389 | 1161 | - | - | 677 | - | - |
| Stage 1 | 552 | 572 | - | 376 | 401 | - | - | - | - | - | - | - |
| Stage 2 | 349 | 310 | - | 575 | 562 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 119 | 116 | 662 | ~ 126 | 159 | 389 | 1161 | - | - | 677 | - | - |
| Mov Cap-2 Maneuver | 119 | 116 | - | ~ 126 | 159 | - | - | - | - | - | - | - |
| Stage 1 | 552 | 537 | - | 376 | 401 | - | - | - | - | - | - | - |
| Stage 2 | 332 | 310 | - | 524 | 528 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 41.2 | 223.7 | 0 | 0.8 |
| HCM LOS | E | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1161 | - | - | 127 | 133 | 677 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.22 | 1.249 | 0.048 | - | - |
| HCM Control Delay (s) | 0 | - | - | 41.2 | 223.7 | 10.6 | 0 | - |
| HCM Lane LOS | A | - | - | E | F | B | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.8 | 10.2 | 0.1 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 130.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 956 | 392 | 53 | 16 | 61 | 261 |
| Future Vol, veh/h | 956 | 392 | 53 | 16 | 61 | 261 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 70 | 70 | 90 | 90 |
| Heavy Vehicles, % | 1 | 1 | 3 | 11 | 0 | 4 |
| Mvmt Flow | 1028 | 422 | 76 | 23 | 68 | 290 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 243 | 68 | 358 | 0 | - | 0 |
| Stage 1 | 68 | - | - | - | - | - |
| Stage 2 | 175 | - | - | - | - | - |
| Critical Hdwy | 6.41 | 6.21 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.41 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.41 | - | - | - | - | - |
| Follow-up Hdwy | 3.509 | 3.309 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | ~ 748 | 998 | 1195 | - | - | - |
| Stage 1 | ~ 957 | - | - | - | - | - |
| Stage 2 | ~ 858 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 700 | 998 | 1195 | - | - | - |
| Mov Cap-2 Maneuver | ~ 700 | - | - | - | - | - |
| Stage 1 | ~ 896 | - | - | - | - | - |
| Stage 2 | ~ 858 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 170.6 | 6.3 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1195 | - | 700 | 998 | - | - |
| HCM Lane V/C Ratio | 0.063 | - | 1.469 | 0.422 | - | - |
| HCM Control Delay (s) | 8.2 | - | 236 | 11.2 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 48.9 | 2.1 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 163.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 246 | 1328 | 0 | 0 | 385 |
| Future Vol, veh/h | 0 | 246 | 1328 | 0 | 0 | 385 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 70 | 70 | 80 | 80 |
| Heavy Vehicles, % | 2 | 3 | 2 | 2 | 2 | 4 |
| Mvmt Flow | 0 | 324 | 1897 | 0 | 0 | 481 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 1897 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.245 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.3285 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | ~ 85 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | ~ 85 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 1366 | 0 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 85 | - |
| HCM Lane V/C Ratio | - | 3.808 | - |
| HCM Control Delay (s) | - | $ 1366 | - |
| HCM Lane LOS | - | F | - |
| HCM 95th %tile Q(veh) | - | 33.5 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 519 | 3 | 455 | 201 | 27 | 12 | 3 | 1367 | 63 | 3 | 3 |
| Future Volume (vph) | 0 | 519 | 3 | 455 | 201 | 27 | 12 | 3 | 1367 | 63 | 3 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | | 1.00 | | 1.00 | 0.98 | | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | 0.96 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3572 | | 3433 | 3546 | | | 1765 | 2814 | | 2048 | |
| Flt Permitted | | 1.00 | | 0.95 | 1.00 | | | 0.82 | 1.00 | | 0.73 | |
| Satd. Flow (perm) | | 3572 | | 3433 | 3546 | | | 1502 | 2814 | | 1566 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.96 | 0.96 | 0.96 | 0.91 | 0.91 | 0.91 | 0.68 | 0.68 | 0.68 |
| Adj. Flow (vph) | 0 | 590 | 3 | 474 | 209 | 28 | 13 | 3 | 1502 | 93 | 4 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 593 | 0 | 474 | 232 | 0 | 0 | 16 | 1502 | 0 | 100 | 0 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | | 17.4 | | 16.0 | 39.4 | | | 20.2 | 20.2 | | 20.2 | |
| Effective Green, g (s) | | 17.4 | | 16.0 | 39.4 | | | 20.2 | 20.2 | | 20.2 | |
| Actuated g/C Ratio | | 0.24 | | 0.22 | 0.55 | | | 0.28 | 0.28 | | 0.28 | |
| Clearance Time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | | 868 | | 767 | 1951 | | | 423 | 793 | | 441 | |
| v/s Ratio Prot | | c0.17 | | c0.14 | 0.07 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.53 | | 0.06 | |
| v/c Ratio | | 0.68 | | 0.62 | 0.12 | | | 0.04 | 1.89 | | 0.23 | |
| Uniform Delay, d1 | | 24.6 | | 25.0 | 7.7 | | | 18.6 | 25.7 | | 19.7 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.2 | | 1.5 | 0.0 | | | 0.0 | 407.1 | | 0.3 | |
| Delay (s) | | 26.8 | | 26.5 | 7.8 | | | 18.7 | 432.8 | | 20.0 | |
| Level of Service | | C | | C | A | | | B | F | | B | |
| Approach Delay (s) | | 26.8 | | | 20.3 | | | 428.4 | | | 20.0 | |
| Approach LOS | | C | | | C | | | F | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 233.6 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.12 | | |
| Actuated Cycle Length (s) | 71.6 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 82.3% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 1285 | 664 | 756 | 522 | 0 | 0 | 0 | 0 | 429 | 0 | 166 |
| Future Volume (vph) | 0 | 1285 | 664 | 756 | 522 | 0 | 0 | 0 | 0 | 429 | 0 | 166 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 1512 | 781 | 804 | 555 | 0 | 0 | 0 | 0 | 477 | 0 | 184 |
| RTOR Reduction (vph) | 0 | 0 | 363 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 140 |
| Lane Group Flow (vph) | 0 | 1512 | 418 | 804 | 555 | 0 | 0 | 0 | 0 | 477 | 0 | 44 |
| Heavy Vehicles (%) | 0% | 1% | 1% | 1% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 35.0 | 35.0 | 25.0 | 66.0 | | | | | 24.5 | | 24.5 |
| Effective Green, g (s) | | 35.0 | 35.0 | 25.0 | 66.0 | | | | | 24.5 | | 24.5 |
| Actuated g/C Ratio | | 0.34 | 0.34 | 0.24 | 0.64 | | | | | 0.24 | | 0.24 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 2062 | 527 | 789 | 2224 | | | | | 837 | | 672 |
| v/s Ratio Prot | | 0.25 | c0.27 | c0.25 | 0.16 | | | | | c0.14 | | 0.02 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.73 | 0.79 | 1.02 | 0.25 | | | | | 0.57 | | 0.07 |
| Uniform Delay, d1 | | 29.6 | 30.5 | 38.8 | 7.7 | | | | | 34.4 | | 30.1 |
| Progression Factor | | 1.00 | 1.00 | 1.33 | 1.26 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 1.7 | 9.2 | 28.5 | 0.1 | | | | | 1.5 | | 0.1 |
| Delay (s) | | 31.3 | 39.7 | 80.3 | 9.8 | | | | | 35.8 | | 30.2 |
| Level of Service | | C | D | F | A | | | | | D | | C |
| Approach Delay (s) | | 34.2 | | | 51.5 | | | 0.0 | | | 34.3 | |
| Approach LOS | | C | | | D | | | A | | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM 2000 Control Delay | 39.6 | HCM 2000 Level of Service | D | |
| HCM 2000 Volume to Capacity ratio | 0.79 | | | |
| Actuated Cycle Length (s) | 102.5 | Sum of lost time (s) | 18.0 | |
| Intersection Capacity Utilization | 89.9% | ICU Level of Service | E | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 768 | 946 | 0 | 0 | 1028 | 450 | 250 | 0 | 691 | 0 | 0 | 0 |
| Future Volume (vph) | 768 | 946 | 0 | 0 | 1028 | 450 | 250 | 0 | 691 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.95 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3236 | 3455 | | | 4916 | | 3433 | | 2814 | | | |
| Flt Permitted | 0.11 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 389 | 3455 | | | 4916 | | 3433 | | 2814 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.92 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 883 | 1087 | 0 | 0 | 1142 | 500 | 266 | 0 | 735 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 76 | 0 | 0 | 0 | 559 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 883 | 1087 | 0 | 0 | 1566 | 0 | 266 | 0 | 176 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 1% | 0% | 2% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 60.0 | 35.0 | | | 35.0 | | 24.5 | | 24.5 | | | |
| Effective Green, g (s) | 60.0 | 35.0 | | | 35.0 | | 24.5 | | 24.5 | | | |
| Actuated g/C Ratio | 0.59 | 0.34 | | | 0.34 | | 0.24 | | 0.24 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 922 | 1179 | | | 1678 | | 820 | | 672 | | | |
| v/s Ratio Prot | c0.23 | 0.31 | | | 0.32 | | c0.08 | | 0.06 | | | |
| v/s Ratio Perm | c0.33 | | | | | | | | | | | |
| v/c Ratio | 0.96 | 0.92 | | | 0.93 | | 0.32 | | 0.26 | | | |
| Uniform Delay, d1 | 29.4 | 32.4 | | | 32.6 | | 32.2 | | 31.7 | | | |
| Progression Factor | 1.65 | 0.56 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 15.9 | 9.3 | | | 10.3 | | 0.5 | | 0.4 | | | |
| Delay (s) | 64.5 | 27.5 | | | 43.0 | | 32.7 | | 32.1 | | | |
| Level of Service | E | C | | | D | | C | | C | | | |
| Approach Delay (s) | | 44.0 | | | 43.0 | | | 32.2 | | | 0.0 | |
| Approach LOS | | D | | | D | | | C | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 41.1 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.77 | | |
| Actuated Cycle Length (s) | 102.5 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 89.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 341 | 1825 | 1418 | 245 | 456 | 936 |
| Future Volume (vph) | 341 | 1825 | 1418 | 245 | 456 | 936 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.93 | 0.93 | 0.87 | 0.87 |
| Adj. Flow (vph) | 388 | 2074 | 1525 | 263 | 524 | 1076 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 183 | 0 | 165 |
| Lane Group Flow (vph) | 388 | 2074 | 1525 | 80 | 524 | 911 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 2% | 1% | 1% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Effective Green, g (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Actuated g/C Ratio | 0.08 | 0.49 | 0.31 | 0.31 | 0.31 | 0.31 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 151 | 1739 | 1079 | 482 | 545 | 487 |
| v/s Ratio Prot | c0.22 | 0.59 | c0.43 | | 0.29 | c0.57 |
| v/s Ratio Perm | | | | 0.05 | | |
| v/c Ratio | 2.57 | 1.19 | 1.41 | 0.17 | 0.96 | 1.87 |
| Uniform Delay, d1 | 27.0 | 15.0 | 20.5 | 15.0 | 20.2 | 20.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 725.3 | 92.7 | 191.5 | 0.7 | 29.1 | 399.2 |
| Delay (s) | 752.3 | 107.7 | 212.0 | 15.8 | 49.2 | 419.7 |
| Level of Service | F | F | F | B | D | F |
| Approach Delay (s) | | 209.3 | 183.2 | | 298.4 | |
| Approach LOS | | F | F | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 225.7 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.75 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 107.2% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 154 | 5 | 17 | 10 | 27 | 556 | 17 | 633 | 8 | 149 | 150 | 96 |
| Future Volume (vph) | 154 | 5 | 17 | 10 | 27 | 556 | 17 | 633 | 8 | 149 | 150 | 96 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1805 | 1681 | | 1805 | 1792 | 1599 | 1805 | 3568 | | 1736 | 1845 | 1615 |
| Flt Permitted | 0.73 | 1.00 | | 0.74 | 1.00 | 1.00 | 0.66 | 1.00 | | 0.17 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1395 | 1681 | | 1407 | 1792 | 1599 | 1245 | 3568 | | 310 | 1845 | 1615 |
| Peak-hour factor, PHF | 0.84 | 0.84 | 0.84 | 0.77 | 0.77 | 0.77 | 0.89 | 0.89 | 0.89 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 183 | 6 | 20 | 13 | 35 | 722 | 19 | 711 | 9 | 160 | 161 | 103 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 0 | 153 | 0 | 1 | 0 | 0 | 0 | 60 |
| Lane Group Flow (vph) | 183 | 14 | 0 | 13 | 35 | 569 | 19 | 719 | 0 | 160 | 161 | 43 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 6% | 1% | 0% | 1% | 0% | 4% | 3% | 0% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Perm | NA | | pm+pt | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 32.5 | 32.5 | | 32.5 | 32.5 | 32.5 | 20.1 | 20.1 | | 32.1 | 32.1 | 32.1 |
| Effective Green, g (s) | 32.5 | 32.5 | | 32.5 | 32.5 | 32.5 | 20.1 | 20.1 | | 32.1 | 32.1 | 32.1 |
| Actuated g/C Ratio | 0.42 | 0.42 | | 0.42 | 0.42 | 0.42 | 0.26 | 0.26 | | 0.42 | 0.42 | 0.42 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 591 | 713 | | 596 | 760 | 678 | 326 | 936 | | 269 | 773 | 676 |
| v/s Ratio Prot | | 0.01 | | | 0.02 | | | c0.20 | | c0.06 | 0.09 | |
| v/s Ratio Perm | 0.13 | | | 0.01 | | c0.36 | 0.02 | | | 0.19 | | 0.03 |
| v/c Ratio | 0.31 | 0.02 | | 0.02 | 0.05 | 0.84 | 0.06 | 0.77 | | 0.59 | 0.21 | 0.06 |
| Uniform Delay, d1 | 14.6 | 12.8 | | 12.8 | 12.9 | 19.7 | 21.2 | 26.1 | | 15.8 | 14.2 | 13.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.3 | 0.0 | | 0.0 | 0.0 | 9.0 | 0.1 | 3.8 | | 3.5 | 0.1 | 0.0 |
| Delay (s) | 14.9 | 12.8 | | 12.8 | 13.0 | 28.7 | 21.2 | 29.9 | | 19.3 | 14.3 | 13.3 |
| Level of Service | B | B | | B | B | C | C | C | | B | B | B |
| Approach Delay (s) | | 14.7 | | | 27.7 | | | 29.7 | | | 16.0 | |
| Approach LOS | | B | | | C | | | C | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 24.8 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.79 | | |
| Actuated Cycle Length (s) | 76.6 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 76.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 78.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 153 | 9 | 3 | 403 | 190 | 11 |
| Future Vol, veh/h | 153 | 9 | 3 | 403 | 190 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 70 | 70 | 73 | 73 | 40 | 40 |
| Heavy Vehicles, % | 4 | 0 | 0 | 2 | 0 | 0 |
| Mvmt Flow | 219 | 13 | 4 | 552 | 475 | 28 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 232 | 0 | 786 | 226 |
| Stage 1 | - | - | - | - | 226 | - |
| Stage 2 | - | - | - | - | 560 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1348 | - | ~ 364 | 818 |
| Stage 1 | - | - | - | - | 816 | - |
| Stage 2 | - | - | - | - | 576 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1348 | - | ~ 363 | 818 |
| Mov Cap-2 Maneuver | - | - | - | - | ~ 363 | - |
| Stage 1 | - | - | - | - | 816 | - |
| Stage 2 | - | - | - | - | 574 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 200.5 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 374 | - | - | 1348 | - |
| HCM Lane V/C Ratio | 1.344 | - | - | 0.003 | - |
| HCM Control Delay (s) | 200.5 | - | - | 7.7 | 0 |
| HCM Lane LOS | F | - | - | A | A |
| HCM 95th %tile Q(veh) | 23.9 | - | - | 0 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 8 | 154 | 392 | 3 | 1 | 14 |
| Future Vol, veh/h | 8 | 154 | 392 | 3 | 1 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 63 | 63 | 77 | 77 | 36 | 36 |
| Heavy Vehicles, % | 40 | 0 | 0 | 1 | 0 | 11 |
| Mvmt Flow | 13 | 244 | 509 | 4 | 3 | 39 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 513 | 0 | - | 0 | 781 | 511 |
| Stage 1 | - | - | - | - | 511 | - |
| Stage 2 | - | - | - | - | 270 | - |
| Critical Hdwy | 4.5 | - | - | - | 6.4 | 6.31 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.56 | - | - | - | 3.5 | 3.399 |
| Pot Cap-1 Maneuver | 884 | - | - | - | 366 | 545 |
| Stage 1 | - | - | - | - | 606 | - |
| Stage 2 | - | - | - | - | 780 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 884 | - | - | - | 361 | 545 |
| Mov Cap-2 Maneuver | - | - | - | - | 361 | - |
| Stage 1 | - | - | - | - | 597 | - |
| Stage 2 | - | - | - | - | 780 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.5 | 0 | 12.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 884 | - | - | - | 527 |
| HCM Lane V/C Ratio | 0.014 | - | - | - | 0.079 |
| HCM Control Delay (s) | 9.1 | - | - | - | 12.4 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 163 | 1 | 6 | 220 | 15 | 12 |
| Future Vol, veh/h | 163 | 1 | 6 | 220 | 15 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 81 | 81 | 71 | 71 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 11 | 0 |
| Mvmt Flow | 209 | 1 | 7 | 272 | 21 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 210 | 0 | 496 | 210 |
| Stage 1 | - | - | - | - | 210 | - |
| Stage 2 | - | - | - | - | 286 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.51 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.51 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.51 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.599 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1373 | - | 517 | 835 |
| Stage 1 | - | - | - | - | 804 | - |
| Stage 2 | - | - | - | - | 742 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1373 | - | 514 | 835 |
| Mov Cap-2 Maneuver | - | - | - | - | 514 | - |
| Stage 1 | - | - | - | - | 804 | - |
| Stage 2 | - | - | - | - | 738 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 11.2 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 620 | - | - | 1373 | - |
| HCM Lane V/C Ratio | 0.061 | - | - | 0.005 | - |
| HCM Control Delay (s) | 11.2 | - | - | 7.6 | 0 |
| HCM Lane LOS | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 12 | 15 | 1 | 0 | 7 |
| Future Vol, veh/h | 1 | 12 | 15 | 1 | 0 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 67 | 67 | 69 | 69 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 10 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 18 | 22 | 1 | 0 | 14 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 37 | 23 | 0 | 0 | 23 | 0 |
| Stage 1 | 23 | - | - | - | - | - |
| Stage 2 | 14 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 981 | 1060 | - | - | 1605 | - |
| Stage 1 | 1005 | - | - | - | - | - |
| Stage 2 | 1014 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 981 | 1060 | - | - | 1605 | - |
| Mov Cap-2 Maneuver | 981 | - | - | - | - | - |
| Stage 1 | 1005 | - | - | - | - | - |
| Stage 2 | 1014 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.5 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1053 | 1605 | - |
| HCM Lane V/C Ratio | - | - | 0.018 | - | - |
| HCM Control Delay (s) | - | - | 8.5 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 8 | 16 | 0 |
| Future Vol, veh/h | 3 | 0 | 0 | 8 | 16 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 25 | 25 | 63 | 63 | 63 | 63 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 10 | 0 |
| Mvmt Flow | 12 | 0 | 0 | 13 | 25 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 38 | 25 | 25 | 0 | - | 0 |
| Stage 1 | 25 | - | - | - | - | - |
| Stage 2 | 13 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 979 | 1057 | 1603 | - | - | - |
| Stage 1 | 1003 | - | - | - | - | - |
| Stage 2 | 1015 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 979 | 1057 | 1603 | - | - | - |
| Mov Cap-2 Maneuver | 979 | - | - | - | - | - |
| Stage 1 | 1003 | - | - | - | - | - |
| Stage 2 | 1015 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.7 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1603 | - | 979 | - | - |
| HCM Lane V/C Ratio | - | - | 0.012 | - | - |
| HCM Control Delay (s) | 0 | - | 8.7 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 201 | 0 | 0 | 6 | 6 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 201 | 0 | 0 | 6 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 39 | 39 | 92 | 92 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 515 | 0 | 0 | 9 | 9 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 529 | 529 | 14 | 529 | 533 | 515 | 18 | 0 | 0 | 515 | 0 | 0 |
| Stage 1 | 14 | 14 | - | 515 | 515 | - | - | - | - | - | - | - |
| Stage 2 | 515 | 515 | - | 14 | 18 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 460 | 455 | 1066 | 460 | 453 | 560 | 1612 | - | - | 1051 | - | - |
| Stage 1 | 1006 | 884 | - | 543 | 535 | - | - | - | - | - | - | - |
| Stage 2 | 543 | 535 | - | 1006 | 880 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 460 | 455 | 1066 | 460 | 453 | 560 | 1612 | - | - | 1051 | - | - |
| Mov Cap-2 Maneuver | 460 | 455 | - | 460 | 453 | - | - | - | - | - | - | - |
| Stage 1 | 1006 | 884 | - | 543 | 535 | - | - | - | - | - | - | - |
| Stage 2 | 543 | 535 | - | 1006 | 880 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 0 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1612 | - | - | - | - | 1051 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 0 | 0 | - | - |
| HCM Lane LOS | A | - | - | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 8 | 3 | 655 | 1 | 5 | 165 |
| Future Vol, veh/h | 8 | 3 | 655 | 1 | 5 | 165 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 78 | 78 | 76 | 76 |
| Heavy Vehicles, % | 0 | 0 | 1 | 0 | 0 | 4 |
| Mvmt Flow | 9 | 3 | 840 | 1 | 7 | 217 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1072 | 841 | 0 | 0 | 841 | 0 |
| Stage 1 | 841 | - | - | - | - | - |
| Stage 2 | 231 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 246 | 368 | - | - | 803 | - |
| Stage 1 | 426 | - | - | - | - | - |
| Stage 2 | 812 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 244 | 368 | - | - | 803 | - |
| Mov Cap-2 Maneuver | 244 | - | - | - | - | - |
| Stage 1 | 426 | - | - | - | - | - |
| Stage 2 | 804 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 19 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 269 | 803 | - |
| HCM Lane V/C Ratio | - | - | 0.046 | 0.008 | - |
| HCM Control Delay (s) | - | - | 19 | 9.5 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 12.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 54 | 166 | 490 | 17 | 15 | 158 |
| Future Vol, veh/h | 54 | 166 | 490 | 17 | 15 | 158 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 72 | 72 | 67 | 67 | 81 | 81 |
| Heavy Vehicles, % | 14 | 0 | 1 | 46 | 0 | 3 |
| Mvmt Flow | 75 | 231 | 731 | 25 | 19 | 195 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 977 | 744 | 0 | 0 | 756 | 0 |
| Stage 1 | 744 | - | - | - | - | - |
| Stage 2 | 233 | - | - | - | - | - |
| Critical Hdwy | 6.54 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.54 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.54 | - | - | - | - | - |
| Follow-up Hdwy | 3.626 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 264 | 418 | - | - | 864 | - |
| Stage 1 | 449 | - | - | - | - | - |
| Stage 2 | 778 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 257 | 418 | - | - | 864 | - |
| Mov Cap-2 Maneuver | 257 | - | - | - | - | - |
| Stage 1 | 449 | - | - | - | - | - |
| Stage 2 | 759 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 50.6 | 0 | 0.8 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 362 | 864 | - |
| HCM Lane V/C Ratio | - | - | 0.844 | 0.021 | - |
| HCM Control Delay (s) | - | - | 50.6 | 9.3 | 0 |
| HCM Lane LOS | - | - | F | A | A |
| HCM 95th %tile Q(veh) | - | - | 7.7 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 5 | 404 | 0 | 0 | 232 |
| Future Vol, veh/h | 0 | 5 | 404 | 0 | 0 | 232 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 68 | 68 | 74 | 74 |
| Heavy Vehicles, % | 0 | 0 | 3 | 0 | 0 | 7 |
| Mvmt Flow | 0 | 20 | 594 | 0 | 0 | 314 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 908 | 594 | 0 | 0 | 594 | 0 |
| Stage 1 | 594 | - | - | - | - | - |
| Stage 2 | 314 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 308 | 509 | - | - | 992 | - |
| Stage 1 | 555 | - | - | - | - | - |
| Stage 2 | 745 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 308 | 509 | - | - | 992 | - |
| Mov Cap-2 Maneuver | 308 | - | - | - | - | - |
| Stage 1 | 555 | - | - | - | - | - |
| Stage 2 | 745 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 12.4 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 509 | 992 | - |
| HCM Lane V/C Ratio | - | - | 0.039 | - | - |
| HCM Control Delay (s) | - | - | 12.4 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 205.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 30 | 23 | 3 | 314 | 21 | 23 | 1 | 326 | 114 | 3 | 560 | 14 |
| Future Vol, veh/h | 30 | 23 | 3 | 314 | 21 | 23 | 1 | 326 | 114 | 3 | 560 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 54 | 54 | 54 | 85 | 85 | 85 | 84 | 84 | 84 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 2 | 1 | 0 | 1 | 11 |
| Mvmt Flow | 56 | 43 | 6 | 369 | 25 | 27 | 1 | 388 | 136 | 3 | 636 | 16 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1134 | 1176 | 644 | 1133 | 1116 | 456 | 652 | 0 | 0 | 524 | 0 | 0 |
| Stage 1 | 650 | 650 | - | 458 | 458 | - | - | - | - | - | - | - |
| Stage 2 | 484 | 526 | - | 675 | 658 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.63 | 6.2 | 7.1 | 6.64 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.117 | 3.3 | 3.5 | 4.126 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 181 | 182 | 476 | ~ 182 | 197 | 609 | 944 | - | - | 1053 | - | - |
| Stage 1 | 461 | 448 | - | 587 | 547 | - | - | - | - | - | - | - |
| Stage 2 | 568 | 511 | - | 447 | 443 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 155 | 181 | 476 | ~ 147 | 196 | 609 | 944 | - | - | 1053 | - | - |
| Mov Cap-2 Maneuver | 155 | 181 | - | ~ 147 | 196 | - | - | - | - | - | - | - |
| Stage 1 | 460 | 446 | - | 586 | 546 | - | - | - | - | - | - | - |
| Stage 2 | 517 | 510 | - | 398 | 441 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 54.1 | $ 820.1 | 0 | 0 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 944 | - | - | 171 | 157 | 1053 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.606 | 2.683 | 0.003 | - | - |
| HCM Control Delay (s) | 8.8 | 0 | - | 54.1 | $ 820.1 | 8.4 | 0 | - |
| HCM Lane LOS | A | A | - | F | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 3.3 | 37.3 | 0 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 106.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 373 | 81 | 224 | 51 | 27 | 870 |
| Future Vol, veh/h | 373 | 81 | 224 | 51 | 27 | 870 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 76 | 76 | 83 | 83 |
| Heavy Vehicles, % | 2 | 2 | 1 | 3 | 0 | 1 |
| Mvmt Flow | 434 | 94 | 295 | 67 | 33 | 1048 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 690 | 33 | 1081 | 0 | - | 0 |
| Stage 1 | 33 | - | - | - | - | - |
| Stage 2 | 657 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | ~ 411 | 1041 | 649 | - | - | - |
| Stage 1 | 989 | - | - | - | - | - |
| Stage 2 | 516 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 224 | 1041 | 649 | - | - | - |
| Mov Cap-2 Maneuver | ~ 224 | - | - | - | - | - |
| Stage 1 | 539 | - | - | - | - | - |
| Stage 2 | 516 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 390.4 | 12.3 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 649 | - | 224 | 1041 | - | - |
| HCM Lane V/C Ratio | 0.454 | - | 1.936 | 0.09 | - | - |
| HCM Control Delay (s) | 15.1 | - | $ 473.3 | 8.8 | - | - |
| HCM Lane LOS | C | - | F | A | - | - |
| HCM 95th %tile Q(veh) | 2.4 | - | 31.4 | 0.3 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

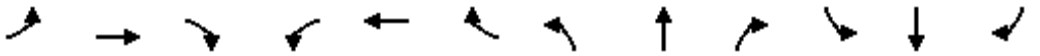
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 72 | 586 | 0 | 0 | 1392 |
| Future Vol, veh/h | 0 | 72 | 586 | 0 | 0 | 1392 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 73 | 73 | 95 | 95 | 89 | 89 |
| Heavy Vehicles, % | 0 | 13 | 0 | 1 | 0 | 1 |
| Mvmt Flow | 0 | 99 | 617 | 0 | 0 | 1564 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 617 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.395 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.4235 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 465 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | 465 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14.8 | 0 | 0 |
| HCM LOS | B | | |

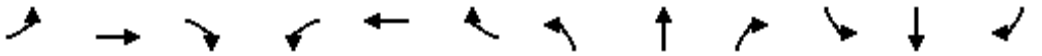
| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 465 | - |
| HCM Lane V/C Ratio | - | 0.212 | - |
| HCM Control Delay (s) | - | 14.8 | - |
| HCM Lane LOS | - | B | - |
| HCM 95th %tile Q(veh) | - | 0.8 | - |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 3 | 115 | 7 | 1502 | 704 | 145 | 9 | 6 | 404 | 7 | 2 | 2 |
| Future Volume (vph) | 3 | 115 | 7 | 1502 | 704 | 145 | 9 | 6 | 404 | 7 | 2 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 0.97 | | | 1.00 | 0.85 | | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | 1.00 | | 0.97 | |
| Satd. Flow (prot) | 1805 | 3514 | | 3467 | 3474 | | | 1784 | 2682 | | 2036 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.88 | 1.00 | | 0.87 | |
| Satd. Flow (perm) | 1805 | 3514 | | 3467 | 3474 | | | 1619 | 2682 | | 1826 | |
| Peak-hour factor, PHF | 0.84 | 0.84 | 0.84 | 0.83 | 1.00 | 0.83 | 0.88 | 0.88 | 0.88 | 0.63 | 0.63 | 0.63 |
| Adj. Flow (vph) | 4 | 137 | 8 | 1810 | 704 | 175 | 10 | 7 | 459 | 11 | 3 | 3 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 4 | 141 | 0 | 1810 | 868 | 0 | 0 | 17 | 459 | 0 | 15 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 1% | 1% | 0% | 0% | 0% | 6% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | 6.4 | 13.3 | | 50.0 | 57.9 | | | 20.0 | 20.0 | | 20.0 | |
| Effective Green, g (s) | 6.4 | 13.3 | | 50.0 | 57.9 | | | 20.0 | 20.0 | | 20.0 | |
| Actuated g/C Ratio | 0.06 | 0.13 | | 0.49 | 0.57 | | | 0.20 | 0.20 | | 0.20 | |
| Clearance Time (s) | 5.0 | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | 2.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | 114 | 461 | | 1711 | 1985 | | | 319 | 529 | | 360 | |
| v/s Ratio Prot | 0.00 | c0.04 | | c0.52 | c0.25 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.17 | | 0.01 | |
| v/c Ratio | 0.04 | 0.31 | | 1.06 | 0.44 | | | 0.05 | 0.87 | | 0.04 | |
| Uniform Delay, d1 | 44.6 | 39.8 | | 25.6 | 12.4 | | | 33.0 | 39.4 | | 32.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 0.4 | | 38.9 | 0.2 | | | 0.1 | 14.0 | | 0.0 | |
| Delay (s) | 44.6 | 40.2 | | 64.6 | 12.6 | | | 33.0 | 53.4 | | 32.9 | |
| Level of Service | D | D | | E | B | | | C | D | | C | |
| Approach Delay (s) | | 40.3 | | | 47.6 | | | 52.7 | | | 32.9 | |
| Approach LOS | | D | | | D | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 47.9 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.90 | | |
| Actuated Cycle Length (s) | 101.3 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 69.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 365 | 161 | 174 | 1214 | 0 | 0 | 0 | 0 | 625 | 0 | 1016 |
| Future Volume (vph) | 0 | 365 | 161 | 174 | 1214 | 0 | 0 | 0 | 0 | 625 | 0 | 1016 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 5981 | 1419 | 2918 | 3455 | | | | | 3467 | | 2814 |
| Peak-hour factor, PHF | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.92 | 0.92 | 0.92 | 0.75 | 0.75 | 0.75 |
| Adj. Flow (vph) | 0 | 456 | 201 | 218 | 1518 | 0 | 0 | 0 | 0 | 833 | 0 | 1355 |
| RTOR Reduction (vph) | 0 | 0 | 133 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 72 |
| Lane Group Flow (vph) | 0 | 456 | 68 | 218 | 1518 | 0 | 0 | 0 | 0 | 833 | 0 | 1283 |
| Heavy Vehicles (%) | 0% | 2% | 10% | 12% | 1% | 0% | 2% | 2% | 2% | 1% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 34.7 | 34.7 | 25.0 | 65.7 | | | | | 25.0 | | 25.0 |
| Effective Green, g (s) | | 34.7 | 34.7 | 25.0 | 65.7 | | | | | 25.0 | | 25.0 |
| Actuated g/C Ratio | | 0.34 | 0.34 | 0.24 | 0.64 | | | | | 0.24 | | 0.24 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 2020 | 479 | 710 | 2210 | | | | | 843 | | 685 |
| v/s Ratio Prot | | 0.08 | 0.05 | 0.07 | c0.44 | | | | | 0.24 | | c0.46 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.23 | 0.14 | 0.31 | 0.69 | | | | | 0.99 | | 1.87 |
| Uniform Delay, d1 | | 24.4 | 23.6 | 31.8 | 11.9 | | | | | 38.7 | | 38.9 |
| Progression Factor | | 1.00 | 1.00 | 0.89 | 1.57 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 0.1 | 0.3 | 0.0 | 0.1 | | | | | 28.0 | | 398.5 |
| Delay (s) | | 24.5 | 23.9 | 28.4 | 18.8 | | | | | 66.7 | | 437.3 |
| Level of Service | | C | C | C | B | | | | | E | | F |
| Approach Delay (s) | | 24.3 | | | 20.0 | | | 0.0 | | | 296.2 | |
| Approach LOS | | C | | | B | | | A | | | F | |

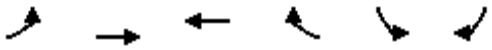
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 152.5 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.09 | | |
| Actuated Cycle Length (s) | 102.7 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 86.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 177 | 813 | 0 | 0 | 479 | 86 | 909 | 0 | 405 | 0 | 0 | 0 |
| Future Volume (vph) | 177 | 813 | 0 | 0 | 479 | 86 | 909 | 0 | 405 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.98 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3113 | 3421 | | | 4947 | | 3433 | | 2733 | | | |
| Flt Permitted | 0.39 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 1270 | 3421 | | | 4947 | | 3433 | | 2733 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.78 | 0.78 | 0.78 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 203 | 934 | 0 | 0 | 564 | 101 | 1165 | 0 | 519 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 331 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 203 | 934 | 0 | 0 | 643 | 0 | 1165 | 0 | 188 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 5% | 2% | 0% | 0% | 2% | 5% | 2% | 2% | 4% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 51.7 | 34.7 | | | 42.7 | | 25.0 | | 25.0 | | | |
| Effective Green, g (s) | 51.7 | 34.7 | | | 42.7 | | 25.0 | | 25.0 | | | |
| Actuated g/C Ratio | 0.50 | 0.34 | | | 0.42 | | 0.24 | | 0.24 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 944 | 1155 | | | 2056 | | 835 | | 665 | | | |
| v/s Ratio Prot | c0.04 | c0.27 | | | c0.13 | | c0.34 | | 0.07 | | | |
| v/s Ratio Perm | 0.07 | | | | | | | | | | | |
| v/c Ratio | 0.22 | 0.81 | | | 0.31 | | 1.40 | | 0.28 | | | |
| Uniform Delay, d1 | 13.5 | 31.0 | | | 20.1 | | 38.9 | | 31.6 | | | |
| Progression Factor | 1.09 | 1.22 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 0.1 | 3.4 | | | 0.2 | | 185.2 | | 0.5 | | | |
| Delay (s) | 14.8 | 41.0 | | | 20.3 | | 224.0 | | 32.0 | | | |
| Level of Service | B | D | | | C | | F | | C | | | |
| Approach Delay (s) | | 36.4 | | | 20.3 | | | 164.8 | | | 0.0 | |
| Approach LOS | | D | | | C | | | F | | | A | |

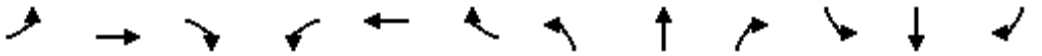
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 95.4 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.81 | | |
| Actuated Cycle Length (s) | 102.7 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 86.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 699 | 2242 | 808 | 670 | 181 | 224 |
| Future Volume (vph) | 699 | 2242 | 808 | 670 | 181 | 224 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3471 | 3343 | 1583 | 1719 | 1538 |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.96 | 0.96 | 0.76 | 0.76 |
| Adj. Flow (vph) | 813 | 2607 | 842 | 698 | 238 | 295 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 485 | 0 | 195 |
| Lane Group Flow (vph) | 813 | 2607 | 842 | 213 | 238 | 100 |
| Heavy Vehicles (%) | 1% | 4% | 8% | 2% | 5% | 5% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 8.7 | 32.7 | 18.0 | 18.0 | 14.3 | 14.3 |
| Effective Green, g (s) | 8.7 | 32.7 | 18.0 | 18.0 | 14.3 | 14.3 |
| Actuated g/C Ratio | 0.15 | 0.55 | 0.31 | 0.31 | 0.24 | 0.24 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 263 | 1923 | 1019 | 482 | 416 | 372 |
| v/s Ratio Prot | c0.45 | c0.75 | 0.25 | | c0.14 | 0.07 |
| v/s Ratio Perm | | | | 0.13 | | |
| v/c Ratio | 3.09 | 1.36 | 0.83 | 0.44 | 0.57 | 0.27 |
| Uniform Delay, d1 | 25.1 | 13.1 | 19.0 | 16.5 | 19.7 | 18.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 951.1 | 163.6 | 7.7 | 2.9 | 2.3 | 0.5 |
| Delay (s) | 976.2 | 176.7 | 26.7 | 19.4 | 21.9 | 18.7 |
| Level of Service | F | F | C | B | C | B |
| Approach Delay (s) | | 366.8 | 23.4 | | 20.1 | |
| Approach LOS | | F | C | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 236.9 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.53 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 90.2% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 77 | 48 | 34 | 16 | 15 | 132 | 9 | 159 | 71 | 815 | 515 | 151 |
| Future Volume (vph) | 77 | 48 | 34 | 16 | 15 | 132 | 9 | 159 | 71 | 815 | 515 | 151 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.95 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1805 | 1706 | | 1805 | 1681 | 1369 | 1805 | 3411 | | 1770 | 1900 | 1615 |
| Flt Permitted | 0.75 | 1.00 | | 0.69 | 1.00 | 1.00 | 0.41 | 1.00 | | 0.38 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1416 | 1706 | | 1306 | 1681 | 1369 | 774 | 3411 | | 703 | 1900 | 1615 |
| Peak-hour factor, PHF | 0.76 | 0.76 | 0.76 | 0.78 | 0.78 | 0.78 | 0.83 | 0.83 | 0.83 | 0.76 | 0.76 | 0.76 |
| Adj. Flow (vph) | 101 | 63 | 45 | 21 | 19 | 169 | 11 | 192 | 86 | 1072 | 678 | 199 |
| RTOR Reduction (vph) | 0 | 24 | 0 | 0 | 0 | 146 | 0 | 49 | 0 | 0 | 0 | 51 |
| Lane Group Flow (vph) | 101 | 84 | 0 | 21 | 19 | 23 | 11 | 229 | 0 | 1072 | 678 | 148 |
| Heavy Vehicles (%) | 0% | 4% | 5% | 0% | 13% | 18% | 0% | 0% | 3% | 2% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Perm | NA | | pm+pt | NA | Prot |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | 6 |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | |
| Actuated Green, G (s) | 13.3 | 13.3 | | 13.3 | 13.3 | 13.3 | 12.7 | 12.7 | | 72.5 | 72.5 | 72.5 |
| Effective Green, g (s) | 13.3 | 13.3 | | 13.3 | 13.3 | 13.3 | 12.7 | 12.7 | | 72.5 | 72.5 | 72.5 |
| Actuated g/C Ratio | 0.14 | 0.14 | | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 | | 0.74 | 0.74 | 0.74 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 192 | 232 | | 177 | 228 | 186 | 100 | 442 | | 1124 | 1408 | 1197 |
| v/s Ratio Prot | | 0.05 | | | 0.01 | | | 0.07 | | c0.54 | 0.36 | 0.09 |
| v/s Ratio Perm | c0.07 | | | 0.02 | | 0.02 | 0.01 | | | c0.17 | | |
| v/c Ratio | 0.53 | 0.36 | | 0.12 | 0.08 | 0.12 | 0.11 | 0.52 | | 0.95 | 0.48 | 0.12 |
| Uniform Delay, d1 | 39.3 | 38.4 | | 37.1 | 36.9 | 37.1 | 37.6 | 39.7 | | 13.3 | 5.1 | 3.6 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.6 | 1.0 | | 0.3 | 0.2 | 0.3 | 0.5 | 1.0 | | 16.8 | 0.3 | 0.0 |
| Delay (s) | 41.9 | 39.4 | | 37.4 | 37.1 | 37.4 | 38.0 | 40.7 | | 30.1 | 5.3 | 3.6 |
| Level of Service | D | D | | D | D | D | D | D | | C | A | A |
| Approach Delay (s) | | 40.6 | | | 37.4 | | | 40.6 | | | 18.8 | |
| Approach LOS | | D | | | D | | | D | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 24.4 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.92 | | |
| Actuated Cycle Length (s) | 97.8 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 79.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 14.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 570 | 364 | 70 | 84 | 79 | 26 |
| Future Vol, veh/h | 570 | 364 | 70 | 84 | 79 | 26 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 71 | 71 | 69 | 69 |
| Heavy Vehicles, % | 1 | 5 | 0 | 12 | 36 | 0 |
| Mvmt Flow | 731 | 467 | 99 | 118 | 114 | 38 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 1198 | 0 | 1281 | 965 |
| Stage 1 | - | - | - | - | 965 | - |
| Stage 2 | - | - | - | - | 316 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.76 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.76 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.76 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.824 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 590 | - | 155 | 312 |
| Stage 1 | - | - | - | - | 321 | - |
| Stage 2 | - | - | - | - | 668 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 590 | - | 127 | 312 |
| Mov Cap-2 Maneuver | - | - | - | - | 127 | - |
| Stage 1 | - | - | - | - | 321 | - |
| Stage 2 | - | - | - | - | 548 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 5.6 | 139.4 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 149 | - | - | 590 | - |
| HCM Lane V/C Ratio | 1.021 | - | - | 0.167 | - |
| HCM Control Delay (s) | 139.4 | - | - | 12.3 | 0 |
| HCM Lane LOS | F | - | - | B | A |
| HCM 95th %tile Q(veh) | 7.8 | - | - | 0.6 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 19 | 579 | 131 | 2 | 0 | 7 |
| Future Vol, veh/h | 19 | 579 | 131 | 2 | 0 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 71 | 71 | 50 | 50 |
| Heavy Vehicles, % | 0 | 1 | 8 | 0 | 0 | 25 |
| Mvmt Flow | 22 | 681 | 185 | 3 | 0 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 188 | 0 | - | 0 | 912 | 187 |
| Stage 1 | - | - | - | - | 187 | - |
| Stage 2 | - | - | - | - | 725 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.45 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.525 |
| Pot Cap-1 Maneuver | 1398 | - | - | - | 307 | 799 |
| Stage 1 | - | - | - | - | 850 | - |
| Stage 2 | - | - | - | - | 483 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1398 | - | - | - | 302 | 799 |
| Mov Cap-2 Maneuver | - | - | - | - | 302 | - |
| Stage 1 | - | - | - | - | 836 | - |
| Stage 2 | - | - | - | - | 483 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 9.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1398 | - | - | - | 799 |
| HCM Lane V/C Ratio | 0.016 | - | - | - | 0.018 |
| HCM Control Delay (s) | 7.6 | - | - | - | 9.6 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 348 | 18 | 4 | 164 | 0 | 0 |
| Future Vol, veh/h | 348 | 18 | 4 | 164 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 95 | 95 | 82 | 82 | 25 | 40 |
| Heavy Vehicles, % | 1 | 0 | 0 | 5 | 20 | 0 |
| Mvmt Flow | 366 | 19 | 5 | 200 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 385 | 0 | 586 | 376 |
| Stage 1 | - | - | - | - | 376 | - |
| Stage 2 | - | - | - | - | 210 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.6 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.6 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.68 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1185 | - | 444 | 675 |
| Stage 1 | - | - | - | - | 656 | - |
| Stage 2 | - | - | - | - | 784 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1185 | - | 442 | 675 |
| Mov Cap-2 Maneuver | - | - | - | - | 442 | - |
| Stage 1 | - | - | - | - | 656 | - |
| Stage 2 | - | - | - | - | 780 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 1185 | - |
| HCM Lane V/C Ratio | - | - | - | 0.004 | - |
| HCM Control Delay (s) | 0 | - | - | 8.1 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 22 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 22 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 53 | 53 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 0 | 13 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 44 | 0 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 88 | 0 | 0 | 0 | 0 | 0 |
| Stage 1 | 0 | - | - | - | - | - |
| Stage 2 | 88 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 918 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 940 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 918 | - | - | - | - | - |
| Mov Cap-2 Maneuver | 918 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 940 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | 0 | - | - |
| HCM Lane LOS | - | - | A | - | - |
| HCM 95th %tile Q(veh) | - | - | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 0 | 0 | 0 | 0 | 9 |
| Future Vol, veh/h | 7 | 0 | 0 | 0 | 0 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 50 | 50 | 42 | 42 | 69 | 69 |
| Heavy Vehicles, % | 75 | 0 | 0 | 0 | 6 | 80 |
| Mvmt Flow | 14 | 0 | 0 | 0 | 0 | 13 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 7 | 7 | 13 | 0 | - | 0 |
| Stage 1 | 7 | - | - | - | - | - |
| Stage 2 | 0 | - | - | - | - | - |
| Critical Hdwy | 7.15 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 6.15 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.15 | - | - | - | - | - |
| Follow-up Hdwy | 4.175 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 854 | 1081 | 1619 | - | - | - |
| Stage 1 | 855 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 854 | 1081 | 1619 | - | - | - |
| Mov Cap-2 Maneuver | 854 | - | - | - | - | - |
| Stage 1 | 855 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.3 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1619 | - | 854 | - | - |
| HCM Lane V/C Ratio | - | - | 0.016 | - | - |
| HCM Control Delay (s) | 0 | - | 9.3 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 68 | 6 | 37 | 0 | 138 | 53 | 243 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 68 | 6 | 37 | 0 | 138 | 53 | 243 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 88 | 88 | 92 | 92 | 69 | 69 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 18 | 2 | 2 | 15 | 1 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 74 | 7 | 42 | 0 | 150 | 77 | 352 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 646 | 609 | 253 | 609 | 785 | 42 | 429 | 0 | 0 | 42 | 0 | 0 |
| Stage 1 | 553 | 553 | - | 56 | 56 | - | - | - | - | - | - | - |
| Stage 2 | 93 | 56 | - | 553 | 729 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 385 | 410 | 786 | 407 | 325 | 1029 | 1141 | - | - | 1567 | - | - |
| Stage 1 | 517 | 514 | - | 956 | 848 | - | - | - | - | - | - | - |
| Stage 2 | 914 | 848 | - | 517 | 428 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 320 | 354 | 786 | 364 | 280 | 1029 | 1141 | - | - | 1567 | - | - |
| Mov Cap-2 Maneuver | 320 | 354 | - | 364 | 280 | - | - | - | - | - | - | - |
| Stage 1 | 514 | 446 | - | 950 | 843 | - | - | - | - | - | - | - |
| Stage 2 | 843 | 843 | - | 449 | 372 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 8.8 | 1.1 | 2 |
| HCM LOS | A | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1141 | - | - | - | 1029 | 1567 | - | - |
| HCM Lane V/C Ratio | 0.006 | - | - | - | 0.072 | 0.096 | - | - |
| HCM Control Delay (s) | 8.2 | 0 | - | 0 | 8.8 | 7.5 | 0 | - |
| HCM Lane LOS | A | A | - | A | A | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.2 | 0.3 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 2 | 223 | 15 | 15 | 504 |
| Future Vol, veh/h | 7 | 2 | 223 | 15 | 15 | 504 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 63 | 63 | 81 | 81 | 84 | 84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 |
| Mvmt Flow | 11 | 3 | 275 | 19 | 18 | 600 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 921 | 285 | 0 | 0 | 294 | 0 |
| Stage 1 | 285 | - | - | - | - | - |
| Stage 2 | 636 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 303 | 759 | - | - | 1279 | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 531 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 297 | 759 | - | - | 1279 | - |
| Mov Cap-2 Maneuver | 297 | - | - | - | - | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 520 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16 | 0 | 0.2 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 343 | 1279 | - |
| HCM Lane V/C Ratio | - | - | 0.042 | 0.014 | - |
| HCM Control Delay (s) | - | - | 16 | 7.9 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 16 | 21 | 217 | 15 | 23 | 488 |
| Future Vol, veh/h | 16 | 21 | 217 | 15 | 23 | 488 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 86 | 86 | 83 | 83 |
| Heavy Vehicles, % | 44 | 0 | 1 | 63 | 0 | 1 |
| Mvmt Flow | 18 | 24 | 252 | 17 | 28 | 588 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 905 | 261 | 0 | 0 | 269 | 0 |
| Stage 1 | 261 | - | - | - | - | - |
| Stage 2 | 644 | - | - | - | - | - |
| Critical Hdwy | 6.84 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.84 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - | - | - |
| Follow-up Hdwy | 3.896 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 260 | 783 | - | - | 1306 | - |
| Stage 1 | 695 | - | - | - | - | - |
| Stage 2 | 451 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 252 | 783 | - | - | 1306 | - |
| Mov Cap-2 Maneuver | 252 | - | - | - | - | - |
| Stage 1 | 695 | - | - | - | - | - |
| Stage 2 | 437 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14.8 | 0 | 0.4 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 410 | 1306 | - |
| HCM Lane V/C Ratio | - | - | 0.103 | 0.021 | - |
| HCM Control Delay (s) | - | - | 14.8 | 7.8 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.3 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 6 | 253 | 2 | 9 | 392 |
| Future Vol, veh/h | 0 | 6 | 253 | 2 | 9 | 392 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 89 | 89 | 81 | 81 |
| Heavy Vehicles, % | 0 | 0 | 5 | 100 | 0 | 2 |
| Mvmt Flow | 0 | 8 | 284 | 2 | 11 | 484 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 791 | 285 | 0 | 0 | 286 | 0 |
| Stage 1 | 285 | - | - | - | - | - |
| Stage 2 | 506 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 361 | 759 | - | - | 1288 | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 610 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 357 | 759 | - | - | 1288 | - |
| Mov Cap-2 Maneuver | 357 | - | - | - | - | - |
| Stage 1 | 768 | - | - | - | - | - |
| Stage 2 | 603 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.8 | 0 | 0.2 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 759 | 1288 | - |
| HCM Lane V/C Ratio | - | - | 0.011 | 0.009 | - |
| HCM Control Delay (s) | - | - | 9.8 | 7.8 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 23.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 9 | 10 | 2 | 95 | 6 | 7 | 0 | 503 | 432 | 28 | 324 | 32 |
| Future Vol, veh/h | 9 | 10 | 2 | 95 | 6 | 7 | 0 | 503 | 432 | 28 | 324 | 32 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 65 | 65 | 65 | 90 | 90 | 90 | 87 | 87 | 87 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 3 | 0 | 3 | 0 |
| Mvmt Flow | 12 | 13 | 3 | 146 | 9 | 11 | 0 | 559 | 480 | 32 | 372 | 37 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1264 | 1494 | 391 | 1262 | 1272 | 799 | 409 | 0 | 0 | 1039 | 0 | 0 |
| Stage 1 | 455 | 455 | - | 799 | 799 | - | - | - | - | - | - | - |
| Stage 2 | 809 | 1039 | - | 463 | 473 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.3 | 6.5 | 6.2 | 7.14 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.3 | 5.5 | - | 6.14 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 4 | 3.3 | 3.536 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 134 | 124 | 662 | ~ 145 | 169 | 389 | 1161 | - | - | 677 | - | - |
| Stage 1 | 552 | 572 | - | 376 | 401 | - | - | - | - | - | - | - |
| Stage 2 | 349 | 310 | - | 575 | 562 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 119 | 116 | 662 | ~ 126 | 159 | 389 | 1161 | - | - | 677 | - | - |
| Mov Cap-2 Maneuver | 119 | 116 | - | ~ 126 | 159 | - | - | - | - | - | - | - |
| Stage 1 | 552 | 537 | - | 376 | 401 | - | - | - | - | - | - | - |
| Stage 2 | 332 | 310 | - | 524 | 528 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 41.2 | 223.7 | 0 | 0.8 |
| HCM LOS | E | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1161 | - | - | 127 | 133 | 677 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.22 | 1.249 | 0.048 | - | - |
| HCM Control Delay (s) | 0 | - | - | 41.2 | 223.7 | 10.6 | 0 | - |
| HCM Lane LOS | A | - | - | E | F | B | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.8 | 10.2 | 0.1 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 161.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 956 | 433 | 73 | 16 | 61 | 261 |
| Future Vol, veh/h | 956 | 433 | 73 | 16 | 61 | 261 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 70 | 70 | 90 | 90 |
| Heavy Vehicles, % | 1 | 1 | 3 | 11 | 0 | 4 |
| Mvmt Flow | 1028 | 466 | 104 | 23 | 68 | 290 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 299 | 68 | 358 | 0 | - | 0 |
| Stage 1 | 68 | - | - | - | - | - |
| Stage 2 | 231 | - | - | - | - | - |
| Critical Hdwy | 6.41 | 6.21 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.41 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.41 | - | - | - | - | - |
| Follow-up Hdwy | 3.509 | 3.309 | 2.227 | - | - | - |
| Pot Cap-1 Maneuver | ~ 694 | 998 | 1195 | - | - | - |
| Stage 1 | ~ 957 | - | - | - | - | - |
| Stage 2 | ~ 810 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 634 | 998 | 1195 | - | - | - |
| Mov Cap-2 Maneuver | ~ 634 | - | - | - | - | - |
| Stage 1 | ~ 874 | - | - | - | - | - |
| Stage 2 | ~ 810 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 213.2 | 6.8 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1195 | - | 634 | 998 | - | - |
| HCM Lane V/C Ratio | 0.087 | - | 1.621 | 0.467 | - | - |
| HCM Control Delay (s) | 8.3 | - | -$ 304.4 | 11.7 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 56.1 | 2.5 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 174.6 |

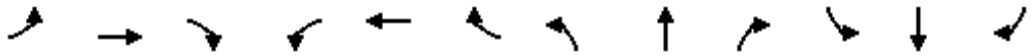
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 246 | 1369 | 0 | 0 | 405 |
| Future Vol, veh/h | 0 | 246 | 1369 | 0 | 0 | 405 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 70 | 70 | 80 | 80 |
| Heavy Vehicles, % | 2 | 3 | 2 | 2 | 2 | 4 |
| Mvmt Flow | 0 | 324 | 1956 | 0 | 0 | 506 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 1956 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.245 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.3285 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | ~ 79 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | ~ 79 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 1502.2 | 0 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 79 | - |
| HCM Lane V/C Ratio | - | 4.097 | - |
| HCM Control Delay (s) | - | $ 1502.2 | - |
| HCM Lane LOS | - | F | - |
| HCM 95th %tile Q(veh) | - | 34.1 | - |

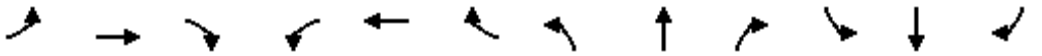
| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 519 | 3 | 464 | 201 | 27 | 12 | 3 | 1468 | 63 | 3 | 3 |
| Future Volume (vph) | 0 | 519 | 3 | 464 | 201 | 27 | 12 | 3 | 1468 | 63 | 3 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Total Lost time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Lane Util. Factor | | 0.95 | | 0.97 | 0.95 | | | 1.00 | 0.88 | | 1.00 | |
| Frt | | 1.00 | | 1.00 | 0.98 | | | 1.00 | 0.85 | | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | 0.96 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 3572 | | 3433 | 3546 | | | 1765 | 2814 | | 2048 | |
| Flt Permitted | | 1.00 | | 0.95 | 1.00 | | | 0.82 | 1.00 | | 0.73 | |
| Satd. Flow (perm) | | 3572 | | 3433 | 3546 | | | 1501 | 2814 | | 1566 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.96 | 0.96 | 0.96 | 0.91 | 0.91 | 0.91 | 0.68 | 0.68 | 0.68 |
| Adj. Flow (vph) | 0 | 590 | 3 | 483 | 209 | 28 | 13 | 3 | 1613 | 93 | 4 | 4 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 593 | 0 | 483 | 232 | 0 | 0 | 16 | 1613 | 0 | 100 | 0 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | Prot | NA | | Prot | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | 2 | | 1 | 5 | | | 8 | | | 4 | |
| Permitted Phases | | | | | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | | 17.5 | | 16.3 | 39.8 | | | 20.2 | 20.2 | | 20.2 | |
| Effective Green, g (s) | | 17.5 | | 16.3 | 39.8 | | | 20.2 | 20.2 | | 20.2 | |
| Actuated g/C Ratio | | 0.24 | | 0.23 | 0.55 | | | 0.28 | 0.28 | | 0.28 | |
| Clearance Time (s) | | 6.0 | | 6.0 | 6.0 | | | 6.0 | 6.0 | | 6.0 | |
| Vehicle Extension (s) | | 3.0 | | 3.0 | 3.0 | | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | | 868 | | 777 | 1960 | | | 421 | 789 | | 439 | |
| v/s Ratio Prot | | c0.17 | | c0.14 | 0.07 | | | | | | | |
| v/s Ratio Perm | | | | | | | | 0.01 | c0.57 | | 0.06 | |
| v/c Ratio | | 0.68 | | 0.62 | 0.12 | | | 0.04 | 2.04 | | 0.23 | |
| Uniform Delay, d1 | | 24.7 | | 25.1 | 7.7 | | | 18.8 | 25.9 | | 19.9 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 2.2 | | 1.6 | 0.0 | | | 0.0 | 474.4 | | 0.3 | |
| Delay (s) | | 27.0 | | 26.6 | 7.7 | | | 18.9 | 500.3 | | 20.2 | |
| Level of Service | | C | | C | A | | | B | F | | C | |
| Approach Delay (s) | | 27.0 | | | 20.4 | | | 495.6 | | | 20.2 | |
| Approach LOS | | C | | | C | | | F | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 276.0 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.17 | | |
| Actuated Cycle Length (s) | 72.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 85.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

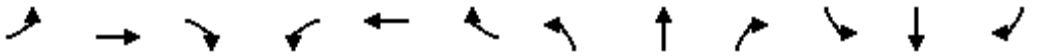
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 1350 | 700 | 756 | 526 | 0 | 0 | 0 | 0 | 429 | 0 | 171 |
| Future Volume (vph) | 0 | 1350 | 700 | 756 | 526 | 0 | 0 | 0 | 0 | 429 | 0 | 171 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 10 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 6.0 | 6.0 | 6.0 | 6.0 | | | | | 6.0 | | 6.0 |
| Lane Util. Factor | | 0.86 | 1.00 | 0.97 | 0.95 | | | | | 0.97 | | 0.88 |
| Frt | | 1.00 | 0.85 | 1.00 | 1.00 | | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Flt Permitted | | 1.00 | 1.00 | 0.95 | 1.00 | | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 6040 | 1546 | 3236 | 3455 | | | | | 3502 | | 2814 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 0 | 1588 | 824 | 804 | 560 | 0 | 0 | 0 | 0 | 477 | 0 | 190 |
| RTOR Reduction (vph) | 0 | 0 | 363 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 144 |
| Lane Group Flow (vph) | 0 | 1588 | 461 | 804 | 560 | 0 | 0 | 0 | 0 | 477 | 0 | 46 |
| Heavy Vehicles (%) | 0% | 1% | 1% | 1% | 1% | 0% | 0% | 0% | 0% | 0% | 0% | 1% |
| Turn Type | | NA | Prot | Prot | NA | | | | | Prot | | Prot |
| Protected Phases | | 6 | 6 | 5 | 2 5 | | | | | 3 | | 3 |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | 35.0 | 35.0 | 25.0 | 66.0 | | | | | 24.7 | | 24.7 |
| Effective Green, g (s) | | 35.0 | 35.0 | 25.0 | 66.0 | | | | | 24.7 | | 24.7 |
| Actuated g/C Ratio | | 0.34 | 0.34 | 0.24 | 0.64 | | | | | 0.24 | | 0.24 |
| Clearance Time (s) | | 6.0 | 6.0 | 6.0 | | | | | | 6.0 | | 6.0 |
| Vehicle Extension (s) | | 5.0 | 5.0 | 4.0 | | | | | | 5.0 | | 5.0 |
| Lane Grp Cap (vph) | | 2058 | 526 | 787 | 2220 | | | | | 842 | | 676 |
| v/s Ratio Prot | | 0.26 | c0.30 | c0.25 | 0.16 | | | | | c0.14 | | 0.02 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | 0.77 | 0.88 | 1.02 | 0.25 | | | | | 0.57 | | 0.07 |
| Uniform Delay, d1 | | 30.3 | 31.8 | 38.9 | 7.8 | | | | | 34.3 | | 30.1 |
| Progression Factor | | 1.00 | 1.00 | 1.33 | 1.25 | | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 2.2 | 16.2 | 29.2 | 0.1 | | | | | 1.4 | | 0.1 |
| Delay (s) | | 32.4 | 48.0 | 81.1 | 9.9 | | | | | 35.7 | | 30.2 |
| Level of Service | | C | D | F | A | | | | | D | | C |
| Approach Delay (s) | | 37.8 | | | 51.8 | | | 0.0 | | | 34.2 | |
| Approach LOS | | D | | | D | | | A | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 41.5 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.83 | | |
| Actuated Cycle Length (s) | 102.7 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 92.1% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

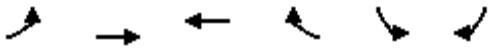
c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 826 | 953 | 0 | 0 | 1029 | 450 | 253 | 0 | 691 | 0 | 0 | 0 |
| Future Volume (vph) | 826 | 953 | 0 | 0 | 1029 | 450 | 253 | 0 | 691 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Lane Util. Factor | 0.97 | 0.95 | | | 0.91 | | 0.97 | | 0.88 | | | |
| Frt | 1.00 | 1.00 | | | 0.95 | | 1.00 | | 0.85 | | | |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | 3236 | 3455 | | | 4916 | | 3433 | | 2814 | | | |
| Flt Permitted | 0.11 | 1.00 | | | 1.00 | | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | 389 | 3455 | | | 4916 | | 3433 | | 2814 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.92 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 949 | 1095 | 0 | 0 | 1143 | 500 | 269 | 0 | 735 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 76 | 0 | 0 | 0 | 558 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 949 | 1095 | 0 | 0 | 1567 | 0 | 269 | 0 | 177 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 1% | 1% | 0% | 0% | 1% | 0% | 2% | 0% | 1% | 0% | 0% | 0% |
| Turn Type | pm+pt | NA | | | NA | | Prot | | Prot | | | |
| Protected Phases | 1 | 6 | | | 2 | | 3 | | 3 | | | |
| Permitted Phases | 6 | | | | | | | | | | | |
| Actuated Green, G (s) | 60.0 | 35.0 | | | 35.0 | | 24.7 | | 24.7 | | | |
| Effective Green, g (s) | 60.0 | 35.0 | | | 35.0 | | 24.7 | | 24.7 | | | |
| Actuated g/C Ratio | 0.58 | 0.34 | | | 0.34 | | 0.24 | | 0.24 | | | |
| Clearance Time (s) | 6.0 | 6.0 | | | 6.0 | | 6.0 | | 6.0 | | | |
| Vehicle Extension (s) | 4.0 | 5.0 | | | 5.0 | | 5.0 | | 5.0 | | | |
| Lane Grp Cap (vph) | 920 | 1177 | | | 1675 | | 825 | | 676 | | | |
| v/s Ratio Prot | c0.25 | 0.32 | | | 0.32 | | c0.08 | | 0.06 | | | |
| v/s Ratio Perm | c0.35 | | | | | | | | | | | |
| v/c Ratio | 1.03 | 0.93 | | | 0.94 | | 0.33 | | 0.26 | | | |
| Uniform Delay, d1 | 30.4 | 32.7 | | | 32.8 | | 32.1 | | 31.6 | | | |
| Progression Factor | 1.63 | 0.57 | | | 1.00 | | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | 32.9 | 9.8 | | | 10.6 | | 0.5 | | 0.4 | | | |
| Delay (s) | 82.5 | 28.5 | | | 43.3 | | 32.6 | | 32.0 | | | |
| Level of Service | F | C | | | D | | C | | C | | | |
| Approach Delay (s) | | 53.6 | | | 43.3 | | | 32.2 | | | 0.0 | |
| Approach LOS | | D | | | D | | | C | | | A | |

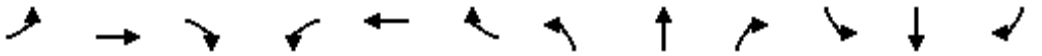
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 45.4 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.83 | | |
| Actuated Cycle Length (s) | 102.7 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 92.1% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 342 | 1825 | 1418 | 248 | 463 | 972 |
| Future Volume (vph) | 342 | 1825 | 1418 | 248 | 463 | 972 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1787 | 3539 | 3539 | 1583 | 1787 | 1599 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.93 | 0.93 | 0.87 | 0.87 |
| Adj. Flow (vph) | 389 | 2074 | 1525 | 267 | 532 | 1117 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 186 | 0 | 165 |
| Lane Group Flow (vph) | 389 | 2074 | 1525 | 81 | 532 | 952 |
| Heavy Vehicles (%) | 1% | 2% | 2% | 2% | 1% | 1% |
| Turn Type | Prot | NA | NA | Perm | Prot | Prot |
| Protected Phases | 1 | 6 | 2 | | 3 | 3 |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Effective Green, g (s) | 5.0 | 29.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Actuated g/C Ratio | 0.08 | 0.49 | 0.31 | 0.31 | 0.31 | 0.31 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 151 | 1739 | 1079 | 482 | 545 | 487 |
| v/s Ratio Prot | c0.22 | 0.59 | c0.43 | | 0.30 | c0.60 |
| v/s Ratio Perm | | | | 0.05 | | |
| v/c Ratio | 2.58 | 1.19 | 1.41 | 0.17 | 0.98 | 1.95 |
| Uniform Delay, d1 | 27.0 | 15.0 | 20.5 | 15.0 | 20.3 | 20.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 728.2 | 92.7 | 191.5 | 0.8 | 32.3 | 436.8 |
| Delay (s) | 755.2 | 107.7 | 212.0 | 15.8 | 52.6 | 457.3 |
| Level of Service | F | F | F | B | D | F |
| Approach Delay (s) | | 210.0 | 182.8 | | 326.7 | |
| Approach LOS | | F | F | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 234.3 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.79 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 109.4% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 154 | 5 | 17 | 10 | 27 | 657 | 17 | 633 | 8 | 158 | 150 | 96 |
| Future Volume (vph) | 154 | 5 | 17 | 10 | 27 | 657 | 17 | 633 | 8 | 158 | 150 | 96 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1805 | 1681 | | 1805 | 1792 | 1599 | 1805 | 3568 | | 1736 | 1845 | 1615 |
| Flt Permitted | 0.73 | 1.00 | | 0.74 | 1.00 | 1.00 | 0.66 | 1.00 | | 0.16 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1395 | 1681 | | 1407 | 1792 | 1599 | 1245 | 3568 | | 289 | 1845 | 1615 |
| Peak-hour factor, PHF | 0.84 | 0.84 | 0.84 | 0.77 | 0.77 | 0.77 | 0.89 | 0.89 | 0.89 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 183 | 6 | 20 | 13 | 35 | 853 | 19 | 711 | 9 | 170 | 161 | 103 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 156 | 0 | 1 | 0 | 0 | 0 | 63 |
| Lane Group Flow (vph) | 183 | 15 | 0 | 13 | 35 | 697 | 19 | 719 | 0 | 170 | 161 | 40 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 6% | 1% | 0% | 1% | 0% | 4% | 3% | 0% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Perm | NA | | pm+pt | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 39.5 | 39.5 | | 39.5 | 39.5 | 39.5 | 20.8 | 20.8 | | 32.9 | 32.9 | 32.9 |
| Effective Green, g (s) | 39.5 | 39.5 | | 39.5 | 39.5 | 39.5 | 20.8 | 20.8 | | 32.9 | 32.9 | 32.9 |
| Actuated g/C Ratio | 0.47 | 0.47 | | 0.47 | 0.47 | 0.47 | 0.25 | 0.25 | | 0.39 | 0.39 | 0.39 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 4.5 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 652 | 786 | | 658 | 838 | 748 | 306 | 879 | | 242 | 719 | 629 |
| v/s Ratio Prot | | 0.01 | | | 0.02 | | | c0.20 | | c0.06 | 0.09 | |
| v/s Ratio Perm | 0.13 | | | 0.01 | | c0.44 | 0.02 | | | 0.21 | | 0.02 |
| v/c Ratio | 0.28 | 0.02 | | 0.02 | 0.04 | 0.93 | 0.06 | 0.82 | | 0.70 | 0.22 | 0.06 |
| Uniform Delay, d1 | 13.7 | 12.1 | | 12.1 | 12.2 | 21.2 | 24.3 | 30.0 | | 19.3 | 17.2 | 16.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.2 | 0.0 | | 0.0 | 0.0 | 18.3 | 0.1 | 6.0 | | 8.9 | 0.2 | 0.0 |
| Delay (s) | 14.0 | 12.1 | | 12.1 | 12.2 | 39.5 | 24.4 | 36.0 | | 28.1 | 17.4 | 16.2 |
| Level of Service | B | B | | B | B | D | C | D | | C | B | B |
| Approach Delay (s) | | 13.7 | | | 38.0 | | | 35.7 | | | 21.3 | |
| Approach LOS | | B | | | D | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 31.9 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.87 | | |
| Actuated Cycle Length (s) | 84.4 | Sum of lost time (s) | 16.5 |
| Intersection Capacity Utilization | 82.6% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 335.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 153 | 18 | 13 | 400 | 294 | 66 |
| Future Vol, veh/h | 153 | 18 | 13 | 400 | 294 | 66 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 70 | 70 | 73 | 73 | 40 | 40 |
| Heavy Vehicles, % | 4 | 0 | 0 | 2 | 0 | 0 |
| Mvmt Flow | 219 | 26 | 18 | 548 | 735 | 165 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 245 | 0 | 816 | 232 |
| Stage 1 | - | - | - | - | 232 | - |
| Stage 2 | - | - | - | - | 584 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1333 | - | ~ 349 | 812 |
| Stage 1 | - | - | - | - | 811 | - |
| Stage 2 | - | - | - | - | ~ 561 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1333 | - | ~ 342 | 812 |
| Mov Cap-2 Maneuver | - | - | - | - | ~ 342 | - |
| Stage 1 | - | - | - | - | 811 | - |
| Stage 2 | - | - | - | - | ~ 550 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | $ 637.8 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 383 | - | - | 1333 | - |
| HCM Lane V/C Ratio | 2.35 | - | - | 0.013 | - |
| HCM Control Delay (s) | $ 637.8 | - | - | 7.7 | 0 |
| HCM Lane LOS | F | - | - | A | A |
| HCM 95th %tile Q(veh) | 69.5 | - | - | 0 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 8 | 210 | 400 | 3 | 1 | 14 |
| Future Vol, veh/h | 8 | 210 | 400 | 3 | 1 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 63 | 63 | 77 | 77 | 36 | 36 |
| Heavy Vehicles, % | 40 | 0 | 0 | 1 | 0 | 11 |
| Mvmt Flow | 13 | 333 | 519 | 4 | 3 | 39 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 523 | 0 | - | 0 | 880 | 521 |
| Stage 1 | - | - | - | - | 521 | - |
| Stage 2 | - | - | - | - | 359 | - |
| Critical Hdwy | 4.5 | - | - | - | 6.4 | 6.31 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.56 | - | - | - | 3.5 | 3.399 |
| Pot Cap-1 Maneuver | 876 | - | - | - | 320 | 538 |
| Stage 1 | - | - | - | - | 600 | - |
| Stage 2 | - | - | - | - | 711 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 876 | - | - | - | 315 | 538 |
| Mov Cap-2 Maneuver | - | - | - | - | 315 | - |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 711 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 12.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 876 | - | - | - | 514 |
| HCM Lane V/C Ratio | 0.014 | - | - | - | 0.081 |
| HCM Control Delay (s) | 9.2 | - | - | - | 12.6 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 218 | 1 | 0 | 230 | 12 | 0 |
| Future Vol, veh/h | 218 | 1 | 0 | 230 | 12 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 78 | 78 | 81 | 81 | 71 | 71 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 11 | 0 |
| Mvmt Flow | 279 | 1 | 0 | 284 | 17 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 280 | 0 | 564 | 280 |
| Stage 1 | - | - | - | - | 280 | - |
| Stage 2 | - | - | - | - | 284 | - |
| Critical Hdwy | - | - | 4.1 | - | 6.51 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.51 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.51 | - |
| Follow-up Hdwy | - | - | 2.2 | - | 3.599 | 3.3 |
| Pot Cap-1 Maneuver | - | - | 1294 | - | 472 | 764 |
| Stage 1 | - | - | - | - | 747 | - |
| Stage 2 | - | - | - | - | 744 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1294 | - | 472 | 764 |
| Mov Cap-2 Maneuver | - | - | - | - | 472 | - |
| Stage 1 | - | - | - | - | 747 | - |
| Stage 2 | - | - | - | - | 744 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.9 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 472 | - | - | 1294 | - |
| HCM Lane V/C Ratio | 0.036 | - | - | - | - |
| HCM Control Delay (s) | 12.9 | - | - | 0 | - |
| HCM Lane LOS | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 12 | 0 | 0 | 1 | 0 |
| Future Vol, veh/h | 1 | 12 | 0 | 0 | 1 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 67 | 67 | 69 | 69 | 50 | 50 |
| Heavy Vehicles, % | 0 | 0 | 10 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 18 | 0 | 0 | 2 | 0 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 4 | 0 | 0 | 0 | 0 | 0 |
| Stage 1 | 0 | - | - | - | - | - |
| Stage 2 | 4 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 1023 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 1024 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 1023 | - | - | - | - | - |
| Mov Cap-2 Maneuver | 1023 | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | 1024 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | | 0 | |
| HCM LOS | - | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | - | - | - | - | - |
| HCM Lane LOS | - | - | - | - | - |
| HCM 95th %tile Q(veh) | - | - | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 1 | 0 | 0 |
| Future Vol, veh/h | 3 | 0 | 0 | 1 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 25 | 25 | 63 | 63 | 63 | 63 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 10 | 0 |
| Mvmt Flow | 12 | 0 | 0 | 2 | 0 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 4 | 2 | 2 | 0 | - | 0 |
| Stage 1 | 2 | - | - | - | - | - |
| Stage 2 | 2 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 1023 | 1088 | 1634 | - | - | - |
| Stage 1 | 1026 | - | - | - | - | - |
| Stage 2 | 1026 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 1023 | 1088 | 1634 | - | - | - |
| Mov Cap-2 Maneuver | 1023 | - | - | - | - | - |
| Stage 1 | 1026 | - | - | - | - | - |
| Stage 2 | 1026 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.6 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1634 | - | 1023 | - | - |
| HCM Lane V/C Ratio | - | - | 0.012 | - | - |
| HCM Control Delay (s) | 0 | - | 8.6 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 144 | 0 | 216 | 0 | 13 | 12 | 6 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 144 | 0 | 216 | 0 | 13 | 12 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 39 | 39 | 92 | 92 | 67 | 67 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 157 | 0 | 554 | 0 | 14 | 18 | 9 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 684 | 605 | 23 | 605 | 609 | 554 | 27 | 0 | 0 | 554 | 0 | 0 |
| Stage 1 | 51 | 51 | - | 554 | 554 | - | - | - | - | - | - | - |
| Stage 2 | 633 | 554 | - | 51 | 55 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.12 | 5.52 | - | 6.12 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.2 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 363 | 412 | 1054 | 410 | 410 | 532 | 1600 | - | - | 1016 | - | - |
| Stage 1 | 962 | 852 | - | 517 | 514 | - | - | - | - | - | - | - |
| Stage 2 | 468 | 514 | - | 962 | 849 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 253 | 406 | 1054 | 405 | 404 | 532 | 1600 | - | - | 1016 | - | - |
| Mov Cap-2 Maneuver | 253 | 406 | - | 405 | 404 | - | - | - | - | - | - | - |
| Stage 1 | 962 | 840 | - | 517 | 514 | - | - | - | - | - | - | - |
| Stage 2 | 330 | 514 | - | 949 | 837 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 14.6 | 0 | 3 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1600 | - | - | - | 532 | 1016 | - | - |
| HCM Lane V/C Ratio | - | - | - | - | 0.294 | 0.014 | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | 14.6 | 8.6 | 0 | - |
| HCM Lane LOS | A | - | - | A | B | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.2 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 8 | 3 | 655 | 1 | 5 | 165 |
| Future Vol, veh/h | 8 | 3 | 655 | 1 | 5 | 165 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 78 | 78 | 76 | 76 |
| Heavy Vehicles, % | 0 | 0 | 1 | 0 | 0 | 4 |
| Mvmt Flow | 9 | 3 | 840 | 1 | 7 | 217 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1072 | 841 | 0 | 0 | 841 | 0 |
| Stage 1 | 841 | - | - | - | - | - |
| Stage 2 | 231 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 246 | 368 | - | - | 803 | - |
| Stage 1 | 426 | - | - | - | - | - |
| Stage 2 | 812 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 244 | 368 | - | - | 803 | - |
| Mov Cap-2 Maneuver | 244 | - | - | - | - | - |
| Stage 1 | 426 | - | - | - | - | - |
| Stage 2 | 804 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 19 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 269 | 803 | - |
| HCM Lane V/C Ratio | - | - | 0.046 | 0.008 | - |
| HCM Control Delay (s) | - | - | 19 | 9.5 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 12.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 54 | 166 | 490 | 17 | 15 | 158 |
| Future Vol, veh/h | 54 | 166 | 490 | 17 | 15 | 158 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 72 | 72 | 67 | 67 | 81 | 81 |
| Heavy Vehicles, % | 14 | 0 | 1 | 46 | 0 | 3 |
| Mvmt Flow | 75 | 231 | 731 | 25 | 19 | 195 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 977 | 744 | 0 | 0 | 756 | 0 |
| Stage 1 | 744 | - | - | - | - | - |
| Stage 2 | 233 | - | - | - | - | - |
| Critical Hdwy | 6.54 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.54 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.54 | - | - | - | - | - |
| Follow-up Hdwy | 3.626 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 264 | 418 | - | - | 864 | - |
| Stage 1 | 449 | - | - | - | - | - |
| Stage 2 | 778 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 257 | 418 | - | - | 864 | - |
| Mov Cap-2 Maneuver | 257 | - | - | - | - | - |
| Stage 1 | 449 | - | - | - | - | - |
| Stage 2 | 759 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 50.6 | 0 | 0.8 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 362 | 864 | - |
| HCM Lane V/C Ratio | - | - | 0.844 | 0.021 | - |
| HCM Control Delay (s) | - | - | 50.6 | 9.3 | 0 |
| HCM Lane LOS | - | - | F | A | A |
| HCM 95th %tile Q(veh) | - | - | 7.7 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 5 | 404 | 0 | 0 | 232 |
| Future Vol, veh/h | 0 | 5 | 404 | 0 | 0 | 232 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 25 | 25 | 68 | 68 | 74 | 74 |
| Heavy Vehicles, % | 0 | 0 | 3 | 0 | 0 | 7 |
| Mvmt Flow | 0 | 20 | 594 | 0 | 0 | 314 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 908 | 594 | 0 | 0 | 594 | 0 |
| Stage 1 | 594 | - | - | - | - | - |
| Stage 2 | 314 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 308 | 509 | - | - | 992 | - |
| Stage 1 | 555 | - | - | - | - | - |
| Stage 2 | 745 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 308 | 509 | - | - | 992 | - |
| Mov Cap-2 Maneuver | 308 | - | - | - | - | - |
| Stage 1 | 555 | - | - | - | - | - |
| Stage 2 | 745 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 12.4 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 509 | 992 | - |
| HCM Lane V/C Ratio | - | - | 0.039 | - | - |
| HCM Control Delay (s) | - | - | 12.4 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 205.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 30 | 23 | 3 | 314 | 21 | 23 | 1 | 326 | 114 | 3 | 560 | 14 |
| Future Vol, veh/h | 30 | 23 | 3 | 314 | 21 | 23 | 1 | 326 | 114 | 3 | 560 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 54 | 54 | 54 | 85 | 85 | 85 | 84 | 84 | 84 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 14 | 0 | 0 | 2 | 1 | 0 | 1 | 11 |
| Mvmt Flow | 56 | 43 | 6 | 369 | 25 | 27 | 1 | 388 | 136 | 3 | 636 | 16 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1134 | 1176 | 644 | 1133 | 1116 | 456 | 652 | 0 | 0 | 524 | 0 | 0 |
| Stage 1 | 650 | 650 | - | 458 | 458 | - | - | - | - | - | - | - |
| Stage 2 | 484 | 526 | - | 675 | 658 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.63 | 6.2 | 7.1 | 6.64 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.63 | - | 6.1 | 5.64 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4.117 | 3.3 | 3.5 | 4.126 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 181 | 182 | 476 | ~ 182 | 197 | 609 | 944 | - | - | 1053 | - | - |
| Stage 1 | 461 | 448 | - | 587 | 547 | - | - | - | - | - | - | - |
| Stage 2 | 568 | 511 | - | 447 | 443 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 155 | 181 | 476 | ~ 147 | 196 | 609 | 944 | - | - | 1053 | - | - |
| Mov Cap-2 Maneuver | 155 | 181 | - | ~ 147 | 196 | - | - | - | - | - | - | - |
| Stage 1 | 460 | 446 | - | 586 | 546 | - | - | - | - | - | - | - |
| Stage 2 | 517 | 510 | - | 398 | 441 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 54.1 | $ 820.1 | 0 | 0 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 944 | - | - | 171 | 157 | 1053 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.606 | 2.683 | 0.003 | - | - |
| HCM Control Delay (s) | 8.8 | 0 | - | 54.1 | $ 820.1 | 8.4 | 0 | - |
| HCM Lane LOS | A | A | - | F | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 3.3 | 37.3 | 0 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 177.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 373 | 85 | 267 | 51 | 27 | 870 |
| Future Vol, veh/h | 373 | 85 | 267 | 51 | 27 | 870 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 290 | 100 | - | - | 175 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 86 | 86 | 76 | 76 | 83 | 83 |
| Heavy Vehicles, % | 2 | 2 | 1 | 3 | 0 | 1 |
| Mvmt Flow | 434 | 99 | 351 | 67 | 33 | 1048 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 802 | 33 | 1081 | 0 | - | 0 |
| Stage 1 | 33 | - | - | - | - | - |
| Stage 2 | 769 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | ~ 353 | 1041 | 649 | - | - | - |
| Stage 1 | 989 | - | - | - | - | - |
| Stage 2 | 457 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 162 | 1041 | 649 | - | - | - |
| Mov Cap-2 Maneuver | ~ 162 | - | - | - | - | - |
| Stage 1 | 454 | - | - | - | - | - |
| Stage 2 | 457 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s$ | 666.1 | 14.2 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 649 | - | 162 | 1041 | - | - |
| HCM Lane V/C Ratio | 0.541 | - | 2.677 | 0.095 | - | - |
| HCM Control Delay (s) | 16.9 | - | $ 815.9 | 8.8 | - | - |
| HCM Lane LOS | C | - | F | A | - | - |
| HCM 95th %tile Q(veh) | 3.3 | - | 38.2 | 0.3 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 72 | 590 | 0 | 0 | 1435 |
| Future Vol, veh/h | 0 | 72 | 590 | 0 | 0 | 1435 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 73 | 73 | 95 | 95 | 89 | 89 |
| Heavy Vehicles, % | 0 | 13 | 0 | 1 | 0 | 1 |
| Mvmt Flow | 0 | 99 | 621 | 0 | 0 | 1612 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 621 | 0 | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.395 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.4235 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 462 | - | 0 | 0 | - |
| Stage 1 | 0 | - | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | 0 | - |
| Platoon blocked, % | | | - | | | - |
| Mov Cap-1 Maneuver | - | 462 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

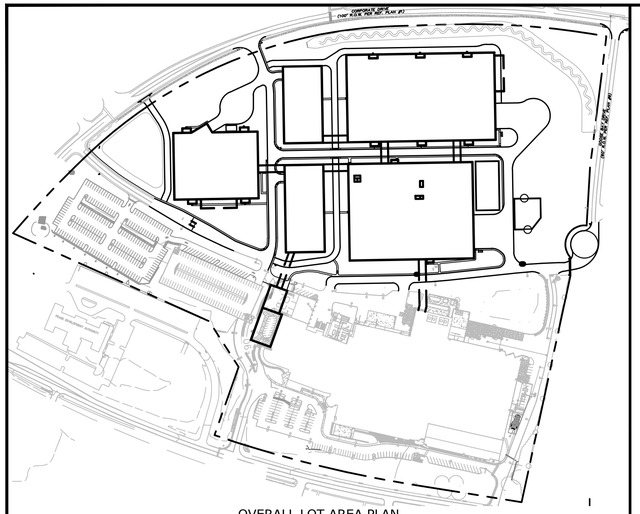
| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14.9 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | WBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 462 | - |
| HCM Lane V/C Ratio | - | 0.213 | - |
| HCM Control Delay (s) | - | 14.9 | - |
| HCM Lane LOS | - | B | - |
| HCM 95th %tile Q(veh) | - | 0.8 | - |

# APPENDIX I

Site Development Plan

# PROPOSED ADMINISTRATIVE APPROVAL MASTER SITE PLAN
01/09/2023



OVERALL LOT AREA PLAN
SCALE : 1" = 250'

## SITE DATA

LOCATION: TAX MAP 305, LOTS 1 & 2 — 70 & 80 CORPORATE DRIVE, PORTSMOUTH, NH
TAX MAP 305, LOT 6 — 101 INTERNATIONAL DRIVE, PORTSMOUTH, NH

ZONING DISTRICT: AIRPORT, BUSINESS & COMMERCIAL (ABC)

## DIMENSIONAL REQUIREMENTS:

| | REQUIRED | PROVIDED |
|---|---|---|
| MINIMUM LOT AREA: | 5 AC | 43.4± AC |
| MINIMUM STREET FRONTAGE: | 200 FT | 1,038 FT |
| MINIMUM FRONT YARD SETBACK: | 70 FT | 70 FT |
| SIDE SETBACK | 30 FT | 30 FT |
| REAR SETBACK | 50 FT | 51 FT |
| MINIMUM OPEN SPACE | 25 % | 43.3± % |

MAXIMUM STRUCTURE HEIGHT SHALL NOT EXCEED FAA CRITERIA.

## PARKING REQUIREMENTS:

REQUIRED PARKING
2 SPACES PER 3 EMPLOYEES ON LARGEST SHIFT
740 EXISTING EMPLOYEES — 493 SPACES
1250 ANTICIPATED EMPLOYEES — 833 SPACES
TOTAL REQUIRED: 1,326 SPACES

PARKING PROVIDED
EXISTING SPACES: 522 SPACES
LYNX PARKING LOT EXPANSION SPACES: 222 spaces
PROPOSED PARKING GARAGE #1: 700 SPACES
TOTAL: 1,444 SPACES

PREVIOUSLY DAYLIGHTED HODGSON BROOK
CORPORATE DRIVE (100' R.O.W. PER REF. PLAN #1)
GOOSE BAY DRIVE (60' R.O.W. PER REF. PLAN #9)
GOOSE BAY RD
PROPOSED GRAVEL WETLAND #2
70' MIN FRONT YARD SETBACK (TYP)
CONSTRUCTED CHLORDINE SOILS CAPPING AREA
PROPOSED 7-STORY PARKING GARAGE #1 700 SPACES F.F=58.0
PROPOSED BUILDING #2 BUILDING HEIGHT = 105 FT 426,000± SF F.F=56.5
PROPOSED OVERHEAD BUILDING CONNECTION (TYP.)
PROPOSED OVERHEAD COOLING TOWERS (COORD. W/ BLDG. DWGS.)
PROPOSED RAIN GARDEN #1
PROPOSED BUILDING #3 BUILDING HEIGHT = 105 FT 186,000± SF F.F=62.0
EXISTING SIDEWALK ACCESS TO BUS STOP AT 20 INTERNATIONAL DRIVE
PROPOSED OVERHEAD COOLING TOWERS (COORD. W/ BLDG. DWGS.)
LYNX PARKING LOT EXPANSION PROJECT CURRENTLY UNDER CONSTRUCTION
PROPOSED 2-STORY UTILITY BUILDING F.F=58.0
PROPOSED BUILDING #1 BUILDING HEIGHT = 36 FT 131,840± SF FOOTPRINT F.F=56.5
PROPOSED UTILITY YARD #1
PROPOSED UTILITY YARD #2
PROPOSED GRAVEL WETLAND #1
PROPOSED CUL-DE-SAC
50' MIN. REAR SETBACK (TYP)
PROPOSED CAFE
PROPOSED GYM/LOBBY
PROPOSED OVERHEAD BUILDING CONNECTION (TYP)
EXISTING LONZA BIOLOGICS BUILDING
PEASE DEVELOPMENT AUTHORITY

SEE SHEET C-105 FOR LEGEND AND SITE NOTES

SCALE IN FEET
0 80' 160'
GRAPHIC SCALE

# Proposed Industrial Development

Lonza Biologics

Portsmouth, New Hampshire

| MARK | DATE | DESCRIPTION |
|---|---|---|
| I | 1/9/2023 | Admin. Approval Submission |
| H | 12/10/2021 | Planning Board Stipulation |
| G | 8/19/2019 | Admin. Approval Submission |
| F | 11/6/2018 | P.B. Submission |
| E | 8/30/2018 | Revised AoT Submission |

| | |
|---|---|
| PROJECT NO: | L-0700-013 |
| DATE: | 04/03/2018 |
| FILE: | L-0700-026-C-DSGN.dwg |
| DRAWN BY: | CJK |
| CHECKED: | NAH |
| APPROVED: | PMC |

MASTER SITE PLAN

SCALE: AS SHOWN

C-104

Last Save Date: January 6, 2023 3:51 PM By: CKRZCUIK
Plot Date: Wednesday, January 11, 2023 8:30 AM By: CKRZCUIK
T&B File Location: J:\L\L0700 Lonza Biologics Expansion was 1576F\026_Project Albacore\Drawings\AutoCAD\L-0700-026-C-DSGN.dwg Layout Tab: C-104

# APPENDIX J

Traffic Control Signal Plans

SIGN 9"X 12" 1 EACH
R10-3A(R) BLACK ON WHITE
1 MOUNTED OVER PUSH BUTTON

SIGN 9"X 12" 5 EACH
R10-3A(L) BLACK ON WHITE
5 MOUNTED OVER PUSH BUTTONS

SIGN 24"X 30" 2 EACH
R3-5L ONLY BLACK ON WHITE
MOUNTED ON MAST ARM NEXT TO LEFT TURN SIGNAL

SIGN 30"X 30" 4 EACH
R3-7L LEFT LANE MUST TURN LEFT BLACK ON WHITE
1 T.S. POST MOUNTED

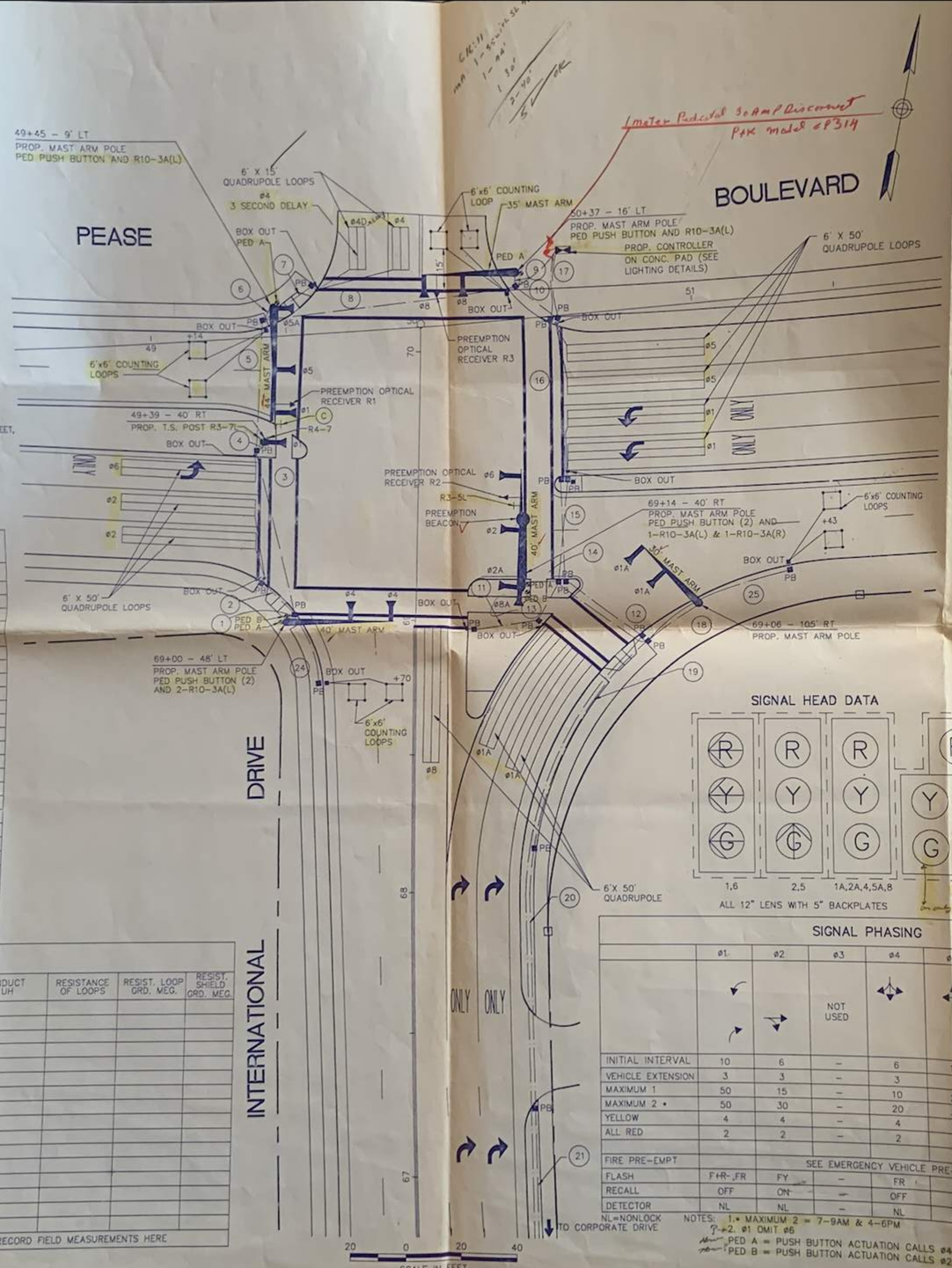
SIGN 24"X 30" 2 EACH
R4-7
1 T.S. POST MOUNTED (PAIR)

## PULL BOX SCHEDULE

49+36 – 42' RT
49+42 – 05' LT
49+61 – 17' LT
50+36 – 11' LT
50+51 – 01' RT (2)
64+55 – 44' RT (SHEET 36)
65+45 – 44' RT (SHEET 34)
66+35 – 44' RT (SHEET 34)
67+25 – 44' RT
68+15 – 44' RT
68+70 – 35' LT
68+93 – 22' RT
68+95 – 85' RT (2)
69+02 – 45' LT
69+01 – 46' RT
69+20 – 54' RT (2)
69+54 – 56' RT (2)

SIGN 30"X 30" 1 EACH
ONLY ONLY
MAST ARM MOUNTED

NOTES:
1. SIGNS MOUNTED ON MAST ARMS AND T.S. POSTS SHOWN ON THIS SHEET, OTHER POST MOUNTED SIGNS SHOWN ON SHEET 41.
2. FOR PAVEMENT MARKINGS SEE SHEET 41.
3. QUADRUPLE LOOPS TO HAVE 2-4-2 LOOP WIRE CONFIGURATION; 6'x6' LOOPS TO HAVE 3 TURNS.




## CONDUIT SCHEDULE

| I.D. | STATION TO STATION | NO. | LENGTH | SCHEDULE TYPE | REMARKS |
|---|---|---|---|---|---|
| (1) | 69+00 – 48' LT — 69+02 – 45' LT | 1 | 4' | 40 | FROM MAST ARM |
| (2) | 69+02 – 45' LT — 69+14 – 58' LT | 1 | 16' | 80 | |
| (3) | 69+02 – 45' LT — 49+36 – 42' RT | 1 | 61' | 80 | |
| (4) | 49+36 – 42' RT — 49+39 – 40' RT | 1 | 4' | 40 | TO T.S. POST |
| (5) | 49+39 – 40' RT — 49+42 – 05' LT | 1 | 46' | 80 | |
| (6) | 49+42 – 05' LT — 49+45 – 09' LT | 1 | 5' | 40 | TO MAST ARM |
| (7) | 49+42 – 05' LT — 49+61 – 17' LT | 1 | 21' | 40 | |
| (8) | 49+42 – 05' LT — 50+36 – 11' LT | 1 | 94' | 80 | |
| (9) | 50+37 – 16' LT — 50+36 – 11' LT | 1 | 4' | 40 | FROM MAST ARM |
| (10) | 50+36 – 11' LT — 50+64 – 22' LT | 1 | 20' | 40 | TO CONTROLLER |
| (11) | 68+97 – 22' RT — 69+01 – 46' RT | 1 | 23' | 40 | |
| (12) | 68+95 – 85' RT — 69+20 – 54' RT | 2 | 40' | 80 | 1 POWER SERVICE |
| (13) | 69+01 – 46' RT — 69+20 – 54' RT | 1 | 20' | 40 | |
| (14) | 69+17 – 40' RT — 69+20 – 54' RT | 1 | 13' | 40 | |
| (15) | 69+20 – 54' RT — 69+54 – 56' RT | 2 | 32' | 80 | 1 POWER SERVICE |
| (16) | 69+54 – 56' RT — 50+51 – 01' RT | 2 | 59' | 80 | 1 POWER SERVICE |
| (17) | 50+51 – 01' RT — 50+64 – 22' LT | 2 | 26' | 40 | 1 POWER SERVICE |
| (18) | 68+95 – 85' RT — 69+06 – 105' RT | 1 | 23' | 40 | TO MAST ARM |
| (19) | 68+95 – 85' RT — 68+15 – 44' RT | 1 | 90' | 40 | |
| (20) | 68+15 – 44' RT — 67+25 – 44' RT | 1• | 90' | 80 | •SEE SHT. 8 TYNCH DTL. |
| (21) | 67+25 – 44' RT — 66+35 – 44' RT | 1• | 90' | 40 | •SEE SHT. 8 TYNCH DTL. |
| (22) | 66+35 – 44' RT — 65+45 – 44' RT | 1• | 90' | 40 | •SEE SHT. 8 TYNCH DTL. |
| (23) | 65+45 – 44' RT — 64+55 – 44' RT | 1• | 90' | 40 | •SEE SHT. 8 TYNCH DTL. |
| (24) | 68+70 – 35' LT — 69+02 – 45' LT | 1 | 35' | 40 | |
| (25) | 68+95 – 85' RT — 51+30 – 98' RT | 1 | 60' | 40 | |

## DETECTOR SCHEDULE

| DETECTOR STREET | DIRECTION | LANE | ø | AMPLIFIER NO. | AMPLIFIER CHANNEL | INDUCT UH | RESISTANCE OF LOOPS | RESIST. LOOP GRD. MEG. | RESIST. SHIELD GRD. MEG. |
|---|---|---|---|---|---|---|---|---|---|
| PEASE BOULEVARD | EASTBOUND | LEFT | 6 | 1 | 1 | | | | |
| PEASE BOULEVARD | EASTBOUND | CENTER & RIGHT | 2 | 1 | 2 | | | | |
| PEASE BOULEVARD | WESTBOUND | LEFT & CENTER | 1 | 2 | 1 | | | | |
| PEASE BOULEVARD | WESTBOUND | CENTER & RIGHT | 5 | 2 | 2 | | | | |
| INTERNATIONAL DRIVE | NORTHBOUND | LEFT | 8 | 3 | 1 | | | | |
| INTERNATIONAL DRIVE | NORTHBOUND | CENTER & RIGHT | 1 | 3 | 2 | | | | |
| DRIVE | SOUTHBOUND | LEFT | 4 | 4 | 1 | | | | |
| DRIVE | SOUTHBOUND | RIGHT | 4D | 5 | 2 | | | | |
| PEASE BOULEVARD | EB EGRESS | LEFT | C | 6 | 1 | | | | |
| PEASE BOULEVARD | EB EGRESS | RIGHT | C | 6 | 2 | | | | |
| PEASE BOULEVARD | WB EGRESS | LEFT | C | 7 | 1 | | | | |
| PEASE BOULEVARD | WB EGRESS | RIGHT | C | 7 | 2 | | | | |
| INTERNATIONAL DRIVE | SB EGRESS | LEFT | C | 8 | 1 | | | | |
| INTERNATIONAL DRIVE | SB EGRESS | RIGHT | C | 8 | 2 | | | | |
| DRIVE | NB EGRESS | LEFT | C | 9 | 1 | | | | |
| DRIVE | NB EGRESS | RIGHT | C | 9 | 2 | | | | |

C – COUNTING LOOP

RECORD FIELD MEASUREMENTS HERE

## PRE-EMPTION PHASING & PRIORITY

| RECEIVER & PRIORITY | PREEMPT PHASE ASSIGNMENT | MOVEMENT | VEHICLE PHASE ASSIGNMENT |
|---|---|---|---|
| R1 | 1 | | 1 + 5 |
| R2 | 2 | | 2 + 6 |
| R3 | 3 | | 8 |

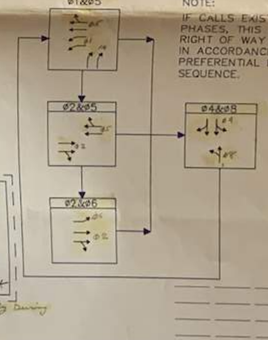
If pre-empt 1 & 5 called ø4 will also be called

### EMERGENCY VEHICLE PRE-EMPTION OPERATION

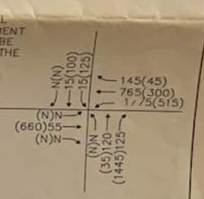
1. PRE-EMPTION OPERATION UTILIZES AVAILABLE PHASES IN 8 PHASE TIMER THROUGH THE MSD PRE-EMPT INPUTS TO EFFECT APPROPRIATE SIGNAL DISPLAYS FOR SINGLE APPROACH MOVEMENTS AS SHOWN IN THE PRE-EMPTION PHASING AND PRIORITY CHART.
2. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
3. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS 1, 2, OR 3 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: ( 1 HIGHEST AND 3 LOWEST )
4. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR # 1 (OR #2, #3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCE ( 4 SECONDS: YELLOW AND 1 SECOND: ALL RED ) AND SERVICE EMERGENCY VEHICLE PRE-EMPTION PHASE #2 (OR #1) IF NECESSARY, THEN TIME PHASE PRE-EMPTION CLEARANCE AND RESUME NORMAL SIGNAL OPERATION. EMERGENCY VEHICLE PRE-EMPTION PHASES #3 SHALL BE SIMILARLY SERVED.
5. MINIMUM GREEN & NORMAL VEHICLE CLEARANCE, SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

NO COORDINATION

## PREFERENTIAL PHASE SEQUENCE

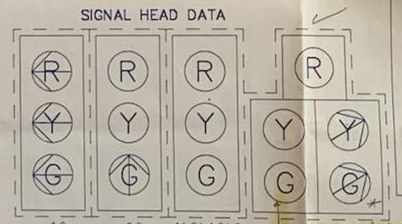



NOTE:
IF CALLS EXIST ON ALL PHASES, THIS ASSIGNMENT RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.




DESIGN YEAR TRAFFIC VOLUMES AM(PM)

## SIGNAL HEAD DATA




ALL 12" LENS WITH 5" BACKPLATES

## SIGNAL PHASING

NO COORD

| | ø1 | ø2 | ø3 | ø4 | ø5 | ø6 | ø7 | ø8 |
|---|---|---|---|---|---|---|---|---|
| | | | NOT USED | | | | NOT USED | |
| INITIAL INTERVAL | 10 | 6 | – | 6 | 10 | 6 | – | 6 |
| VEHICLE EXTENSION | 3 | 3 | – | 3 | 3 | 2 | – | 3 |
| MAXIMUM 1 | 50 | 15 | – | 10 | 20 | 10 | – | 10 |
| MAXIMUM 2 • | 50 | 30 | – | 20 | 30 | 15 | – | 20 |
| YELLOW | 4 | 4 | – | 4 | 4 | 3 | – | 4 |
| ALL RED | 2 | 2 | – | 2 | 2 | 2 | – | 2 |
| FIRE PRE-EMPT | SEE EMERGENCY VEHICLE PRE-EMPTION OPERATION | | | | | | | |
| FLASH | FI+R- /FR | FY | – | FR | FY | FI+R- | – | FR |
| RECALL | OFF | ON | – | OFF | ON | OFF | – | OFF |
| DETECTOR | NL | NL | – | NL | NL | NL | – | NL |

NL=NONLOCK

NOTES: 1.• MAXIMUM 2 = 7-9AM & 4-6PM
2. ø2, ø1 OMIT ø5
PED A = PUSH BUTTON ACTUATION CALLS ø4 MAX 2
PED B = PUSH BUTTON ACTUATION CALLS ø2 MAX 1

| Rev. No. | Date | Description | Made by | Chk. by | Appd. by |
|---|---|---|---|---|---|

**Pease Development Authority**
**Portsmouth, New Hampshire**

Pease International Tradeport
Portsmouth, New Hampshire
E.D.A. No. 01-49-03235

# Pease Boulevard and International Drive Signalization Plan


Vanasse Hangen Brustlin, Inc.
Engineers • Planners • Scientists
Six Bedford Farms, Bedford, New Hampshire 03110
Kilton Road
603 644 0888 • FAX 603 644 2385


6/6:11

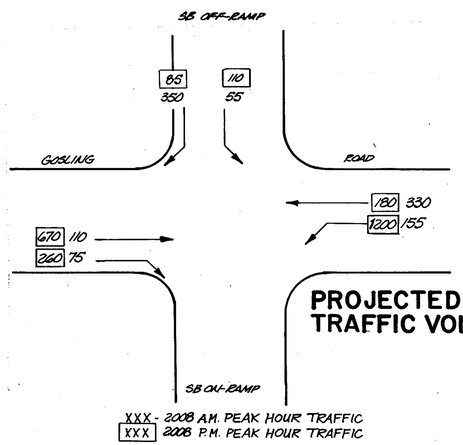
| Designed by: | Drawn by: | Checked by: |
|---|---|---|
| Scale: 1" = 20' | Date: March 18, 1994 | |
| Sheet: of | | |

REVISIONS AFTER PROPOSAL

| NUMBER | DESCRIPTION | DATE | STATION |
|---|---|---|---|
| | | | |

NOTEBOOKS — BOOK ____ PAGE ____ ; BOOK ____ PAGE ____ ; BOOK ____ PAGE ____

EXISTING DETAIL — DATE
PROPOSED DESIGN — P. Konigsdale — DATE 10-6-89
SHEET CHECKED — Smith — DATE 10-6-89
AS BUILT DETAILS — DATE




## PROJECTED TRAFFIC VOLUMES

## SIGNAL HEADS

12" LENSES
5" (NOMINAL) BACKPLATES




Ⓒ = NO TURN ON RED ARROW — TO BE PLACED ADJACENT TO LEFT TURN SIGNALS 3A, 1A, 5

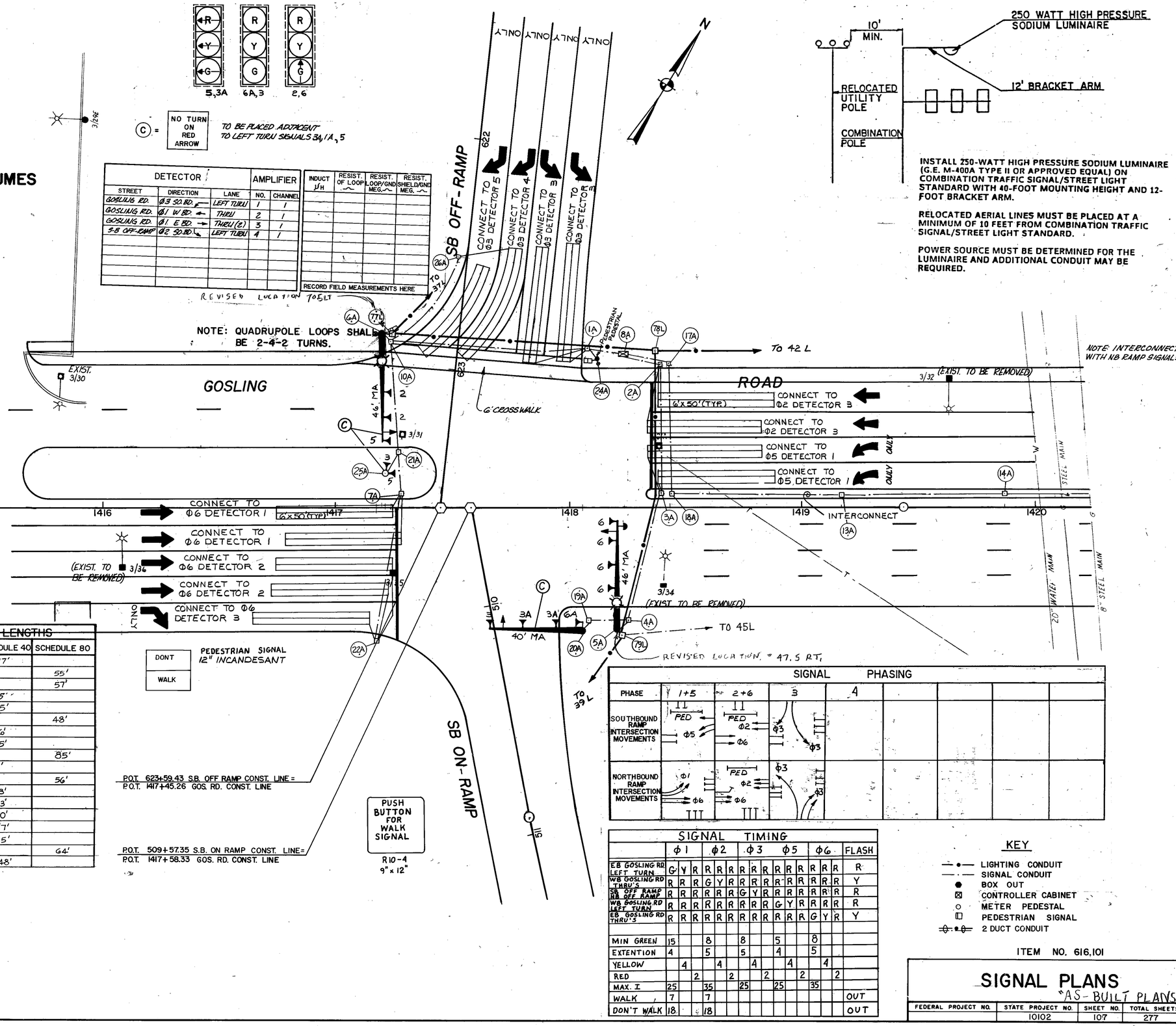
| DETECTOR | | | AMPLIFIER | |
|---|---|---|---|---|
| STREET | DIRECTION | LANE | NO. | CHANNEL |
| GOSLING RD. | Ø3 SO. BD. | LEFT TURN | 1 | 1 |
| GOSLING RD. | Ø1 W. BD. | THRU | 2 | 1 |
| GOSLING RD. | Ø1 E. BD. | THRU (2) | 3 | 1 |
| SB OFF-RAMP | Ø2 SO. BD. | LEFT TURN | 4 | 1 |

| INDUCT μH | RESIST. OF LOOP ~ | RESIST. LOOP/GND MEG.~ | RESIST. SHIELD/GND MEG. ~ |
|---|---|---|---|
| | | | |

RECORD FIELD MEASUREMENTS HERE

REVISED LOCATION TO 51L

NOTE: QUADRUPOLE LOOPS SHALL BE 2-4-2 TURNS.




## SCHEMATIC COMBINATION POLES




INSTALL 250-WATT HIGH PRESSURE SODIUM LUMINAIRE (G.E. M-400A TYPE II OR APPROVED EQUAL) ON COMBINATION TRAFFIC SIGNAL/STREET LIGHT STANDARD WITH 40-FOOT MOUNTING HEIGHT AND 12-FOOT BRACKET ARM.

RELOCATED AERIAL LINES MUST BE PLACED AT A MINIMUM OF 10 FEET FROM COMBINATION TRAFFIC SIGNAL/STREET LIGHT STANDARD.

POWER SOURCE MUST BE DETERMINED FOR THE LUMINAIRE AND ADDITIONAL CONDUIT MAY BE REQUIRED.

## FOUNDATIONS

| FOUNDATION LOC. | TYPE | STATION | OFFSET | NOTES |
|---|---|---|---|---|
| 1A | PB | 14+08 | 68' LT | |
| 2A | PB | 14+39 | 62' LT | |
| 3A | PB | 14+39 | 6' LT | |
| 4A | PB | 14+25 | 48' RT | |
| 5A | MA | 14+20 | 56' RT | SIGNAL POLE WITH 46' MAST ARM |
| 6A | SP | 17+20 | 75' LT | SIGNAL POLE W/46' MAST ARM, PEDESTRIAN SIGNAL & PB |
| 7A | PB | 17+28 | 6' LT | |
| 8A | CC | 14+24 | 66' LT | AUXILIARY CABINET |
| 24A | SP | 14+12 | 64' LT | 8' SIGNAL PEDESTAL, WITH PEDESTRIAN SIGNAL & PUSH BUTTON |
| 10A | PB | 17+24 | 72' LT | |
| 22A | PB | 14+18 | 57' RT. | |
| | | | | |
| 13A | PB | 19+17 | 5' LT. | |
| 14A | PB | 19+87 | 5' LT. | |
| 21A | PB | 14+27 | 24' LT. | |
| 17A | PB | 14+43 | 62' LT. | |
| 18A | | 14+43 | 6' LT. | |
| 20A | SP | 14+05 | 53' RT. | SIGNAL POLE W/40' MA. |
| 26A | PB | 622+52 | 4' RT. | |

## CONDUIT LENGTHS

| FROM | TO | SCHEDULE 40 | SCHEDULE 80 |
|---|---|---|---|
| 1A | 8A | 17' | |
| 2A | 3A | | 55' |
| 3A | 4A | | 57' |
| 4A | 5A | 5' | |
| 10A | 6A | 5' | |
| 10A | 21A | | 48' |
| 8A | 2A | 16' | |
| 1A | 24A | 5' | |
| 1A | 10A | | 85' |
| 17A | 8A | 20' | |
| 17A | 18A | | 56' |
| 21A | 7A | 18' | |
| 18A | 13A | 73' | |
| 13A | 14A | 70' | |
| 4A | 19A | 17' | |
| 19A | 20A | 5' | |
| 7A | 22A | | 64' |
| 10A | 26A | 48' | |

DONT WALK — PEDESTRIAN SIGNAL 12" INCANDESANT

P.O.T. 623+59.43 S.B. OFF RAMP CONST. LINE =
P.O.T. 1417+45.26 GOS. RD. CONST. LINE

P.O.T. 509+57.35 S.B. ON RAMP CONST. LINE=
P.O.T. 1417+58.33 GOS. RD. CONST. LINE

PUSH BUTTON FOR WALK SIGNAL
R10-4
9" x 12"

## SIGNAL PHASING




## SIGNAL TIMING

| | Ø1 | | | Ø2 | | | Ø3 | | | Ø5 | | | Ø6 | | | FLASH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EB GOSLING RD LEFT TURN | G | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| WB GOSLING RD THRU'S | R | R | R | G | Y | R | R | R | R | R | R | R | R | R | R | Y |
| SB OFF RAMP NB OFF RAMP | R | R | R | R | R | R | G | Y | R | R | R | R | R | R | R | R |
| WB GOSLING RD LEFT TURN | R | R | R | R | R | R | R | R | R | G | Y | R | R | R | R | R |
| EB GOSLING RD THRU'S | R | R | R | R | R | R | R | R | R | R | R | R | G | Y | R | Y |
| MIN GREEN | 15 | | | 8 | | | 8 | | | 5 | | | 8 | | | |
| EXTENTION | 4 | | | 5 | | | 5 | | | 4 | | | 5 | | | |
| YELLOW | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | |
| RED | | | 2 | | | 2 | | | 2 | | | 2 | | | 2 | |
| MAX. I | 25 | | | 35 | | | 25 | | | 25 | | | 35 | | | |
| WALK | 7 | | | 7 | | | | | | | | | | | | OUT |
| DON'T WALK | 18 | | | 18 | | | | | | | | | | | | OUT |

## KEY

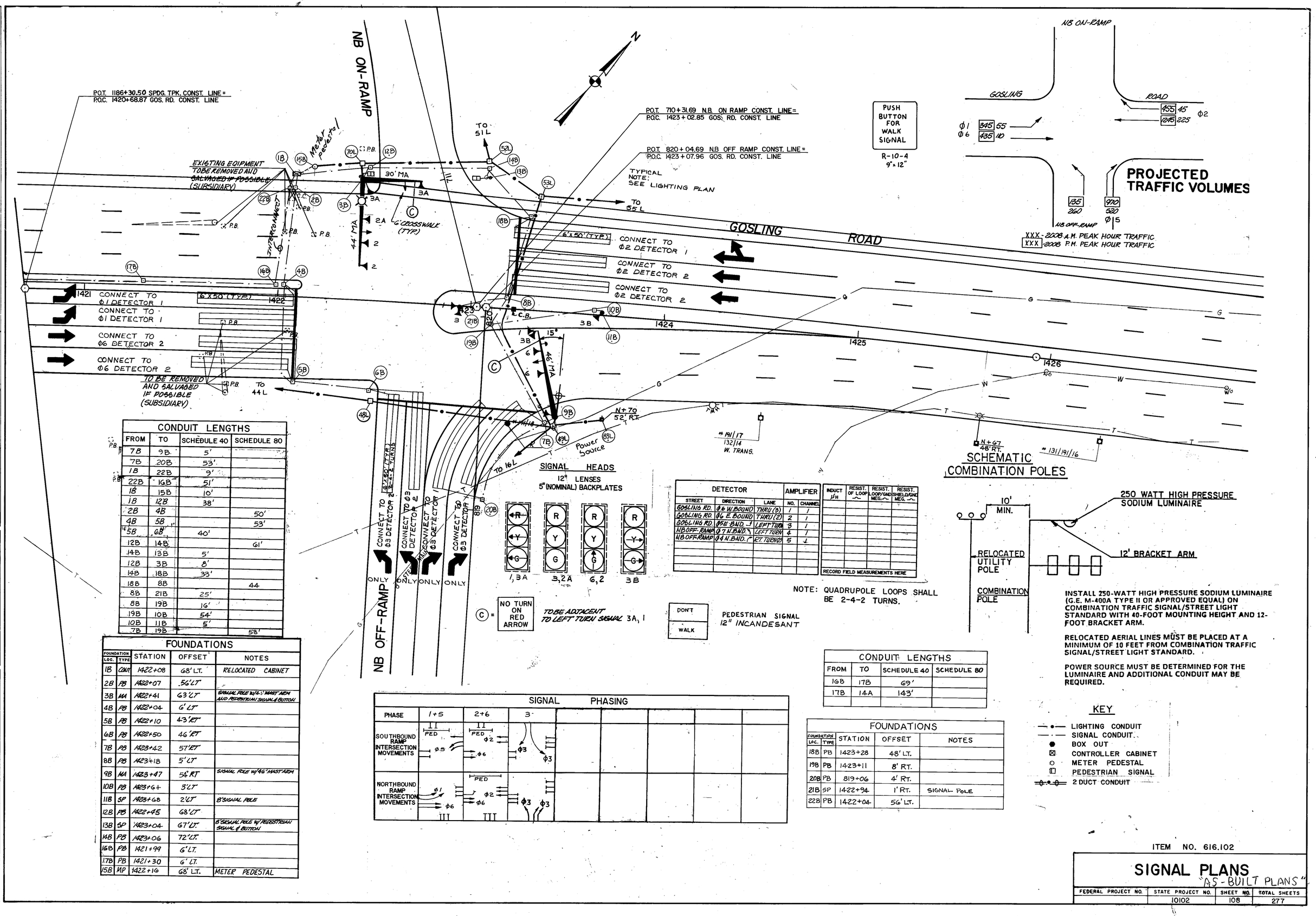
- LIGHTING CONDUIT
- SIGNAL CONDUIT
- BOX OUT
- CONTROLLER CABINET
- METER PEDESTAL
- PEDESTRIAN SIGNAL
- 2 DUCT CONDUIT

ITEM NO. 616,101

# SIGNAL PLANS

"AS-BUILT PLANS"

| FEDERAL PROJECT NO. | STATE PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| | 10102 | 107 | 277 |




### CONDUIT LENGTHS

| FROM | TO | SCHEDULE 40 | SCHEDULE 80 |
|---|---|---|---|
| 7B | 9B | 5' | |
| 7B | 20B | 53' | |
| 1B | 22B | 9' | |
| 22B | 16B | 51' | |
| 1B | 15B | 10' | |
| 1B | 12B | 38' | |
| 2B | 4B | | 50' |
| 4B | 5B | | 53' |
| 5B | 6B | 40' | |
| 12B | 14B | | 61' |
| 14B | 13B | 5' | |
| 12B | 3B | 8' | |
| 14B | 18B | 33' | |
| 18B | 8B | | 44 |
| 8B | 21B | 25' | |
| 8B | 19B | 16' | |
| 19B | 10B | 54' | |
| 10B | 11B | 5' | |
| 7B | 19B | | 58' |

### FOUNDATIONS

| FOUNDATION LOC. | FOUNDATION TYPE | STATION | OFFSET | NOTES |
|---|---|---|---|---|
| 1B | CONT | 1422+08 | 68' LT. | RELOCATED CABINET |
| 2B | PB | 1422+07 | 56' LT | |
| 3B | MA | 1422+41 | 63' LT | SIGNAL POLE W/45' MAST ARM AND PEDESTRIAN SIGNAL & BUTTON |
| 4B | PB | 1422+04 | 6' LT | |
| 5B | PB | 1422+10 | 43' RT | |
| 6B | PB | 1422+50 | 46' RT | |
| 7B | PB | 1423+42 | 57' RT | |
| 8B | PB | 1423+18 | 5' LT | |
| 9B | MA | 1423+47 | 54' RT | SIGNAL POLE W/45' MAST ARM |
| 10B | PB | 1423+64 | 3' LT | |
| 11B | SP | 1423+68 | 2' LT | 8' SIGNAL POLE |
| 12B | PB | 1422+45 | 68' LT | |
| 13B | SP | 1423+04 | 67' LT | 8' SIGNAL POLE W/ PEDESTRIAN SIGNAL & BUTTON |
| 14B | PB | 1423+06 | 72' LT | |
| 16B | PB | 1421+99 | 6' LT | |
| 17B | PB | 1421+30 | 6' LT | |
| 15B | MP | 1422+16 | 68' LT | METER PEDESTAL |

### SIGNAL PHASING

| PHASE | 1+5 | 2+6 | 3 | | | | |
|---|---|---|---|---|---|---|---|
| SOUTHBOUND RAMP INTERSECTION MOVEMENTS | PED Φ5 | PED Φ2 Φ6 | Φ3 Φ3 | | | | |
| NORTHBOUND RAMP INTERSECTION MOVEMENTS | Φ1 Φ6 | PED Φ2 Φ6 | Φ3 Φ3 | | | | |

### DETECTOR AMPLIFIER

| STREET | DIRECTION | LANE | AMPLIFIER NO. | AMPLIFIER CHANNEL | INDUCT μH | RESIST. OF LOOP | RESIST. LOOP/GND MEG. | RESIST. SHIELD/GND MEG. |
|---|---|---|---|---|---|---|---|---|
| GOSLING RD. | @ W. BOUND | THRU (3) | 1 | 1 | | | | |
| GOSLING RD. | @ E. BOUND | THRU (2) | 2 | 1 | | | | |
| GOSLING RD. | @ E. BND. | LEFT TURN | 3 | 1 | | | | |
| NB OFF-RAMP | @ N. BND. | LEFT TURN | 4 | 1 | | | | |
| NB OFF-RAMP | @ N. BND. | RT. TURN | 5 | 1 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | RECORD FIELD MEASUREMENTS HERE | | | |

### CONDUIT LENGTHS

| FROM | TO | SCHEDULE 40 | SCHEDULE 80 |
|---|---|---|---|
| 16B | 17B | 69' | |
| 17B | 14A | 143' | |
| | | | |

### FOUNDATIONS

| FOUNDATION LOC. | FOUNDATION TYPE | STATION | OFFSET | NOTES |
|---|---|---|---|---|
| 18B | PB | 1423+28 | 48' LT. | |
| 19B | PB | 1423+11 | 8' RT. | |
| 20B | PB | 819+06 | 4' RT. | |
| 21B | SP | 1422+94 | 1' RT. | SIGNAL POLE |
| 22B | PB | 1422+04 | 56' LT. | |

ITEM NO. 616.102

# SIGNAL PLANS

"AS-BUILT PLANS"

| FEDERAL PROJECT NO. | STATE PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| | 10102 | 108 | 277 |

REVISIONS AFTER PROPOSAL — NUMBER / DESCRIPTION / STATION / STATION / DATE

NOTEBOOKS — BOOK PAGE / BOOK PAGE / BOOK PAGE

EXISTING DETAIL — DATE
PROPOSED DESIGN — DATE 10-6-89
SHEET CHECKED — DATE 10-6-89
AS BUILT DETAILS — DATE

## 8 PHASE NEMA DUAL RING QUAD LEFT CONTROLLER

### SIGNAL PHASING & TIMING

| | ø1 | ø2 | ø3 | ø4 | ø5 | ø6 | ø7 | ø8 |
|---|---|---|---|---|---|---|---|---|
| TIMING IN SECONDS | NOT USED | ← ← | NOT USED | NOT USED | ← ← | → → → | ↑ ↑ ↑ | NOT USED |
| INITIAL INTERVAL | – | 8 | – | – | 5 | 8 | 5 | – |
| VEHICLE EXTENSION | – | 4 | – | – | 4 | 4 | 4 | – |
| MAXIMUM 1 | – | 30 | – | – | 20 | 30 | 25 | – |
| MAXIMUM 2 | – | 30 | – | – | 20 | 30 | 25 | – |
| YELLOW | – | 4 | – | – | 4 | 4 | 4 | – |
| ALL RED | – | 2 | – | – | 2 | 2 | 2 | – |
| PEDESTRIAN WALK | – | – | – | – | – | – | – | – |
| PEDESTRIAN CLEAR | – | – | – | – | – | – | – | – |
| FLASH | – | FY | – | – | FRA | FY | FR | – |
| RECALL | – | SOFT | – | – | OFF | SOFT | OFF | – |
| DETECTOR | – | NL | – | – | NL | NL | NL | – |
| PRE-EMPT PRIORITY | – | 2 | – | – | 2 | 1 | 3 | – |

SYSTEM TO MAXIMUM 2 UNDER COORDINATION

### SIGNAL HEAD DATA

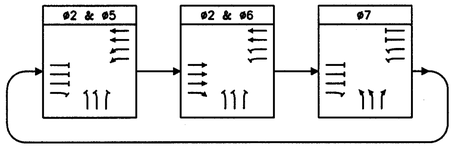
EXISTING

| 5 | 2, 6, 7 | 6A |
|---|---|---|
| 12" LENS | 12" LENS | 12" LENS |

WITH 5" LOUVERED BACKPLATES

NOTE: ALL SIGNAL HEADS ARE EQUIPPED WITH L.E.D. MODULES.

### N.E.M.A. PHASE SEQUENCE




### DETECTOR SCHEDULE

| DETECTOR | | | | AMPLIFIER | | INDUCT UH | RESISTANCE OF LOOPS | RESIST. LOOP GRD. MEG. | RESIST. SHIELD GRD. MEG. |
|---|---|---|---|---|---|---|---|---|---|
| STREET | DIRECTION | LANE | ø | NO. | CHANNEL | | | | |
| NH ROUTE 33 | EASTBOUND | THRU (MEDIAN) | 6 | 1 | 1 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU (CEN-LEFT) | 6 | 1 | 2 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU (CEN-RIGHT) | 6 | 2 | 1 | | | | |
| NH ROUTE 33 | EASTBOUND | RIGHT | 6D | 2 | 2 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU-BACK (MEDIAN) | 6 | 3 | 1 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU-BACK (CEN-LEFT) | 6 | 3 | 2 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU-BACK (CEN-RIGHT) | 6 | 4 | 1 | | | | |
| **NH ROUTE 33** | **EASTBOUND** | **THRU-DEPART (MEDIAN)** | **S5** | 10 | 1 | | | | |
| **NH ROUTE 33** | **EASTBOUND** | **THRU-DEPART (CENTER)** | **S6** | 10 | 2 | | | | |
| **NH ROUTE 33** | **EASTBOUND** | **THRU-DEPART (RIGHT)** | **S7** | 11 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | LEFT (MEDIAN) | 5 | 5 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | LEFT (CEN-LEFT) | 5 | 5 | 2 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU (CEN-RIGHT) | 2 | 6 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU (RIGHT) | 2 | 6 | 2 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU-BACK (CEN-RIGHT) | 2 | 7 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU-BACK (CEN-LEFT) | 2 | 7 | 2 | | | | |
| **NH ROUTE 33** | **WESTBOUND** | **THRU-DEPART (LEFT)** | **S8** | 12 | 1 | | | | |
| **NH ROUTE 33** | **WESTBOUND** | **THRU-DEPART (RIGHT)** | **S9** | 12 | 2 | | | | |
| I-95 SB RAMP | NORTHBOUND | LEFT (MEDIAN) | 7 | 8 | 1 | | | | |
| I-95 SB RAMP | NORTHBOUND | LEFT (CENTER) | 7 | 8 | 2 | | | | |
| I-95 SB RAMP | NORTHBOUND | RIGHT | 7D | 9 | 1 | | | | |
| | | | | | | RECORD FIELD MEASUREMENTS HERE | | | |

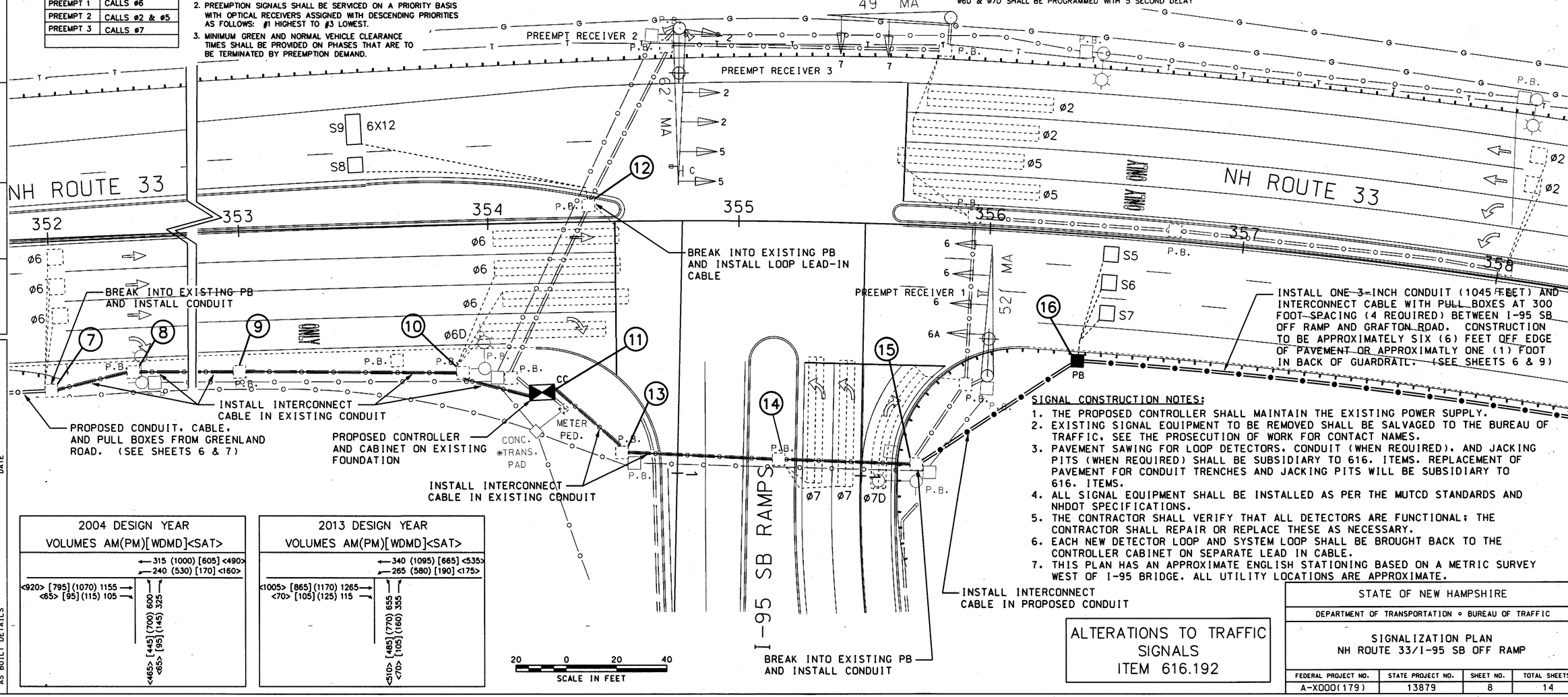
S = SYSTEM LOOP
ø6D & ø7D SHALL BE PROGRAMMED WITH 5 SECOND DELAY

### FIRE PREEMPTION

| | |
|---|---|
| PREEMPT 1 | CALLS ø6 |
| PREEMPT 2 | CALLS ø2 & ø5 |
| PREEMPT 3 | CALLS ø7 |

FIRE PREEMPTION NOTES:

1. PROGRAM PREEMPTION PRIORITY TO MATCH PHASING CHANGE.
2. PREEMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH OPTICAL RECEIVERS ASSIGNED WITH DESCENDING PRIORITIES AS FOLLOWS: #1 HIGHEST TO #3 LOWEST.
3. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE TIMES SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.




| 2004 DESIGN YEAR VOLUMES AM(PM)[WDMD]<SAT> | 2013 DESIGN YEAR VOLUMES AM(PM)[WDMD]<SAT> |
|---|---|
| ← 315 (1000) [605] <490> | ← 340 (1095) [665] <535> |
| ← 240 (530) [170] <160> | ← 265 (580) [190] <175> |
| <920> [795] (1070) 1155 → | <1005> [865] (1170) 1265 → |
| <65> [95] (115) 105 → | <70> [105] (125) 115 → |
| 600 [445] (700) <465> | 655 [485] (770) <510> |
| 325 [95] (145) <65> | 355 [105] (160) <70> |

20 0 20 40
SCALE IN FEET

SIGNAL CONSTRUCTION NOTES:

1. THE PROPOSED CONTROLLER SHALL MAINTAIN THE EXISTING POWER SUPPLY.
2. EXISTING SIGNAL EQUIPMENT TO BE REMOVED SHALL BE SALVAGED TO THE BUREAU OF TRAFFIC. SEE THE PROSECUTION OF WORK FOR CONTACT NAMES.
3. PAVEMENT SAWING FOR LOOP DETECTORS, CONDUIT (WHEN REQUIRED), AND JACKING PITS (WHEN REQUIRED) SHALL BE SUBSIDIARY TO 616. ITEMS. REPLACEMENT OF PAVEMENT FOR CONDUIT TRENCHES AND JACKING PITS WILL BE SUBSIDIARY TO 616. ITEMS.
4. ALL SIGNAL EQUIPMENT SHALL BE INSTALLED AS PER THE MUTCD STANDARDS AND NHDOT SPECIFICATIONS.
5. THE CONTRACTOR SHALL VERIFY THAT ALL DETECTORS ARE FUNCTIONAL; THE CONTRACTOR SHALL REPAIR OR REPLACE THESE AS NECESSARY.
6. EACH NEW DETECTOR LOOP AND SYSTEM LOOP SHALL BE BROUGHT BACK TO THE CONTROLLER CABINET ON SEPARATE LEAD IN CABLE.
7. THIS PLAN HAS AN APPROXIMATE ENGLISH STATIONING BASED ON A METRIC SURVEY WEST OF I-95 BRIDGE. ALL UTILITY LOCATIONS ARE APPROXIMATE.

ALTERATIONS TO TRAFFIC SIGNALS
ITEM 616.192

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF TRAFFIC
SIGNALIZATION PLAN
NH ROUTE 33/I-95 SB OFF RAMP

| FEDERAL PROJECT NO. | STATE PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| A-X000(179) | 13879 | 8 | 14 |

| REVISIONS AFTER PROPOSAL | DESCRIPTION | STATION | DATE | NUMBER |
|---|---|---|---|---|
| | | | | |

| | | DATE |
|---|---|---|
| SDR PROCESSED | CMB | 7/7/03 |
| NEW DESIGN | DJD | 8/11/03 |
| SHEET CHECKED | CMB | 8/21/03 |
| AS BUILT DETAILS | | DATE |

## 8 PHASE NEMA DUAL RING QUAD LEFT CONTROLLER

### SIGNAL PHASING & TIMING

| | ø1 | ø2 | ø3 | ø4 | ø5 | ø6 | ø7 | ø8 |
|---|---|---|---|---|---|---|---|---|
| TIMING IN SECONDS | → | ←←← | ↓↓ | NOT USED | NOT USED | →→ | NOT USED | NOT USED |
| INITIAL INTERVAL | 5 | 8 | 5 | – | – | 8 | – | – |
| VEHICLE EXTENSION | 4 | 4 | 4 | – | – | 4 | – | – |
| MAXIMUM 1 | 20 | 35 | 20 | – | – | 35 | – | – |
| MAXIMUM 2 | 20 | 35 | 20 | – | – | 35 | – | – |
| YELLOW | 4 | 4 | 4 | – | – | 4 | – | – |
| ALL RED | 2 | 2 | 2 | – | – | 2 | – | – |
| PEDESTRIAN WALK | – | – | – | – | – | – | – | – |
| PEDESTRIAN CLEAR | – | – | – | – | – | – | – | – |
| FLASH | FRA | FY | FR | – | – | FY | – | – |
| RECALL | OFF | SOFT | OFF | – | – | SOFT | – | – |
| DETECTOR | NL | NL | NL | – | – | NL | – | – |
| PRE-EMPT PRIORITY | 1 | 2 | 3 | – | – | 1 | – | – |

SYSTEM TO MAXIMUM 2 UNDER COORDINATION

### N.E.M.A. PHASE SEQUENCE




### FIRE PREEMPTION

| | |
|---|---|
| PREEMPT 1 | CALLS ø1 & ø6 |
| PREEMPT 2 | CALLS ø2 |
| PREEMPT 3 | CALLS ø3 |

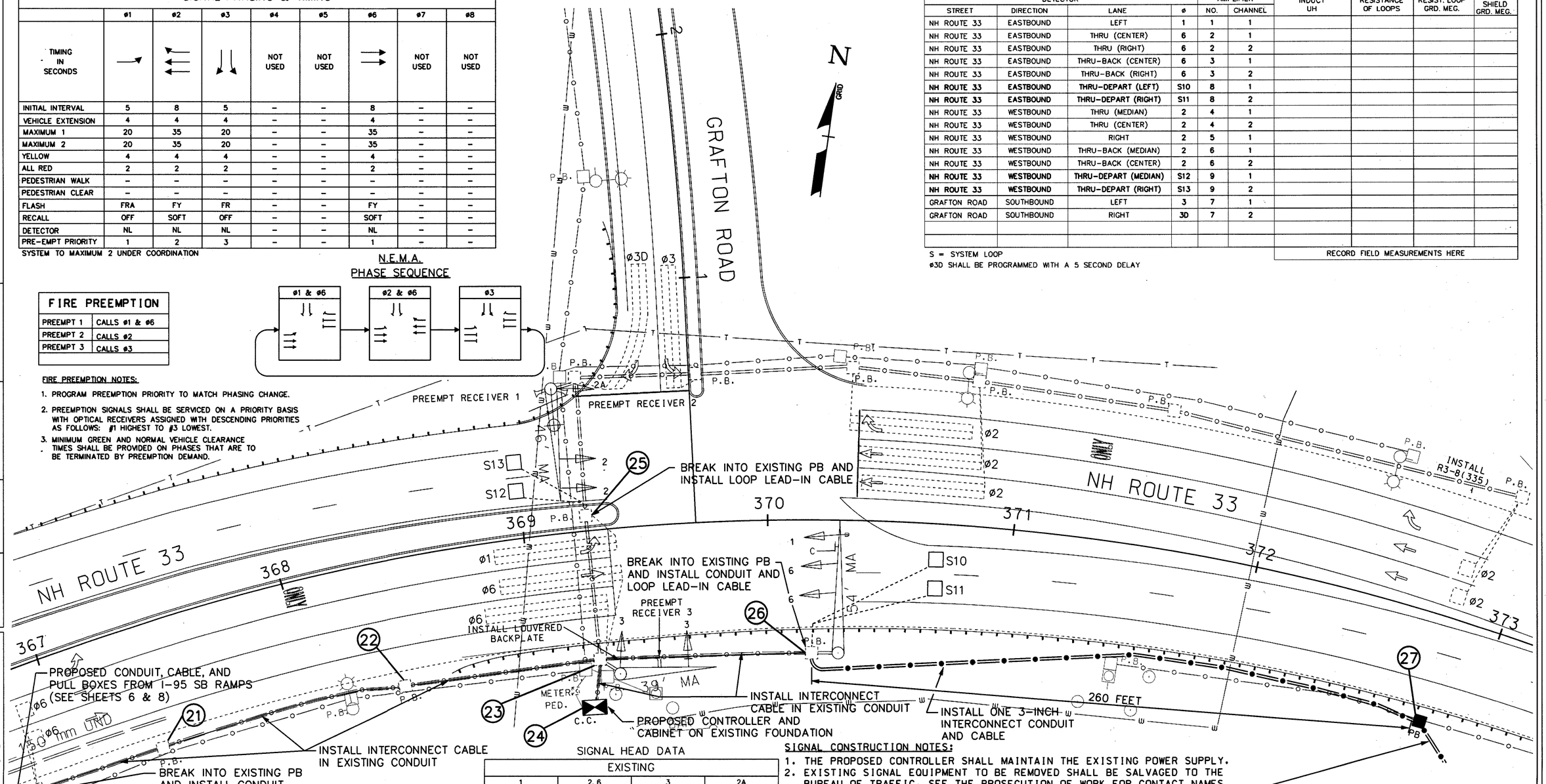
FIRE PREEMPTION NOTES:

1. PROGRAM PREEMPTION PRIORITY TO MATCH PHASING CHANGE.
2. PREEMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH OPTICAL RECEIVERS ASSIGNED WITH DESCENDING PRIORITIES AS FOLLOWS: #1 HIGHEST TO #3 LOWEST.
3. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE TIMES SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.

### DETECTOR SCHEDULE

| DETECTOR | | | | AMPLIFIER | | INDUCT UH | RESISTANCE OF LOOPS | RESIST. LOOP GRD. MEG. | RESIST. SHIELD GRD. MEG. |
|---|---|---|---|---|---|---|---|---|---|
| STREET | DIRECTION | LANE | ø | NO. | CHANNEL | | | | |
| NH ROUTE 33 | EASTBOUND | LEFT | 1 | 1 | 1 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU (CENTER) | 6 | 2 | 1 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU (RIGHT) | 6 | 2 | 2 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU-BACK (CENTER) | 6 | 3 | 1 | | | | |
| NH ROUTE 33 | EASTBOUND | THRU-BACK (RIGHT) | 6 | 3 | 2 | | | | |
| **NH ROUTE 33** | **EASTBOUND** | **THRU-DEPART (LEFT)** | **S10** | **8** | **1** | | | | |
| **NH ROUTE 33** | **EASTBOUND** | **THRU-DEPART (RIGHT)** | **S11** | **8** | **2** | | | | |
| NH ROUTE 33 | WESTBOUND | THRU (MEDIAN) | 2 | 4 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU (CENTER) | 2 | 4 | 2 | | | | |
| NH ROUTE 33 | WESTBOUND | RIGHT | 2 | 5 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU-BACK (MEDIAN) | 2 | 6 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU-BACK (CENTER) | 2 | 6 | 2 | | | | |
| **NH ROUTE 33** | **WESTBOUND** | **THRU-DEPART (MEDIAN)** | **S12** | **9** | **1** | | | | |
| **NH ROUTE 33** | **WESTBOUND** | **THRU-DEPART (RIGHT)** | **S13** | **9** | **2** | | | | |
| GRAFTON ROAD | SOUTHBOUND | LEFT | 3 | 7 | 1 | | | | |
| GRAFTON ROAD | SOUTHBOUND | RIGHT | 3D | 7 | 2 | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | RECORD FIELD MEASUREMENTS HERE | | | |

S = SYSTEM LOOP
ø3D SHALL BE PROGRAMMED WITH A 5 SECOND DELAY




### SIGNAL HEAD DATA

EXISTING

| 1 | 2, 6 | 3 | 2A |
|---|---|---|---|
| 12" LENS | 12" LENS | 12" LENS | 12" LENS |

WITH 5" LOUVERED BACKPLATES

NOTE: ALL SIGNAL HEADS TO BE EQUIPPED WITH NEW L.E.D. MODULES.

| 2004 DESIGN YEAR VOLUMES AM(PM)[WDMD]<SAT> | 2013 DESIGN YEAR VOLUMES AM(PM)[WDMD]<SAT> |
|---|---|
| <165> [170] (185) 345 → | <180> [190] (205) 375 → |
| <815> [720] (1025) 1135 → | <890> [790] (1120) 1245 → |
| 60 (670) [240] <165> | 65 (735) [265] <180> |
| 55 (425) [180] <75> | 60 (465) [200] <85> |
| ← 305 (130) [130] <45> | ← 330 (145) [145] <50> |
| ← 495 (865) [530] <480> | ← 540 (945) [580] <525> |

SIGNAL CONSTRUCTION NOTES:

1. THE PROPOSED CONTROLLER SHALL MAINTAIN THE EXISTING POWER SUPPLY.
2. EXISTING SIGNAL EQUIPMENT TO BE REMOVED SHALL BE SALVAGED TO THE BUREAU OF TRAFFIC. SEE THE PROSECUTION OF WORK FOR CONTACT NAMES.
3. PAVEMENT SAWING FOR LOOP DETECTORS, CONDUIT (WHEN REQUIRED), AND JACKING PITS (WHEN REQUIRED) SHALL BE SUBSIDIARY TO 616. ITEMS. REPLACEMENT OF PAVEMENT FOR CONDUIT TRENCHES AND JACKING PITS WILL BE SUBSIDIARY TO 616. ITEMS.
4. ALL SIGNAL EQUIPMENT SHALL BE INSTALLED AS PER THE MUTCD STANDARDS AND NHDOT SPECIFICATIONS.
5. THE CONTRACTOR SHALL VERIFY THAT ALL DETECTORS ARE FUNCTIONAL; THE CONTRACTOR SHALL REPAIR OR REPLACE THESE AS NECESSARY.
6. EACH NEW DETECTOR LOOP AND SYSTEM LOOP SHALL BE BROUGHT BACK TO THE CONTROLLER CABINET ON SEPARATE LEAD IN CABLE.
7. THIS PLAN HAS AN APPROXIMATE ENGLISH STATIONING BASED ON A METRIC SURVEY WEST OF I-95 BRIDGE. ALL UTILITY LOCATIONS ARE APPROXIMATE.

20 0 20 40
SCALE IN FEET

**ALTERATIONS TO TRAFFIC SIGNALS**
**ITEM 616.193**

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF TRAFFIC

SIGNALIZATION PLAN
NH ROUTE 33/GRAFTON ROAD (PEASE S. ENTRANCE)

| DGN | STATE PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| A-X000(179) | 13879 | 9 | 14 |

| REVISIONS AFTER PROPOSAL | DESCRIPTION | STATION | NUMBER | DATE |
|---|---|---|---|---|
| | | | | |

| | | DATE |
|---|---|---|
| SDR PROCCESSED | CMB | 7/7/03 |
| NEW DESIGN | DJD | 8/11/03 |
| SHEET CHECKED | CMB | 8/21/03 |
| AS BUILT DETAILS | | |

## SIGNAL HEAD DATA

| PROPOSED | | |
|---|---|---|
| 5 | 2, 6 | 7 |
| (R) (Y) (G) | R Y G | R Y G |
| 12" LENS | 12" LENS | 12" LENS |
| WITH 5" LOUVERED BACKPLATES | | |

NOTE: ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW L.E.D. MODULES.

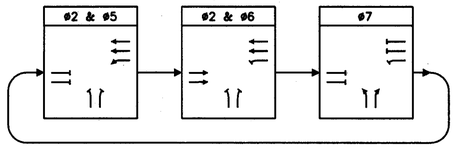
## FIRE PREEMPTION

| | |
|---|---|
| PREEMPT 1 | CALLS ø6 |
| PREEMPT 2 | CALLS ø2 & ø5 |
| PREEMPT 3 | CALLS ø7 |

FIRE PREEMPTION NOTES:

1. PREEMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH OPTICAL RECEIVERS ASSIGNED WITH DESCENDING PRIORITIES AS FOLLOWS: #1 HIGHEST TO #3 LOWEST.
2. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE TIMES SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.

## N.E.M.A. PHASE SEQUENCE

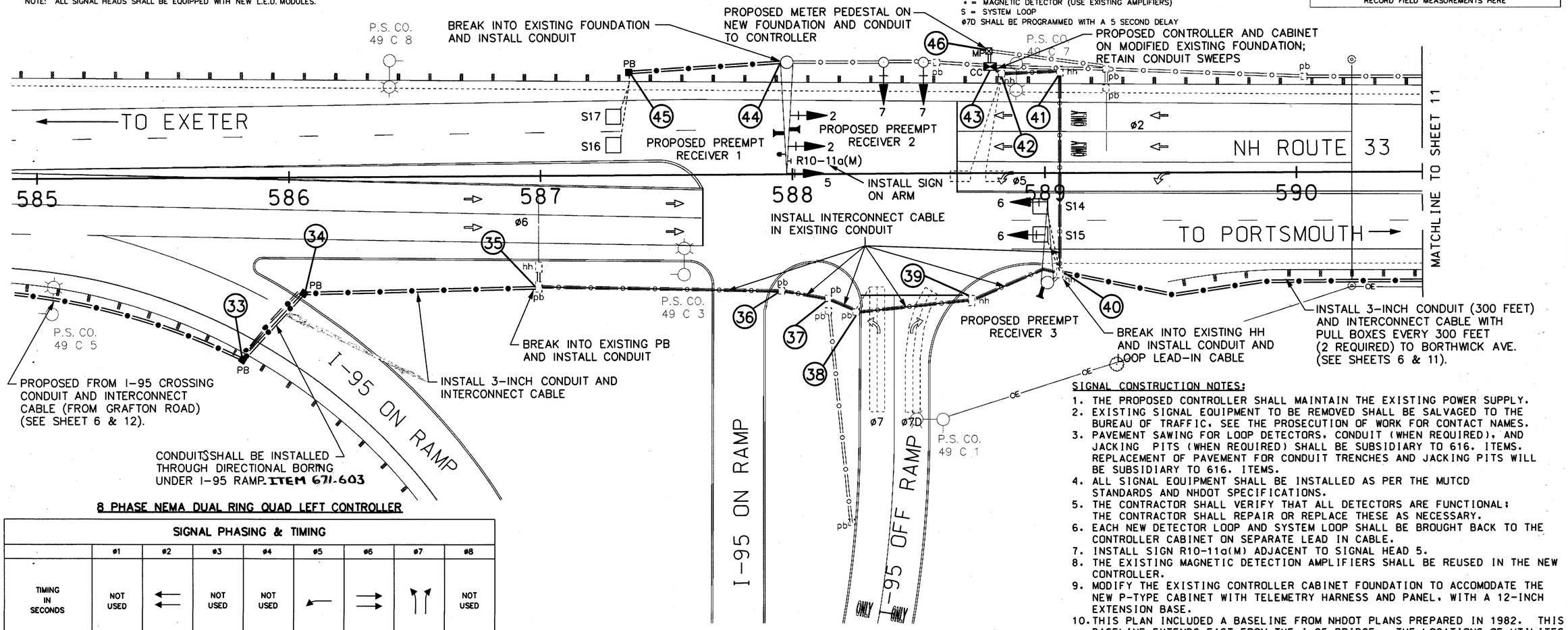



N GRID

## DETECTOR SCHEDULE

| DETECTOR | | | | AMPLIFIER | | INDUCT UH | RESISTANCE OF LOOPS | RESIST. LOOP GRD. MEG. | RESIST. SHIELD GRD. MEG. |
|---|---|---|---|---|---|---|---|---|---|
| STREET | DIRECTION | LANE | ø | NO. | CHANNEL | | | | |
| NH ROUTE 33 | EASTBOUND | THRU (LEFT) | 6• | • | • | | | | |
| NH ROUTE 33 | EASTBOUND | THRU (RIGHT) | 6• | • | • | | | | |
| **NH ROUTE 33** | **EASTBOUND** | **THRU-DEPART (LEFT)** | **S14** | **3** | **1** | | | | |
| **NH ROUTE 33** | **EASTBOUND** | **THRU-DEPART (RIGHT)** | **S15** | **3** | **2** | | | | |
| NH ROUTE 33 | WESTBOUND | LEFT (2) | 5 | 1 | 1 | | | | |
| NH ROUTE 33 | WESTBOUND | THRU (CENTER) | 2• | • | • | | | | |
| NH ROUTE 33 | WESTBOUND | THRU (RIGHT) | 2• | • | • | | | | |
| **NH ROUTE 33** | **WESTBOUND** | **THRU-DEPART (LEFT)** | **S16** | **4** | **1** | | | | |
| **NH ROUTE 33** | **WESTBOUND** | **THRU-DEPART (RIGHT)** | **S17** | **4** | **2** | | | | |
| I-95 OFF RAMP | NORTHBOUND | LEFT | 7 | 2 | 1 | | | | |
| I-95 OFF RAMP | NORTHBOUND | RIGHT | 7D | 2 | 2 | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | RECORD FIELD MEASUREMENTS HERE | | | |

• = MAGNETIC DETECTOR (USE EXISTING AMPLIFIERS)
S = SYSTEM LOOP
ø7D SHALL BE PROGRAMMED WITH A 5 SECOND DELAY




## 8 PHASE NEMA DUAL RING QUAD LEFT CONTROLLER

### SIGNAL PHASING & TIMING

| | ø1 | ø2 | ø3 | ø4 | ø5 | ø6 | ø7 | ø8 |
|---|---|---|---|---|---|---|---|---|
| TIMING IN SECONDS | NOT USED | ← ← | NOT USED | NOT USED | ← | → → | ↑ ↑ | NOT USED |
| INITIAL INTERVAL | - | 10 | - | - | 5 | 10 | 8 | - |
| VEHICLE EXTENSION | - | 4 | - | - | 4 | 4 | 4 | - |
| MAXIMUM 1 | - | 25 | - | - | 40 | 25 | 50 | - |
| MAXIMUM 2 | - | 40 | - | - | 40 | 40 | 40 | - |
| YELLOW | - | 4 | - | - | 4 | 4 | 4 | - |
| ALL RED | - | 2 | - | - | 2 | 2 | 2 | - |
| PEDESTRIAN WALK | - | - | - | - | - | - | - | - |
| PEDESTRIAN CLEAR | - | - | - | - | - | - | - | - |
| FLASH | - | FY | - | - | FRA | FY | FR | - |
| RECALL | - | SOFT | - | - | OFF | SOFT | OFF | - |
| DETECTOR | - | LOCK | - | - | NL | LOCK | NL | - |
| PRE-EMPT PRIORITY | - | 2 | - | - | 2 | 1 | 3 | - |

ø4 & ø8 DUAL ENTRY SYSTEM TO MAXIMUM 2 UNDER COORDINATION

| 2004 DESIGN YEAR VOLUMES AM(PM)[WDMD]<SAT> | 2013 DESIGN YEAR VOLUMES AM(PM)[WDMD]<SAT> |
|---|---|
| ← 550 (845) [545] <455> | ← 600 (920) [595] <495> |
| ← 60 (395) [130] <120> | ← 65 (430) [145] <135> |
| <395> [515] (700) 695 → | <430> [565] (770) 760 → |
| <495> [385] (745) 490 ← | <540> [420] (815) 535 ← |
| 255 (150) [115] <75 | 275 (165) [125] <85 |
| 435 (420) [130] <155 | 475 (460) [145] <170 |

PROPOSED SIGN

NO TURN ON RED ARROW
24" X 30"
R10-11a(M)

20 0 20 40
SCALE IN FEET

# ALTERATIONS TO TRAFFIC SIGNALS ITEM 616.194

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF TRAFFIC

SIGNALIZATION PLAN
NH ROUTE 33/I-95 NB OFF RAMP

| FEDERAL PROJECT NO. | STATE PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| A-X000(179) | 13879 | 10 | 14 |

SIGNAL CONSTRUCTION NOTES:

1. THE PROPOSED CONTROLLER SHALL MAINTAIN THE EXISTING POWER SUPPLY.
2. EXISTING SIGNAL EQUIPMENT TO BE REMOVED SHALL BE SALVAGED TO THE BUREAU OF TRAFFIC. SEE THE PROSECUTION OF WORK FOR CONTACT NAMES.
3. PAVEMENT SAWING FOR LOOP DETECTORS, CONDUIT (WHEN REQUIRED), AND JACKING PITS (WHEN REQUIRED) SHALL BE SUBSIDIARY TO 616. ITEMS. REPLACEMENT OF PAVEMENT FOR CONDUIT TRENCHES AND JACKING PITS WILL BE SUBSIDIARY TO 616. ITEMS.
4. ALL SIGNAL EQUIPMENT SHALL BE INSTALLED AS PER THE MUTCD STANDARDS AND NHDOT SPECIFICATIONS.
5. THE CONTRACTOR SHALL VERIFY THAT ALL DETECTORS ARE FUNCTIONAL; THE CONTRACTOR SHALL REPAIR OR REPLACE THESE AS NECESSARY.
6. EACH NEW DETECTOR LOOP AND SYSTEM LOOP SHALL BE BROUGHT BACK TO THE CONTROLLER CABINET ON SEPARATE LEAD IN CABLE.
7. INSTALL SIGN R10-11a(M) ADJACENT TO SIGNAL HEAD 5.
8. THE EXISTING MAGNETIC DETECTION AMPLIFIERS SHALL BE REUSED IN THE NEW CONTROLLER.
9. MODIFY THE EXISTING CONTROLLER CABINET FOUNDATION TO ACCOMODATE THE NEW P-TYPE CABINET WITH TELEMETRY HARNESS AND PANEL, WITH A 12-INCH EXTENSION BASE.
10. THIS PLAN INCLUDED A BASELINE FROM NHDOT PLANS PREPARED IN 1982. THIS BASELINE EXTENDS EAST FROM THE I-95 BRIDGE. THE LOCATIONS OF UTILITES ARE APPROXIMATE.

REVISIONS AFTER PROPOSAL

| DESCRIPTION | STATION | DATE | NUMBER |
|---|---|---|---|
| | | | |

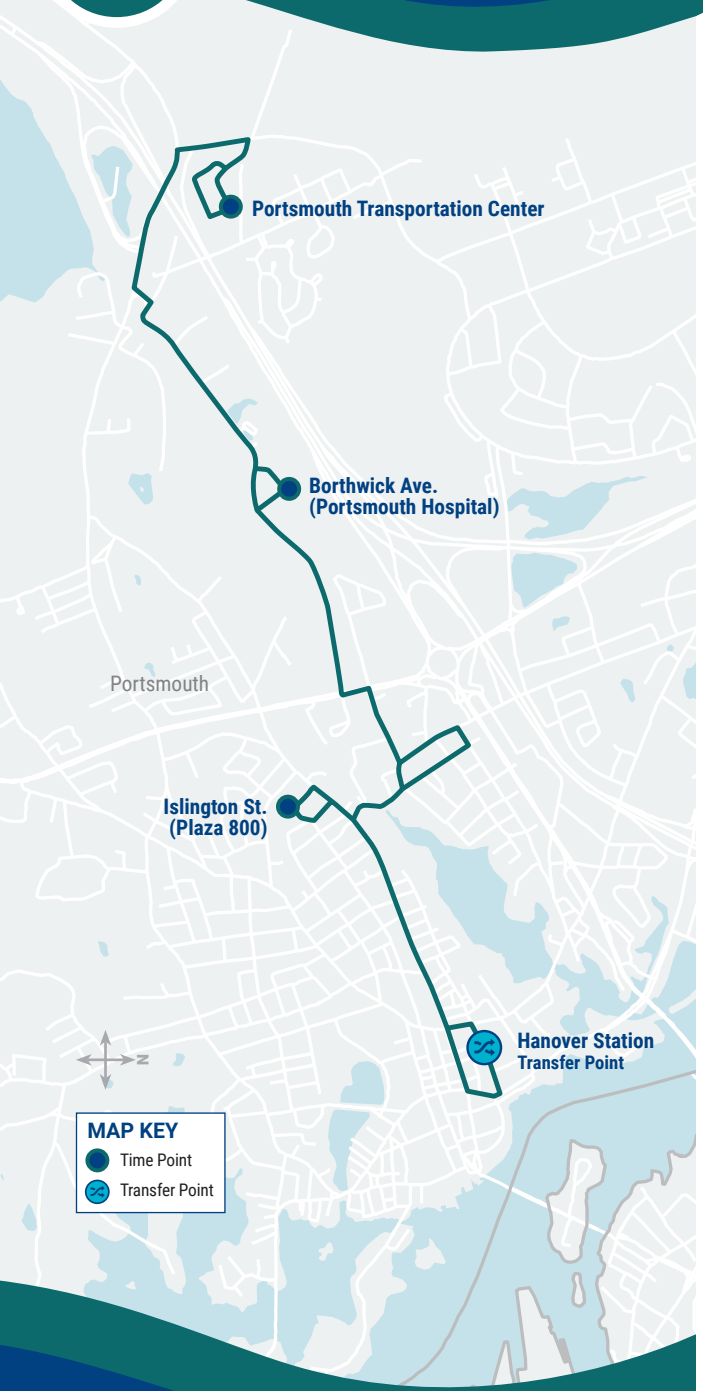
| | | DATE |
|---|---|---|
| SDR PROCESSED | CMB | 7/7/03 |
| NEW DESIGN | DJD | 8/11/03 |
| SHEET CHECKED | CMB | 8/21/03 |
| AS BUILT DETAILS | | DATE |

# APPENDIX K

COAST Bus Schedule & Map

# Route 40 Map

**Portsmouth • Islington • Borthwick**




# Ride Information

## COAST BUS FARES

**Base Cash Fare** **$1.50**

*All passengers ages 5 and up are required to pay this fare each time they board a COAST bus.*

**Half-Fare** **$ 0.75**

*Passengers 65 and older, or passengers with a disability are entitled to pay half the cash fare. Proof of eligibility is required by showing a Medicare card, photo ID with birth date, COAST ADA Paratransit Card, or COAST Half-Fare Card. Please contact COAST to apply for a Half-Fare Card.*

**Multi-Ride Tickets and Passes**

*Available at **www.coastbus.org** or call 603-743-5777, TTY 711.*

**Unlimited Monthly Pass** **$ 52**

*Unlimited rides on COAST Routes for the month.*

## YOUR RIGHTS

COAST adheres to all Federal regulations regarding Civil Rights. If you need to request an ADA Reasonable Modification/ Accommodation, or if you believe you have been discriminated against or would like to file a complaint under the ADA or Title VI, please contact COAST's Civil Rights Officer at 603-516-0788, TTY 711 or email CivilRights@coastbus.org.

## NO SERVICE DAYS

COAST does not operate on the following holidays:

- New Year's Day
- Martin Luther King Jr./ Civil Rights Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Eve Day
- Christmas Day


42 Sumner Drive • Dover, NH 03820

603-743-5777 • TTY 711 • **www.coastbus.org**


*This brochure is available in alternative formats upon request.*

# Bus Schedule & Map 40

Effective 09.17.22

ROUTE 40

**Portsmouth • Islington • Borthwick**

Find all of the full COAST schedules online at **coastbus.org**

# MAP OUT YOUR GAME PLAN

Planning your trip has never been easier!

**www.coastbus.org**

# COAST SYSTEM MAP

## OUTBOUND • INBOUND

# Route 40 Portsmouth • Islington • Borthwick

### How to Read the Schedule

Printed bus schedules only show the timepoints ● (major bus stops where the bus will hold until the scheduled departure time). In between those timepoints are many other stops that you can use. For a full listing of bus stops, visit **www.coastbus.org**, or use the Passio GO! App.

The times shown represent the number of minutes after the hour that the bus will depart from that stop. Last stop times are arrivals. Any exceptions will be noted.

| OUTBOUND (M-Sat) | Service On Every Hour | | |
|---|---|---|---|
| Hanover Station - Portsmouth Transportation Center | First Bus | Minutes Past Hour | Last Bus |
| ● Hanover Station | 6:00am | :00* | 7:00pm |
| ● Islington St. (Plaza 800) | 6:07am | :07* | 7:07pm |
| ● Borthwick Ave. (Ports. Hospital) | 6:15am | :15* | 7:15pm |
| ● Portsmouth Transportation Center | 6:23am | :23* | 7:23pm |

*No Service during the hour of 3pm.*

| INBOUND (M-Sat) | Service On Every Hour | | |
|---|---|---|---|
| Portsmouth Transportation Center- Hanover Station | First Bus | Minutes Past Hour | Last Bus |
| ● Portsmouth Transportation Center | 6:24am | :24* | 7:24pm |
| ● Borthwick Ave. (Ports. Hospital) | 6:31am | :31* | 7:31pm |
| ● Islington St. (Plaza 800) | 6:39am | :39* | 7:39pm |
| ● Hanover Station | 6:47am | :47* | 7:47pm |

*No Service during the hour of 3pm.*

## MAP IT!

For a full listing of bus stops, visit
**www.coastbus.org**
or use the Passio GO! App.

**Passio GO! App**
Download the Passio GO! App for real-time information at the Google Play or App store.

## Making Connections

Please tell your driver if you are trying to make a connection to another Route.

### TRANSFER POINTS

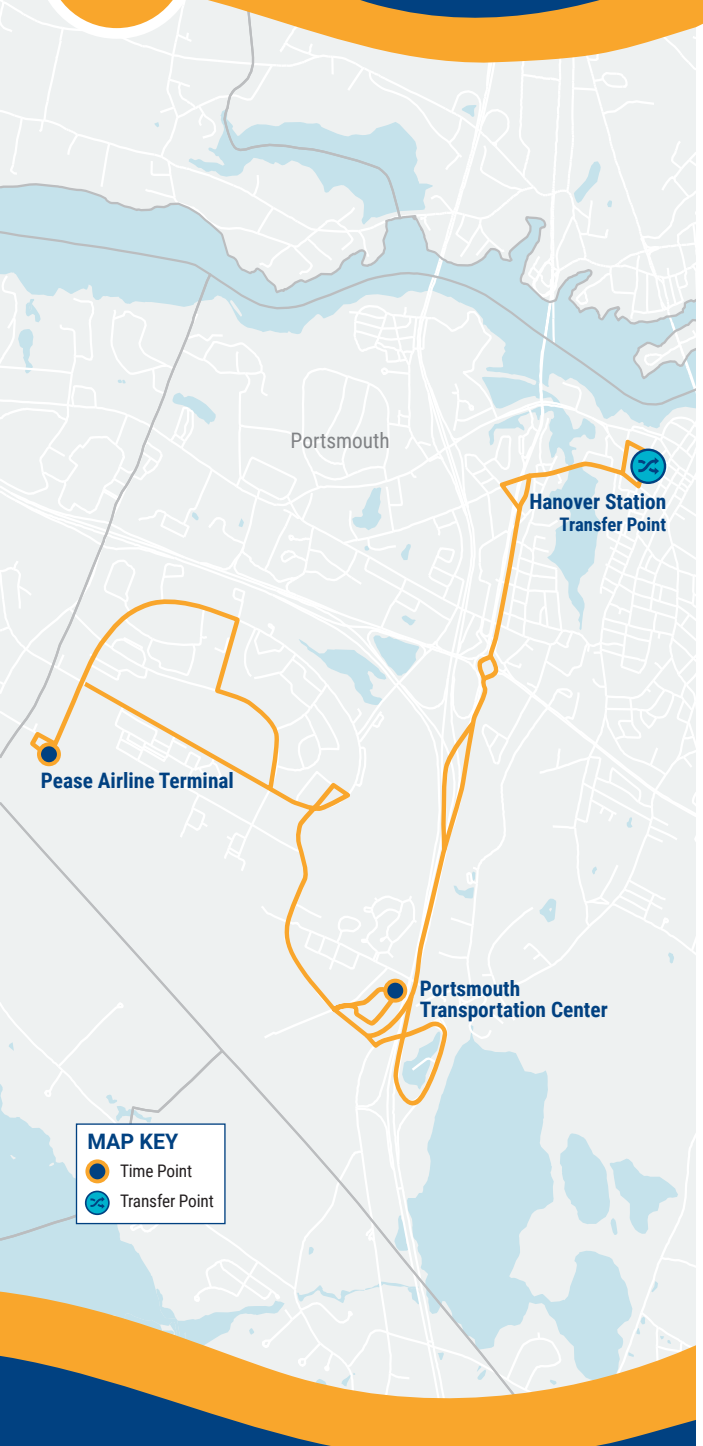
| | |
|---|---|
| Hanover Station | 13 14 40 41 42 43 44 |
| Dover Transportation Center | 1 12 13 33 M-F 33 SAT 34 |
| Dover NHDOT Park & Ride (Exit 9) | 1 14 |
| Rochester City Hall | 6 12 14 |

14 33 SAT Temporarily suspended part of route due to driver shortage.

### Hanover Station, Portsmouth

# Route 42 Map

**Portsmouth • Pease Shuttle**




## Ride Information

### COAST BUS FARES

**Base Cash Fare** **$1.50**

*All passengers ages 5 and up are required to pay this fare each time they board a COAST bus.*

**Half-Fare** **$ 0.75**

*Passengers 65 and older, or passengers with a disability are entitled to pay half the cash fare. Proof of eligibility is required by showing a Medicare card, photo ID with birth date, COAST ADA Paratransit Card, or COAST Half-Fare Card. Please contact COAST to apply for a Half-Fare Card.*

**Multi-Ride Tickets and Passes**

*Available at **www.coastbus.org** or call 603-743-5777, TTY 711.*

**Unlimited Monthly Pass** **$ 52**

*Unlimited rides on COAST Routes for the month.*

### YOUR RIGHTS

COAST adheres to all Federal regulations regarding Civil Rights. If you need to request an ADA Reasonable Modification/ Accommodation, or if you believe you have been discriminated against or would like to file a complaint under the ADA or Title VI, please contact COAST's Civil Rights Officer at 603-516-0788, TTY 711 or email CivilRights@coastbus.org.

### NO SERVICE DAYS

COAST does not operate on the following holidays:

- New Year's Day
- Martin Luther King Jr./ Civil Rights Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Eve Day
- Christmas Day

42 Sumner Drive • Dover, NH 03820
603-743-5777 • TTY 711 • **www.coastbus.org**

*This brochure is available in alternative formats upon request.*

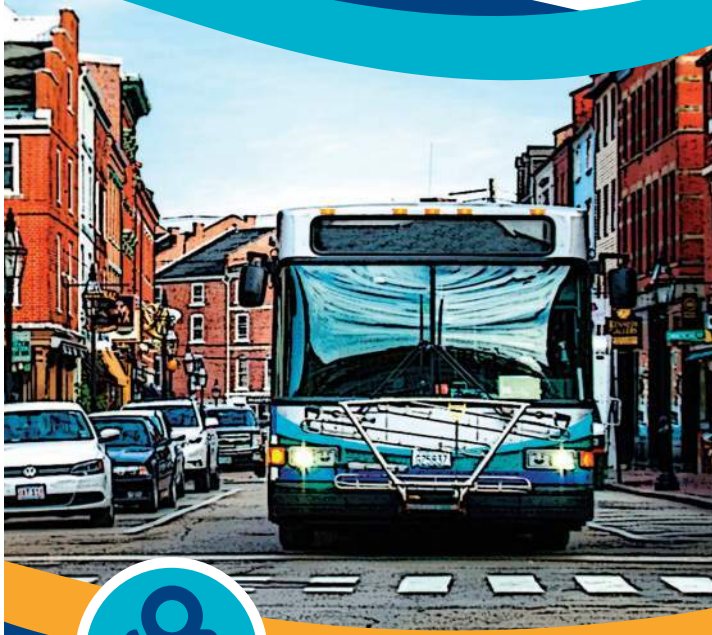
# Bus Schedule & Map 42

COAST

Effective 07.01.22

ROUTE 42

**Portsmouth • Pease Shuttle**



Find all of the full COAST schedules online at **coastbus.org**

# MAP OUT YOUR GAME PLAN

Planning your trip has never been easier!

**www.coastbus.org**

# COAST SYSTEM MAP

## OUTBOUND • INBOUND

# Route 42 Portsmouth • Pease Shuttle

### How to Read the Schedule

Printed bus schedules only show the timepoints (major bus stops where the bus will hold until the scheduled departure time). In between those timepoints are many other stops that you can use. For a full listing of bus stops, visit **www.coastbus.org**, or use the Passio Go! App.

The times shown represent the number of minutes after the hour that the bus will depart from that stop. Last stop times are arrivals. Any exceptions will be noted.

| OUTBOUND (M-F) | Service On Every Hour | | |
|---|---|---|---|
| Hanover Station - Pease Airline Terminal | First Bus | Minutes Past Hour | Last Bus |
| • Hanover Station | 6:22am | :00* | 6:00pm |
| • Portsmouth Transportation Center | 6:33am | :11* | 6:11pm |
| • Pease Airline Terminal | 6:42am | :20* | 6:20pm |

**Regular hourly schedule starts during the hour of 7am and No Service during the hour of 10am.*

| INBOUND (M-F) | Service On Every Hour | | |
|---|---|---|---|
| Pease Airline Terminal - Hanover Station | First Bus | Minutes Past Hour | Last Bus |
| • Pease Airline Terminal | 6:43am | :21* | 6:21pm |
| • Portsmouth Transportation Center | 6:47am | :25* | 6:25pm |
| • Hanover Station | 6:57am | :35* | 6:35pm |

**Regular hourly schedule starts during the hour of 7am and No Service during the hour of 10am.*

## MAP IT!

For a full listing of bus stops, visit
**www.coastbus.org**
or use the Passio GO! App.

**Passio GO! App**
Download the Passio GO! App for real-time information at the Google Play or App store.

## Making Connections

Please tell your driver if you are trying to make a connection to another Route.

### TRANSFER POINTS

| | |
|---|---|
| Hanover Station | 13 14 40 41 42 43 44 |
| Dover Transportation Center | 1 12 13 33 M-F 33 SAT 34 |
| Dover NHDOT Park & Ride (Exit 9) | 1 14 |
| Rochester City Hall | 6 12 14 |

14 33 SAT Temporarily suspended part of route due to driver shortage.

### Hanover Station, Portsmouth

# APPENDIX L

Lonza Employee Residential Zip Code
Based Trip Distribution Analysis

LONZA BIOLOGICS
EMPLOYEE RESIDENTIAL ZIP CODE BASED TRIP DISTRIBUTION ANALYSIS

| OBJECTID | ZIP_CODE | PO_NAME | STATE | employeeCount | Shape_Area | Direction | I-95 South | I-95 North | Route 33 South | Route 33 East | Route 1 East | Route 1 North | Route 4 West | Gosling Road North | check | I-95 South | I-95 North | Route 33 South | Route 33 East | Route 1 East | Route 1 North | Route 4 West | Gosling Road North |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1010.00 | Brimfield | MA | 1 | 0.010514 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 1451.00 | Harvard | MA | 1 | 0.006399 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 1507.00 | Charlton | MA | 1 | 0.012443 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 1522.00 | Jefferson | MA | 1 | 0.00476 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 1581.00 | Westborough | MA | 1 | 0.005997 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 1730.00 | Bedford | MA | 2 | 0.003859 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 1772.00 | Southborough | MA | 1 | 0.004393 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 1801.00 | Woburn | MA | 1 | 0.00367 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 1810.00 | Andover | MA | 2 | 0.009116 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 1826.00 | Dracut | MA | 2 | 0.006115 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 1830.00 | Haverhill | MA | 6 | 0.004248 | | | 100.00% | | | | | | | OK | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 1832.00 | Haverhill | MA | 2 | 0.003408 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 1833.00 | Georgetown | MA | 1 | 0.003762 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 1835.00 | Haverhill | MA | 1 | 0.002461 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 1844.00 | Methuen | MA | 10 | 0.006546 | | | 100.00% | | | | | | | OK | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 1845.00 | North Andover | MA | 2 | 0.007855 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 1852.00 | Lowell | MA | 1 | 0.001495 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 1854.00 | Lowell | MA | 2 | 0.001247 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 1860.00 | Merrimac | MA | 2 | 0.002536 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 1876.00 | Tewksbury | MA | 2 | 0.006037 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 1880.00 | Wakefield | MA | 1 | 0.00226 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 1886.00 | Westford | MA | 1 | 0.008731 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 1907.00 | Swampscott | MA | 1 | 0.00085 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 1913.00 | Amesbury | MA | 5 | 0.003893 | | | 100.00% | | | | | | | OK | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | 1915.00 | Beverly | MA | 1 | 0.00446 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 1921.00 | Boxford | MA | 2 | 0.006996 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 1938.00 | Ipswich | MA | 1 | 0.009451 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 1950.00 | Newburyport | MA | 7 | 0.003159 | | | 100.00% | | | | | | | OK | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 1951.00 | Newbury | MA | 2 | 0.005088 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 1952.00 | Salisbury | MA | 3 | 0.004937 | | | 100.00% | | | | | | | OK | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 1960.00 | Peabody | MA | 1 | 0.004791 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 | 1970.00 | Salem | MA | 1 | 0.002453 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 33 | 1985.00 | West Newbury | MA | 1 | 0.004183 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 34 | 2127.00 | Boston | MA | 1 | 0.000853 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35 | 2145.00 | Somerville | MA | 1 | 0.000407 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 36 | 2176.00 | Melrose | MA | 1 | 0.001348 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 37 | 2180.00 | Stoneham | MA | 1 | 0.001849 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 38 | 2461.00 | Newton Highlands | MA | 1 | 0.000427 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 | 2472.00 | Watertown | MA | 3 | 0.001181 | | | 100.00% | | | | | | | OK | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 | 2492.00 | Needham | MA | 1 | 0.00267 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 41 | 3031.00 | Amherst | NH | 5 | 0.010143 | | | 100.00% | | | | | | | OK | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 42 | 3032.00 | Auburn | NH | 1 | 0.008167 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 43 | 3034.00 | Candia | NH | 3 | 0.01063 | | | 100.00% | | | | | | | OK | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | 3037.00 | Deerfield | NH | 4 | 0.014317 | | | 100.00% | | | | | | | OK | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 45 | 3038.00 | Derry | NH | 8 | 0.010857 | | | 100.00% | | | | | | | OK | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 46 | 3042.00 | Epping | NH | 11 | 0.007973 | | | 50.00% | | | | | | 50.00% | OK | 5.5 | 0 | 0 | 0 | 0 | 0 | 5.5 | 0 |
| 47 | 3044.00 | Fremont | NH | 4 | 0.004945 | | | 50.00% | 50.00% | | | | | | OK | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 48 | 3045.00 | Goffstown | NH | 2 | 0.010311 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 49 | 3047.00 | Greenfield | NH | 1 | 0.008001 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50 | 3051.00 | Hudson | NH | 1 | 0.008357 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 51 | 3052.00 | Litchfield | NH | 1 | 0.004289 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 52 | 3053.00 | Londonderry | NH | 10 | 0.011616 | | | 100.00% | | | | | | | OK | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 53 | 3054.00 | Merrimack | NH | 1 | 0.009547 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 54 | 3055.00 | Milford | NH | 1 | 0.007092 | | | 75.00% | 25.00% | | | | | | OK | 0.75 | 0 | 0.25 | 0 | 0 | 0 | 0 | 0 |
| 55 | 3062.00 | Nashua | NH | 1 | 0.003368 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 56 | 3070.00 | New Boston | NH | 2 | 0.012502 | | | 75.00% | 25.00% | | | | | | OK | 1.5 | 0 | 0.5 | 0 | 0 | 0 | 0 | 0 |
| 57 | 3076.00 | Pelham | NH | 3 | 0.007647 | | | 100.00% | | | | | | | OK | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 58 | 3077.00 | Raymond | NH | 8 | 0.008318 | | | 100.00% | | | | | | | OK | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 59 | 3079.00 | Salem | NH | 6 | 0.007438 | | | 100.00% | | | | | | | OK | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60 | 3101.00 | Manchester | NH | 1 | 0.000226 | | | 90.00% | | | | | | 10.00% | OK | 0.9 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 |
| 61 | 3102.00 | Manchester | NH | 9 | 0.002627 | | | 90.00% | | | | | | 10.00% | OK | 8.1 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 |
| 62 | 3103.00 | Manchester | NH | 6 | 0.002887 | | | 90.00% | | | | | | 10.00% | OK | 5.4 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 |
| 63 | 3104.00 | Manchester | NH | 9 | 0.002441 | | | 90.00% | | | | | | 10.00% | OK | 8.1 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 |
| 64 | 3106.00 | Hooksett | NH | 3 | 0.010556 | | | 100.00% | | | | | | | OK | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65 | 3109.00 | Manchester | NH | 1 | 0.002277 | | | 90.00% | | | | | | 10.00% | OK | 0.9 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 |
| 66 | 3110.00 | Bedford | NH | 4 | 0.009428 | | | 100.00% | | | | | | | OK | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 67 | 3225.00 | Center Barnstead | NH | 1 | 0.008176 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 68 | 3234.00 | Epsom | NH | 1 | 0.009624 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 69 | 3235.00 | Franklin | NH | 1 | 0.009122 | | | | 50.00% | | | | | 50.00% | OK | 0 | 0.5 | 0 | 0 | 0 | 0 | 0.5 | 0 |
| 70 | 3244.00 | Hillsborough | NH | 1 | 0.024593 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 71 | 3245.00 | Holderness | NH | 1 | 0.010031 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 72 | 3253.00 | Meredith | NH | 1 | 0.014683 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 73 | 3255.00 | Newbury | NH | 1 | 0.010912 | | | 50.00% | | | | | | 50.00% | OK | 0.5 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 |
| 74 | 3258.00 | Chichester | NH | 3 | 0.005796 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 75 | 3261.00 | Northwood | NH | 9 | 0.008624 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 |
| 76 | 3263.00 | Pittsfield | NH | 1 | 0.007336 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 77 | 3275.00 | Suncook | NH | 1 | 0.011764 | | | 50.00% | | | | | | 50.00% | OK | 0.5 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 |



Tighe&Bond

LONZA BIOLOGICS
EMPLOYEE RESIDENTIAL ZIP CODE BASED TRIP DISTRIBUTION ANALYSIS

| OBJECTID | ZIP_CODE | PO_NAME | STATE | employeeCount | Shape_Area | Direction | I-95 South | I-95 North | Route 33 South | Route 33 East | Route 1 East | Route 1 North | Route 4 West | Gosling Road North | check | I-95 South | I-95 North | Route 33 South | Route 33 East | Route 1 East | Route 1 North | Route 4 West | Gosling Road North | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 78 | 3280.00 | Washington | NH | 1 | 0.013125 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 79 | 3281.00 | Weare | NH | 1 | 0.017189 | | | 50.00% | | | | | | 50.00% | OK | 0.5 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | |
| 80 | 3290.00 | Nottingham | NH | 18 | 0.013032 | | | 50.00% | | | | | | 50.00% | OK | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | |
| 81 | 3301.00 | Concord | NH | 2 | 0.014821 | | | 50.00% | | | | | | 50.00% | OK | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 82 | 3303.00 | Concord | NH | 1 | 0.020526 | | | 50.00% | | | | | | 50.00% | OK | 0.5 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | |
| 83 | 3570.00 | Berlin | NH | 1 | 0.023446 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 84 | 3576.00 | Colebrook | NH | 1 | 0.057233 | | | | 34.00% | 33.00% | | | | 33.00% | OK | 0 | 0.34 | 0.33 | 0 | 0 | 0 | 0.33 | 0 | |
| 85 | 3801.00 | Portsmouth | NH | 116 | 0.008103 | | | | | 20.00% | 20.00% | 20.00% | | 20.00% 20.00% | OK | 0 | 0 | 23.2 | 23.2 | 23.2 | 0 | 23.2 | 23.2 | |
| 86 | 3809.00 | Alton | NH | 1 | 0.014804 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 87 | 3810.00 | Alton Bay | NH | 3 | 0.008575 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | |
| 88 | 3811.00 | Atkinson | NH | 2 | 0.003295 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 89 | 3812.00 | Bartlett | NH | 1 | 0.02191 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 90 | 3819.00 | Danville | NH | 3 | 0.003186 | | | 50.00% | | | | | | 50.00% | OK | 1.5 | 0 | 0 | 0 | 0 | 0 | 1.5 | 0 | |
| 91 | 3820.00 | Dover | NH | 116 | 0.00875 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 116 | 0 | |
| 92 | 3823.00 | Madbury | NH | 5 | 0.003217 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | |
| 93 | 3824.00 | Durham | NH | 7 | 0.007376 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | |
| 94 | 3825.00 | Barrington | NH | 20 | 0.014117 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | |
| 95 | 3826.00 | East Hampstead | NH | 2 | 0.001192 | | | 100.00% | | | | | | | OK | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 96 | 3827.00 | East Kingston | NH | 3 | 0.00496 | | | 100.00% | | | | | | | OK | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 97 | 3830.00 | East Wakefield | NH | 2 | 0.003238 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | |
| 98 | 3833.00 | Exeter | NH | 39 | 0.013793 | | | 50.00% | | 50.00% | | | | | OK | 19.5 | 0 | 19.5 | 0 | 0 | 0 | 0 | 0 | |
| 99 | 3835.00 | Farmington | NH | 15 | 0.010892 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | |
| 100 | 3839.00 | Rochester | NH | 9 | 0.002018 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | |
| 101 | 3840.00 | Greenland | NH | 24 | 0.003048 | | | | | 100.00% | | | | | OK | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | |
| 102 | 3841.00 | Hampstead | NH | 7 | 0.003098 | | | 100.00% | | | | | | | OK | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 103 | 3842.00 | Hampton | NH | 27 | 0.003921 | | | 100.00% | | | | | | | OK | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 104 | 3844.00 | Hampton Falls | NH | 4 | 0.003506 | | | 100.00% | | | | | | | OK | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 105 | 3848.00 | Kingston | NH | 3 | 0.005907 | | | 100.00% | | | | | | | OK | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 106 | 3851.00 | Milton | NH | 10 | 0.008272 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | |
| 107 | 3852.00 | Milton Mills | NH | 1 | 0.001669 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 108 | 3855.00 | New Durham | NH | 9 | 0.012785 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | |
| 109 | 3856.00 | Newfields | NH | 5 | 0.00225 | | | | | 100.00% | | | | | OK | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | |
| 110 | 3857.00 | Newmarket | NH | 25 | 0.004782 | | | 50.00% | | | | | | 50.00% | OK | 12.5 | 0 | 0 | 0 | 0 | 0 | 12.5 | 0 | |
| 111 | 3858.00 | Newton | NH | 1 | 0.002836 | | | 100.00% | | | | | | | OK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 112 | 3861.00 | Lee | NH | 7 | 0.005561 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | |
| 113 | 3862.00 | North Hampton | NH | 9 | 0.003932 | | | | | 100.00% | | | | | OK | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | |
| 114 | 3864.00 | Ossipee | NH | 2 | 0.01136 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | |
| 115 | 3865.00 | Plaistow | NH | 4 | 0.002967 | | | 100.00% | | | | | | | OK | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 116 | 3867.00 | Rochester | NH | 58 | 0.009024 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 0 | |
| 117 | 3868.00 | Rochester | NH | 15 | 0.002244 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | |
| 118 | 3869.00 | Rollinsford | NH | 5 | 0.001979 | | | | 50.00% | | | | 50.00% | | OK | 0 | 2.5 | 0 | 0 | 0 | 2.5 | 0 | 0 | |
| 119 | 3870.00 | Rye | NH | 10 | 0.003512 | | | 50.00% | | 50.00% | | | | | OK | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | |
| 120 | 3872.00 | Sanbornville | NH | 3 | 0.012299 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | |
| 121 | 3873.00 | Sandown | NH | 4 | 0.004147 | | | 50.00% | | 50.00% | | | | | OK | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | |
| 122 | 3874.00 | Seabrook | NH | 5 | 0.002676 | | | 100.00% | | | | | | | OK | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 123 | 3878.00 | Somersworth | NH | 50 | 0.002836 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | |
| 124 | 3882.00 | Effingham | NH | 2 | 0.011411 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | |
| 125 | 3884.00 | Strafford | NH | 5 | 0.014538 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | |
| 126 | 3885.00 | Stratham | NH | 24 | 0.004492 | | | | | 100.00% | | | | | OK | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | |
| 127 | 3887.00 | Union | NH | 7 | 0.006041 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | |
| 128 | 3894.00 | Wolfeboro | NH | 1 | 0.020419 | | | | | | | | | 100.00% | OK | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 129 | 3901.00 | Berwick | ME | 10 | 0.0107 | | 100.00% | | | | | | | | OK | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 130 | 3902.00 | Cape Neddick | ME | 9 | 0.005456 | | 100.00% | | | | | | | | OK | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 131 | 3903.00 | Eliot | ME | 13 | 0.006136 | | 100.00% | | | | | | | | OK | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 132 | 3904.00 | Kittery | ME | 10 | 0.003178 | | 100.00% | | | | | | | | OK | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 133 | 3905.00 | Kittery Point | ME | 3 | 0.002057 | | 100.00% | | | | | | | | OK | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 134 | 3906.00 | North Berwick | ME | 7 | 0.011124 | | 100.00% | | | | | | | | OK | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 135 | 3907.00 | Ogunquit | ME | 1 | 0.0011 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 136 | 3908.00 | South Berwick | ME | 13 | 0.009329 | | 100.00% | | | | | | | | OK | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 137 | 3909.00 | York | ME | 9 | 0.010628 | | 100.00% | | | | | | | | OK | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 138 | 4005.00 | Biddeford | ME | 2 | 0.014128 | | 100.00% | | | | | | | | OK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 139 | 4009.00 | Bridgton | ME | 1 | 0.018959 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 140 | 4021.00 | Cumberland Center | ME | 1 | 0.005747 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 141 | 4027.00 | Lebanon | ME | 5 | 0.016093 | | 100.00% | | | | | | | | OK | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 142 | 4038.00 | Gorham | ME | 1 | 0.014925 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 143 | 4042.00 | Hollis Center | ME | 2 | 0.009715 | | 100.00% | | | | | | | | OK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 144 | 4043.00 | Kennebunk | ME | 9 | 0.009994 | | 100.00% | | | | | | | | OK | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 145 | 4046.00 | Kennebunkport | ME | 2 | 0.013092 | | 100.00% | | | | | | | | OK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 146 | 4061.00 | North Waterboro | ME | 1 | 0.005735 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 147 | 4062.00 | Windham | ME | 3 | 0.014431 | | 100.00% | | | | | | | | OK | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 148 | 4072.00 | Saco | ME | 2 | 0.011271 | | 100.00% | | | | | | | | OK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 149 | 4073.00 | Sanford | ME | 4 | 0.010941 | | 100.00% | | | | | | | | OK | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 150 | 4076.00 | Shapleigh | ME | 3 | 0.011892 | | 100.00% | | | | | | | | OK | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 151 | 4083.00 | Springvale | ME | 2 | 0.002897 | | 100.00% | | | | | | | | OK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 152 | 4087.00 | Waterboro | ME | 1 | 0.005467 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 153 | 4090.00 | Wells | ME | 2 | 0.016786 | | 100.00% | | | | | | | | OK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 154 | 4105.00 | Falmouth | ME | 1 | 0.008846 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 155 | 4281.00 | South Paris | ME | 1 | 0.012843 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 156 | 4938.00 | Farmington | ME | 1 | 0.036329 | | 100.00% | | | | | | | | OK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1020 |
| | | | SUM | 1020 | | | | | | | | | | | | 285.65 | 122.34 | 114.78 | 23.2 | 23.2 | 2.5 | 425.13 | 23.2 | |
| | | | | 0 | | | | | | | | | | | | 28% | 12% | 11% | 2% | 2% | 0% | 42% | 2% | |
| | | | | | | | | | | | | | | | | | 30% | 10% | 10% | 3% | 3% | 1% | 40% | 3% |



Tighe&Bond

The State of New Hampshire
# Department of Environmental Services

Robert R. Scott, Commissioner

**NOTICE OF ACCEPTANCE OF PERMIT APPLICATION**
LAND RESOURCES MANAGEMENT
ALTERATION OF TERRAIN BUREAU

September 5, 2023

PORTSMOUTH MUNICIPAL CLERK
1 JUNKINS AVE
PORTSMOUT NH 03801

**Re: Alteration of Terrain (AoT) Bureau Permit Application (RSA 485-A:17); NHDES File Number: 230901-190**
**Project Name: ASC/Medical Office**
**Subject Property: Tax Map# 315, Lot# 5**

Dear Sir or Madam:

Pursuant to RSA 541-A:39, please be advised that the New Hampshire Department of Environmental Services (NHDES) AoT Bureau accepted an application on September 5, 2023 for the permit program and subject property referenced above. The application requests a permit to disturb approximately 181,000 square feet of earth at the subject property.

Pursuant to Env-Wq 1503.05 (f), the applicant is required to provide a copy of the application and plans to the municipality. If you have not received the required information, please contact the agent: **ALLEN & MAJOR ASSOCIATES, INC C/O BRIAN D JONES PE, 400 HARVEY ROAD, SUITE D, MANCHESTER NH 03103**.

If you wish to comment on the application, please submit your comments by **September 19, 2023**. All comments should reference the NHDES file number, and mailed to the following address: **NHDES ALTERATION OF TERRAIN BUREAU, PO BOX 95, CONCORD NH 03302-0095**.

Please provide a copy of this notice to all interested departments, boards and commissions. Also note that under current state law and regulations, NHDES is not authorized to consider local zoning and regulatory issues pertaining to a project; these must be addressed at the local level.

If you have any questions, please contact the NHDES Alteration of Terrain Bureau at (603) 271-3568.

Sincerely,
Alteration of Terrain Bureau
Land Resources Management

cc: Dr. Alex Slocum, ATDG, LLC
Raquelle Kemnitz, Apex Design Build
Paul Brean, Pease Development Suthority
Brian Jones, Allen & Major Associates, Inc.

"Green" Statement
360 Corporate Dr.
Portsmouth, NH

Pursuant to Section 2.5.3.1(a) of the Site Plan Review Regulations, Apex Design Build Respectfully submits the following list of the project's "green" components for the new construction at 360 Corporate Dr., Portsmouth, NH:

- The project will meet or exceed all applicable current energy codes.
- All features, rooms, pathways, and means of conveyance will be installed to meet or exceed ADA requirements.
- The project and tenants are located with intent to maximize the usage of the public transit bus stop.
- All collected stormwater runoff is being directed, managed, and stored on-site, limiting the impact on the city stormwater system and limiting sheet flow towards the street.
- The footprint of the proposed developed area has been strategically and meticulously designed to avoid disruption of any existing Wet Lands.
- All landscaping to use native or adaptive species to limit the use of additional resources to maintain the landscaping.

# DRAINAGE REPORT

ALLEN & MAJOR ASSOCIATES, INC.

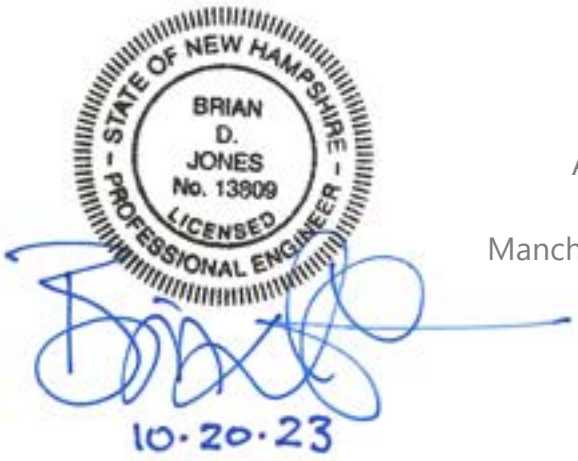
ASC / Medical Office
360 Corporate Drive
Portsmouth, New Hampshire

**APPLICANT**:
ATDG, LLC
7 Sinclair Drive
Exeter, NH 03833

**PREPARED BY**:
Allen & Major Associates, Inc.
400 Harvey Road
Manchester, New Hampshire 03103

# DRAINAGE REPORT

ASC / Medical Office
360 Corporate Drive
Portsmouth, New Hampshire




**APPLICANT:**
ATDG, LLC
7 Sinclair Drive
Exeter, NH 03833

**PREPARED BY:**
Allen & Major Associates, Inc.
400 Harvey Road, Suite D
Manchester, New Hampshire 03103

**ISSUED:**
August 14, 2023

**REVISED:**
August 17, 2023
August 28, 2023
October 20, 2023

**A&M PROJECT NO.:**
3250-01

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# SECTION 1.0 -
## OVERVIEW

## Executive Summary

The purpose of this drainage report is to provide a detailed review of the stormwater runoff, both quality and quantity, as it pertains to the existing and proposed developed conditions. This report will show by means of narrative, calculations and exhibits that appropriate best management practices have been implemented into the design to mitigate the impacts from the proposed development. This report and following tables demonstrate that there is no increase in total peak rate of runoff from the site for all design storm events.

| **Study Point #1 - Wetlands** | | | | |
|---|---|---|---|---|
| | 2-Year | 10-Year | 25-Year | 50-Year |
| Existing Flow (CFS) | 1.46 | 5.06 | 8.52 | 12.08 |
| Proposed Flow (CFS) | 1.00 | 4.73 | 8.44 | 11.68 |
| **Change (CFS)** | **-0.46** | **-0.33** | **-0.08** | **-0.40** |
| Existing Volume (CF) | 8,284 | 22,410 | 35,999 | 50,076 |
| Proposed Volume (CF) | 7,305 | 21,904 | 36,451 | 52,368 |
| **Change (CF)** | **-979** | **-506** | **452** | **2,292** |

| **Study Point #2 - Abutter** | | | | |
|---|---|---|---|---|
| | 2-Year | 10-Year | 25-Year | 50-Year |
| Existing Flow (CFS) | 0.12 | 0.46 | 0.79 | 1.14 |
| Proposed Flow (CFS) | 0.12 | 0.38 | 0.63 | 0.89 |
| **Change (CFS)** | **0.00** | **-0.08** | **-0.16** | **-0.25** |
| Existing Volume (CF) | 612 | 1,747 | 2,860 | 4,025 |
| Proposed Volume (CF) | 487 | 1,286 | 2,046 | 2,831 |
| **Change (CF)** | **-125** | **-461** | **-814** | **-1,194** |

| **Study Point #3 - Corporate Drive** | | | | |
|---|---|---|---|---|
| | 2-Year | 10-Year | 25-Year | 50-Year |
| Existing Flow (CFS) | 0.63 | 1.76 | 2.77 | 3.78 |
| Proposed Flow (CFS) | 0.27 | 1.72 | 2.56 | 3.23 |
| **Change (CFS)** | **-0.36** | **-0.04** | **-0.21** | **-0.55** |
| Existing Volume (CF) | 2,479 | 5,996 | 9,234 | 12,516 |
| Proposed Volume (CF) | 985 | 3,661 | 5,978 | 8,284 |
| **Change (CF)** | **-1,494** | **-2,335** | **-3,256** | **-4,232** |

| Study Point #4 - International Drive | | | | |
|---|---|---|---|---|
| | 2-Year | 10-Year | 25-Year | 50-Year |
| Existing Flow (CFS) | 0.07 | 0.34 | 0.62 | 0.92 |
| Proposed Flow (CFS) | 0.06 | 0.21 | 0.34 | 0.48 |
| **Change (CFS)** | **-0.01** | **-0.13** | **-0.28** | **-0.44** |
| Existing Volume (CF) | 491 | 1,541 | 2,606 | 3,738 |
| Proposed Volume (CF) | 298 | 786 | 1,251 | 1,731 |
| **Change (CF)** | **-193** | **-755** | **-1,355** | **-2,007** |

**Site Location and Description**

The overall project site is comprised of one parcel totaling approximately 6.11± acres. The parcel is listed on the City of Portsmouth's Assessors 315, as Lot 5, and is located at 360 Corporate Drive. The project proposes to develop the site into a 3-story surgical center.

The site is located east of Portsmouth International Airport, north of Great Bay Community College, and west of Hodgson Brook and Route 16. The property was previously developed for the Greater Portsmouth Transportation Management Association; to date, the building has been razed. Currently, the parcel is unoccupied and comprised of 2 existing curb cuts, a paved parking area, lawn, wetlands, and woodlands. The existing tract of land is clear-cut along its frontage on Corporate Drive, with woods and wetlands extending from the centralized portion of the parcel to the rear property line. Elevations on-site range from elevation 61 at the northwest property corner along Corporate Drive to elevation 52 at the southeast property corner, adjacent to the wetland area.

The proposed development consists of the construction of a 3-story surgical center with associated parking. The proposed building has a footprint of 16,700± square feet with gross floor area of 52,400± square feet. The proposed sitework incorporates various walls to protect the existing wetland resources on site and utilize the developable area. A total of 124 spaces are provided for the building. The proposed condition of the site accommodates loading and delivery areas for building operations.

The underlying soils were identified using the USDA Natural Resources Conservation Service (NRCS) soil survey for Rockingham County. The site is shown to primarily have a soil type of Urban Land which does not have a classified Hydrologic Soil Group. A copy of the NRCS Soil Report is included in the Appendix of this report.

| Symbol | Soil Taxonomic Name | Hydrologic Soil Group |
|---|---|---|
| 699 | Urban Land | - |
| 799 | Urban Land-Canton Complex, 3 to 15 percent slopes | - |

The saturated hydraulic conductivity (Ksat) rate assigned in the NRCS Report for Chatfield-Hollis-Canton Complex soils, which are soils identified adjacent to the site in the NRCS report, were utilized for the design infiltration rate on the site. These soils are consistent in composition with what was observed in the test pits performed by A&M and during the site-specific survey, described below. The Ksat value of this soil is 10.19 micrometers per second. This value was converted to 1.44 inches per hour which was assigned a 2x safety factor to achieve the design infiltration rate of 0.72 inches per hour. Additional soil information is provided in the NRCS Soil Report within the appendix of this report.

A site-specific soil survey was performed by TES Environmental Consultants, on August 9, 2023, to determine the on-site soil classification. It was determined that the uplands on site are predominantly hydrologic soil group "B", and include Canton fine sandy loam, Newfields fine sandy loam, and Udorthents, loamy soils. The wetland soils are hydrologic soil type "C" and are classified as Squamscott fine sandy loam. The site-specific soil survey was used for determining the Hydrologic Soil Group for the development. Please see the appendix section for the Hydrologic Soil Plans used for the drainage design. The TES Environmental Consultants survey classified the onsite soils as the following:

SITE SPECIFIC SOIL MAP UNIT KEY

| Symbol* | Map Unit | Slope Class | Drainage Class | HISS Symbol | Hydrologic Soil Group |
|---|---|---|---|---|---|
| 42B | Canton fine sandy loam | 0-8% | Well | 221BH | B |
| 42C | Canton fine sandy loam | 8-15% | Well | 221CH | B |
| 444B | Newfields fine sandy loam | 0-8% | Moderately well | 321BH | B |
| 444C | Newfields fine sandy loam | 8-15% | Moderately well | 321CH | B |
| 500B/ccabb | Udorthents, loamy | 0-8% | Well | 261BH | B |
| 500C/ccabb | Udorthents, loamy | 8-15% | Well | 261CH | B |
| 500D/ccabb | Udorthents, loamy | 15-25% | Well | 261DH | B |
| 500E/ccabb | Udorthents, loamy | 25% + | Well | 261EH | B |
| 500B/hchbb | Udorthents, loamy | 0-8% | Undeterminable | 761BH** | B** |
| 538B | Squamscott fine sandy loam | 0-8% | Poorly | 551BH | C |
| 921B | Newfields Variant (SPD) | 0-8% | Somewhat poorly | 421BH | C |

* Refer to accompanying report for 5-unit supplemental symbol explanation.

** Assumed based upon adjacent soils without impervious surfaces.

A stormwater analysis has been performed for two project site situations. The first analysis consists of the existing site conditions and the second consists of the proposed site conditions. There are four study points where the stormwater flows were analyzed. The study points and contributing watersheds are further outlined in the accompanying text and calculations.

Site Data for Stormwater Modeling

**The proposed project will disturb approximately 181,000 square feet.** This disturbance includes the construction of the proposed building, parking and drive aisles, utility improvements, and stormwater management BMP's.

The proposed watershed is comprised of approximately **92,068** square feet of impervious an increase of **74,926** square feet from the existing conditions. This impervious area includes roof cover, pavement, and sidewalks. Rainfall data used for modeling the stormwater runoff was derived from the "Extreme Precipitation Tables" from the Northeast Regional Climate Center at Cornell University. The design storm events utilized in this analysis are the 2, 10, 25, and 50-year storms. Per Env-Wq 1503.08(l), a 15% multiplier was applied to the storm events because the site is within a Coastal and Great Bay Community.

**Existing Site Conditions**

Stormwater runoff exits the site to four (4) different study point locations. To exhibit no increase in runoff to these points, stormwater runoff flows were analyzed at these four "Study Points." The included Existing Watershed Plan (EWS-1) outlines the boundaries and contributing watershed for the Study Points.

1. Study Point 1: This study point is located at the existing wetland. It is examining the contributing flow from the centralized portion of the site that discharges to the wetland area on site.

2. Study Point 2: This study point is located at the 320 Corporate Drive property. It is examining the contributing flow from the southern portion of the site which travels off site, to the abutter. The stormwater which flows to this study point will be captured within the drainage network of the abutting parcel.

3. Study Point 3: This study point is located at the Corporate Drive roadway. It is examining the contributing flow from the western portion of the site along the frontage of the property. The stormwater which flows to this study point will be managed by the existing stormwater management facilities within the Corporate Drive

right-of-way.

4. Study Point 4: This study point is located at the International Drive roadway. It is examining the contributing flow from the northeastern portion of the site. The stormwater which flows to this study point will be managed by the existing stormwater management facilities within the International Drive right-of-way.

**Proposed Site Conditions**

The project proposes to construct a 16,700± square foot surgical center with associated parking, lighting, utilities, and stormwater infrastructure. The proposed stormwater management facilities have been designed to control the runoff using a combination of structural and non-structural best management practices (BMPs). Runoff from the rear parking lots will be collected by deep sump catch basins, and Nyloplast drains, and directed to Infiltration System #1 or #2. These systems are comprised of Stormtech SC-310 chambers which are backfilled and surrounded with coarse washed stone. The runoff is pretreated when entering these systems through the isolator row, which is lined with filter fabric to trap sediment and debris. The majority of the roof runoff is also directed to these two systems which have been designed to infiltrate the water quality volume per Env-Wq 1504.10. Runoff beyond the water quality volume will overflow to a rip rap apron. Runoff from the front roof canopy and a portion of the front parking lot will be directed to Infiltration System #3. This system is comprised of Stormtech SC-160LP chambers and backfilled with coarse washed stone. This system is designed to infiltrate the water quality volume. Due to the location of this system, it has not been designed with an overflow. Therefore, the system has been designed to infiltrate all runoff which is directed to it, up to and including the 50-year storm event. Runoff from the remainder of the parking lot will sheet flow over the pavement to one of several Rain Guardian Turret devices before entering one of four sediment forebays which overflow to one of four bioretention systems. The Turret is a precast concrete curb inlet structure with a grate and filter screen which traps trash and large debris. The sediment forebays provide pretreatment of the runoff before entering the bioretention systems. The bioretention systems have been designed to infiltrate the required water quality volume. Runoff from the loading dock area will be collected by a deep sump catch basin and treated by a proprietary filter (Jellyfish) before discharge to a rip rap apron.

A hydrologic study of the site was conducted to determine the impact of the proposed development on the existing stormwater runoff. The study determined the rate of runoff at these study points have decreased or remain unchanged. The Proposed Watershed Plan (PWS-1) outlines the boundaries and contributing watershed for the Study Points.

# SECTION 2.0 - DISCUSSION

## Methodology

The peak discharge rates were determined using techniques and data found in the following:

1. Urban Hydrology for Small Watersheds – Technical Release 55 by the United States Department of Agriculture Soils Conservation Service, June 1986. Runoff curve numbers and 24-hour precipitation values were obtained from this reference.
2. HydroCAD© Stormwater Modeling System by HydroCAD Software Solutions, LLC, version 10.20-3c. The HydroCAD program was used to generate the runoff hydrographs for the watershed areas, to determine discharge, stage, and storage characteristics for the bioretention system, to perform drainage routing and to combine the results of the runoff hydrographs.
3. Soil Survey of Rockingham County, New Hampshire by the United States Department of Agriculture, Natural Resources Conservation Services (NRCS). Soil types and boundaries were obtained from this reference.

## Peak Discharge Rates

The stormwater runoff analysis of the existing and proposed conditions includes an estimation of the peak discharge rate from various rainfall events. Peak discharge rates were developed using TR-55 Urban Hydrology for Small Watersheds, developed by the United States Department of Commerce, Engineering Division and the HydroCAD 10.20 computer program. Further, the analysis has been prepared in accordance with the New Hampshire Stormwater Management Manual and standard engineering practices. The peak discharge rate has been estimated for each watershed during the 2, 10, 25, and 50-year storm events.

The stormwater runoff model shows that the proposed site design results in no increase in the total rate of runoff during all storm events. This is accomplished through the construction of the three infiltration systems and four bioretention systems. The table in *Section 1: Executive Summary* provides a summary of the estimated peak discharge rates for each study point during each of the design storm events. The HydroCAD worksheets for the existing and proposed drainage conditions are included within Sections 5 and 6 of this report.

**Performance Standards**

Stormwater performance standards have been implemented as part of the overall stormwater management plan for the proposed development. The goal of these standards is to improve water quality and protect the waters of New Hampshire from adverse impacts due to development. The performance standards are met by implementing appropriate Best Management Practices (BMPs). BMPs were designed in accordance with the NH Stormwater Management Manual and Env.Wq. 1500.

BMPs implemented in the design include:

- Deep sump catch basins
- Subsurface infiltration systems
- Rain Guardian Turret curb inlets
- Sediment Forebays
- Bioretention Systems
- Proprietary filter device (Jellyfish)
- Specific maintenance schedule

**Water Quality Volume (WQV)**

The Water Quality Volume (WQV) is the amount of stormwater runoff from a rainfall event that should be captured and treated to remove the majority of stormwater pollutants on an average annual basis. The recommended WQV is the volume of runoff associated with the first one-inch of rainfall, which is equivalent to capturing and treating the runoff from the 90th percentile of all rainfall.

The WQV has been calculated for the proposed site development and adequate treatment is proposed within the Infiltration System. Refer to Appendix Section 7.8 for *NHDES BMP Worksheets* for specific requirements.

**Water Quality Flow (WQF)**

The Water Quality Flow (WQF) is used to determine a flow rate associated with the WQV, for sizing flow-based treatment and pre-treatment practices.

The WQF has been calculated for the treatment train for the proposed work. Refer to Appendix Section 7.8 for *NHDES BMP Worksheets* for specific requirements.

## Groundwater Recharge Volume (GRV)

The purpose of the groundwater recharge volume criterion is to protect groundwater resources by minimizing the loss of annual pre-development groundwater recharge as a result of the proposed development.
The required Groundwater Recharge Volume (GRV) should be based on the site soils and the following equation:

$$\mathbf{GRV = (A_I)(Rd)}$$

Where:
$A_I$ = the total effective area of impervious surfaces that will exist on the site after development
Rd = the groundwater recharge depth based on the USDA/NRCS hydrologic soil group, as follows:

| | Impervious Area For GRV | | | AoT Requirement | | |
|---|---|---|---|---|---|---|
| HSG | Existing Area (SF) | Proposed Area (SF) | **$A_I$**, Change (SF) | **Rd**, Recharge Depth (inches) | **Rd**, Recharge Depth (feet) | Recharge Required (CF) |
| A | 0 | 0 | 0 | 0.40 | 0.0333 | 0 |
| B | 17,142 | 92,033 | 74,891 | 0.25 | 0.0208 | 1,560.2 |
| C | 0 | 35 | 35 | 0.10 | 0.0083 | 0.3 |
| D | 0 | 0 | 0 | 0.00 | 0.0000 | 0 |
| Total | 17,142 | 92,068 | 74,926 | | | 1,560.5 |

**Recharge required = 1,561 $ft^3$**

## Provided

Recharge provided:
1,582 $ft^3$ (IS1) + 3,340 $ft^3$ (IS2) + 2,057 $ft^3$ (IS3) + 969 $ft^3$ (Bioretention 1) + 436 $ft^3$ (Bioretention 2) + 5,898 $ft^3$ (Bioretention 3) + 1,089 $ft^3$ (Bioretention 4)

**= 15,371 $ft^3$ (provided) > 1,561 $ft^3$ (required)**

See stage storage plots within the calculation pages in the appendix of this report.

**Explanation of Drainage System**

***References:***

1. **New Hampshire Stormwater Management Manual, Volumes 2 & 3, December 2008 and Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas In New Hampshire**
2. **SCS - TR55** *(Second Ed., 1986) - for runoff curve numbers.*

Stormwater runoff is collected in various catch basins, curb inlet structures, and roof drains that are placed throughout the site. Runoff is then routed to an infiltration or bioretention system before recharge or discharge. The 2, 10, 25, and 50-year storm events were analyzed for existing versus proposed conditions (see Drainage Summary). See complete results in the Appendix.

**Deep Sump Catch Basin & Nyloplast Drains:**
Deep sump catch basins are proposed on site in order to catch and route runoff to various stormwater systems.

**Roof Drain:**
Roof drains are located on the buildings to capture and route clean stormwater runoff.

**Infiltration Systems:**
Two Stormtech SC-310 and one SC-160LP infiltration systems by ADS will be utilized to capture, treat, and infiltrate stormwater.

**Rain Guardian – Turret:**
The Rain Guardian – Turret is a concrete structure with inlet grate to capture trash and debris prior to discharge to the bioretention systems.

**Sediment Forebay:**
Sediment forebays are shallow depressions which receive runoff from the Turret structures and are placed upstream of the bioretention systems to provide pretreatment.

**Bioretention System:**
Four bioretention systems are proposed to collect and filter stormwater runoff using conditioned planting soil beds, gravel beds and vegetation within a shallow depression.

**Proprietary Filter Device (Jellyfish):**
The Jellyfish filtering device uses high flow rate membrane filtration to remove a high level and a wide variety of stormwater pollutants.

# SECTION 3.0 -
# OPERATION AND MAINTENANCE PLAN

**General Information**

Allen & Major Associates, Inc. has prepared the following Operation and Maintenance Plan for the ASC / Medical Office project located at 360 Corporate Drive, Portsmouth, NH. The plan is broken down into the following major sections. The first section gives general information about ownership and responsibility (General Information). The next section describes the erosion and sediment control measures used during construction (Construction Period). The third section describes the long-term pollution prevention measures (Long Term Pollution Prevention Plan). The last section describes the maintenance requirements for the stormwater management practices (Maintenance Plan).

**Contact Information**

**Stormwater Management System Owner:**

ATDG, LLC
7 Sinclair Drive
Exeter, NH 03833
603-799-6787

**Notification Procedures for Change of Responsibility for O&M**

The Stormwater Management System (SMS) for this project is owned by ATDG, LLC. The owner shall be legally responsible for the long-term operation and maintenance of this SMS as outlined in this Operation and Maintenance (O&M) Plan. Should ownership of the SMS change, the owner will continue to be responsible until the succeeding owner shall notify the City and Pease Development Authority (PDA) that the succeeding owner has assumed such responsibility. Upon subsequent transfers, the responsibility shall continue to be that of transferring owner until the transferee owner notifies the City of Portsmouth and Pease Development Authority of its assumption of responsibility.

In the event the SMS will serve multiple lots/owners, such as the subdivision of the existing parcel, the owner(s) shall establish an association or other legally enforceable arrangements under which the association or a single party shall have legal responsibility for the operation and maintenance of the entire SMS.

**Construction Period**

1. Contact the City of Portsmouth's Engineering Department and Pease Development Authority at least two (2) weeks prior to start of construction.

2. Install the catch basin filters (silt sacks) and tubular barriers as shown on the Site Preparation Plan.

3. Site access shall be achieved only from the designated construction entrances.

4. All erosion control measures shall be inspected weekly and after all rainfall events exceeding 0.25" and shall be maintained, repaired, or replaced as required or at the direction of the owner's engineer, the City's Engineer, or the Pease Development Authority's Engineer.

5. Sediment accumulation up-gradient of the tubular sediment barrier greater than 6" in depth shall be removed and disposed of in accordance with all applicable regulations.

6. Catch basin filters shall be installed in all catch basins adjacent to the site. Sediment accumulation on all adjacent catch basin inlets shall be removed and the silt sacks shall be replaced if torn or damaged.

7. The contractor shall comply with the General and Erosion Notes listed on the Site Development Plans.

**Post-Development Activities**

1. Upon completion of all terrain alteration activities that direct stormwater to a particular practice, the responsible party shall initiate the O&M activities.

2. Paved Areas – Paved areas should be swept as part of the routine site maintenance. Pavement sweeping is an excellent source control for sedimentation to the existing drainage system and is typically performed in the spring of each year following the snow melt.

3. Paved Areas – Salt for de-icing on the paved areas during the winter months shall be limited to the minimum amount practicable. Sand containing the minimum amount of calcium chloride (or approved equivalent) needed for handling may be applied as part of the routine winter maintenance activities.

4. All sediments removed from site drainage facilities shall be disposed of properly, and in accordance with applicable local and state regulations.

5. All vegetated areas on the site shall be stabilized and maintained to control erosion. Any disturbed areas shall be re-seeded as soon as practicable.

6. Work within any drainage structures shall be performed in accordance with the latest OSHA regulations, and only by individuals with appropriate OSHA certification.

7. Maintenance Responsibilities – All post-construction maintenance activities shall be documented and kept on file and made available to the proper City, PDA, and State authorities upon request.

8. If ownership of the property is transferred, the new owner(s) shall become the responsible party.

**Long-Term Pollution Prevention Plan**

The Long-Term Pollution Prevention Plan (LTPPP) has been prepared and incorporated as part of the Operation and Maintenance of the Stormwater Management System. The purpose of the LTPPP is to identify potential sources of pollution that may affect the quality of stormwater discharges, and to describe the implementation of practices to reduce the pollutants in stormwater discharges. The following items describe the source control and proper procedures for the LTPPP.

**Housekeeping**

The proposed site development has been designed to maintain a high level of water quality treatment for all stormwater discharge and groundwater. An Operation and Maintenance (O&M) plan has been prepared and is included in this section of the report. The Owner (or its designee) is responsible for adherence to the O&M plan in a strict and complete manner.

**Storing of Materials and Waste Products**

There are no proposed exterior (un-covered) storage areas. The trash and waste program for the site includes a dedicated space adjacent to the building for waste & recyclables.

**Vehicle Washing**

Outdoor vehicle washing has the potential to result in high loads of nutrients, metals, and hydrocarbons during dry weather conditions, as the detergent-rich water used to wash the grime off the vehicle enters the stormwater drainage system. The proposed site

improvements do not have accommodations for outdoor car washing. Vehicle washing is not an allowable stormwater discharge under PDA's NPDES Permit with the EPA.

**Maintenance of Lawns, Gardens and other Landscaped Areas**

It should be recognized that this is a general guideline towards achieving high quality and well-groomed landscaped areas. The grounds staff / landscape contractor must recognize the shortcomings of a general maintenance plan such as this and modify and/or augment it based on weekly, monthly, and yearly observations. In order to ensure the highest quality conditions, the staff must also recognize and appreciate the need to be aware of the constantly changing conditions of the landscaping and be able to respond to them on a proactive basis. No trash or landscape debris (including lawn clippings) shall be stored or dumped within the landscaped or naturalized areas.

***Fertilizer***

Maintenance practices should be aimed at reducing environmental, mechanical and pest stresses to promote healthy and vigorous growth. When necessary, pest outbreaks should be treated with the most sensitive control measures available. Synthetic chemical controls should be used only as a last resort to organic and biological control methods. Fertilizer, synthetic chemical controls, and pest management applications (when necessary) shall be performed only by licensed applicators in accordance with the manufacturer's label instructions when environmental conditions are conducive to controlled product application.

Only slow-release organic fertilizers should be used in the landscaped areas to limit the amount of nutrients that could enter downstream resource areas. Fertilization of developed areas on site will be performed within manufacturers labeling instructions and shall not exceed an NPK ratio of 1:1:1 (i.e. Triple 10 fertilizer mix), considered a low nitrogen mixture. Additionally, the fertilizer will include a slow release element.

***Suggested Aeration program***

In-season aeration of lawn areas is good cultural practice and is recommended whenever feasible. It should be accomplished with a solid thin tine aeration method to reduce disruption to the use of the area. The depth of solid tine aeration is similar to core type but should be performed when the soil is somewhat drier for a greater overall effect.

Depending on the intensity of use, it can be expected that all landscaped lawn areas will need aeration to reduce compaction at least once per year. The first operation should occur in late May following the spring season. Methods of reducing compaction will vary based on the nature of the compaction. Compaction on newly

established landscaped areas is generally limited to the top 2-3" and can be alleviated using hollow core or thin tine aeration methods.

***Landscape Maintenance Program Practices:***

- **Lawn**
  1. Mow a minimum of once a week in spring, to a height of 2" to 2 1/2" high. Mowing should be frequent enough so that no more than 1/3 of the grass blade is removed at each mowing. The top growth supports the roots; the shorter the grass is cut, the less the roots will grow. Short cutting also dries out the soil and encourages weeds to germinate.
  2. Mow approximately once every two weeks from July 1st to August 15th depending on lawn growth.
  3. Mow on a ten-day cycle in fall, when growth is stimulated by cooler nights and increased moisture.
  4. Do not remove grass clippings after mowing.
  5. Keep mower blades sharp to prevent ragged cuts on grass leaves, which cause a brownish appearance and increase the chance for disease to enter a leaf.
- **Shrubs**
  1. Mulch not more than 3" depth with shredded pine or fir bark.
  2. Hand prune annually, immediately after blooming, to remove 1/3 of the above-ground biomass (older stems). Stem removals are to occur within 6" of the ground to open up shrub and maintain two-year wood (the blooming wood).
  3. Hand-prune evergreen shrubs only as needed to remove dead and damaged wood and to maintain the naturalistic form of the shrub. Never mechanically shear evergreen shrubs.
  4. Fertilize with ½ lb. slow-release fertilizer (see above section on Fertilizer) every second year.
- **Trees**
  1. Provide aftercare of new tree plantings for the first three years.
  2. Do not fertilize trees, it artificially stimulates them (unless tree health warrants).
  3. Water once a week for the first year; twice a month for the second; once a month for the third year.
  4. Prune trees on a four-year cycle.

**Management of Deicing Chemicals and Snow**

Snow shall only be stockpiled on site. If the stockpiles of snow do not fit then snow will be disposed off-site. It will be the responsibility of the snow removal contractor to properly dispose of transported snow according NHDES. It will be the responsibility of

the snow removal contractor to follow these guidelines and all applicable laws and regulations.

The owner (or its designee) will be responsible for the clearing of the sidewalk and building entrances. The Owner may be required to use a de-icing agent such as potassium chloride to maintain a safe walking surface; however, these are to be used at the minimum amount practicable. The de-icing agent for the walkways and building entrances will be kept within the storage rooms located within the buildings. De-icing agents will not be stored outside.

To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends the development of a Road Salt and Deicing Minimization Plan when a development will create one acre or more of pavement, including parking lots and roadways. A component of the plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. Snow and ice management operators shall be Green SnowPro certified, trained and certified as a New Hampshire salt applicator, in accordance with Env-Wq 2203, and the UNH Technology Transfer Center online tool (http://www.roadsalt.unh.edu/Salt/).

In the spring, following snow melt, the pavement on site should be swept, with special attention paid to locations where snow was stockpiled. Snow stockpiles can contain higher sediment loads to due sanding and plowing operations, so these areas may require more sweeping than other areas. In addition to sweeping, following the snow melt, the grounds should be inspected for sediment and debris, with special attention paid to the landscaping along the perimeter of the parking areas as well as along the toe of slopes adjacent to parking areas, where debris might collect.

## Maintenance Plan

### Documentation

Maintenance documents shall include a completed maintenance checklist (attached) that will include any applicable notes or other documents as described in this section.

### Operation and Maintenance Schedule Summary

The following is a summary of the maintenance schedule for each of the stormwater BMPs. Note all anomalies, signs of degradation, or corrective actions on the annual Maintenance Checklist.

**Rain Guardian - Turret:**

The Rain Guardian Turret is a concrete curb-inlet device that discharges to a bioretention system. It is recommended that the Rain Guardian - Turret be inspected at least twice per year. If observed, remove trash and debris at each inspection. Replace the grate if damaged.

**Deep Sump Catch Basins and Nyloplast Drains:**

These consist of a man-hole type structure that contains inlet and or outlet pipes to further advance stormwater through the proposed drainage system. The size of the pipes and invert elevations vary throughout the project site. The catch basins utilize an inlet grate that is flush to grade to capture runoff and sediment, passing the water through the system and capturing the sediment to be removed. The sediment that accumulates within the bottom of the structures needs to be cleaned periodically, before it reaches a depth of 2' or 50% of its capacity.

**Sediment Forebays:**

The design proposes four sediment forebays which discharge to the bioretention systems. Maintenance of sediment forebays includes:

- Inspection at least annually
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation on embankments
- Remove debris from outlet structures at least once annually
- Remove and dispose of accumulated sediment based on inspection

**Bioretention Area:**

It is recommended that the bioretention systems and their overflow devices be inspected at least twice per year and with any rainfall event exceeding 2.5 inches in a 24-hour period. Trash and debris observed in the bioretention area (if any) shall be removed.

The Owner or its designee shall keep records of the maintenance of the Stormwater BMPs on a yearly basis. Maintenance documents shall include a completed maintenance checklist.

**Proprietary Filter Device (Jellyfish)**

It is recommended that the Jellyfish be inspected quarterly during the first year of operation. The frequency of inspections during subsequent years shall be based on the plan developed during that first year. It is recommended the device be inspected after

any rainfall event exceeding 2.5 inches in a 24-hour period. The device shall be cleaned as directed by the manufacturer. An inspection and maintenance document is provided herewith.

**Supplemental Information**

- Operation and Maintenance Plan Schedule
- Operation and Maintenance Plan Log Form (During Construction)
- Operation & Maintenance Figure
- Anti-Icing Log Form
- UNH Extension - Mechanical Control of Terrestrial Invasive Plants
- Isolator® Row Plus O&M Manual
- Jellfish® Filter Maintenance Guide

**OPERATION AND MAINTENANCE PLAN SCHEDULE**

ALLEN & MAJOR ASSOCIATES, INC.

**Project: 3250-01**
**Project Address: Surgical Center - 360 Corporate Drive, Portsmouth, NH**

**Responsible for O&M Plan: ATDG, LLC**
**Address: 7 Sinclair Drive, Exeter, NH 03833**
**Phone: (603) 799-6787**

*All information within table is derived from New Hampshire Stormwater Manual: Chapter 4, Sections 3 and 4*

| BMP CATEGORY | BMP OR MAINTENANCE ACTIVITY | SCHEDULE/ FREQUENCY | NOTES | ESTIMATED ANNUAL MAINTENANCE COST | INSPECTION PERFORMED | |
|---|---|---|---|---|---|---|
| | | | | | DATE: | BY: |
| PRETREATMENT PRACTICES | **PROPRIETARY FILTER DEVICE (JELLYFISH)** | Inspect quarterly, or more frequently as recommended by manufacturer. It is recommended that the unit be cleaned at least once per year. | Remove and legally dispose of floating debris at each inspection. Remove sediment when it reaches level specified by manufacturer. Remove floating hydrocarbons immediately whenever detected by inspection. | $2,000 | | |
| | **DEEP SUMP CATCH BASINS & NYLOPLAST DRAINS** | May require frequent maintenance. It is recommended that catch basins be inspected at least twice annually. | Sediment should be removed when it approaches half the sump depth. If floating hydrocarbons are observed the material should be removed immediately. Damaged hoods should be replaced when noted by inspection. | $1,000 | | |
| TREATMENT PRACTICES | **UNDERGROUND INFILTRATION SYSTEMS** | Inspect at least twice annually and with any rainfall event exceeding 2.5 inches in a 24-hour period. | Removal of debris from inlet and outlet structures. Removal of accumulated sediment. Inspection and repair of outlet structures and appurtenances. If system does not drain within a 72-hour period following a rainfall event, a professional should assess the facility's condition. | $1,000 | | |
| | **BIORETENTION SYSTEM (includes Turret curb-inlets & sediment forebays)** | Inspect at least twice annually and with any rainfall event exceeding 2.5 inches in a 24-hour period. | Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection. Annually the system should be inspected for drawdown time. Trash and debris should be removed at each inspection. | $2,000 | | |
| OTHER MAINTENANCE | **SNOW STORAGE** | Clear and remove snow to approved storage locations as necessary to ensure systems are working properly and are protected from meltwater pollutants. | Carefully select snow disposal sites before winter. Avoid dumping removed snow over catch basins, or in detention ponds, sediment forebays, rivers, wetlands, and flood plains. It is also prohibited to dump snow in the bioretention basins or gravel swales. | $500 | | |
| | **STREET SWEEPING** | Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. | Sweep, power broom or vacuum paved areas. Submit information that confirms that all street sweepings have been completed in accordance with state and local requirements | $2,000 | | |

# *SURGICAL CENTER*
# *360 CORPORATE DRIVE*
# *PORTSMOUTH, NH*

## MAINTENANCE LOG FORM

INSPECTOR:_____

DATE MAINTENANCE PERFORMED:_____

INSPECTOR'S QUALIFICATIONS:_____

_____

_____

MAINTENANCE LOG

| TYPE OF MAINTENANCE PERFORMED | DATE SINCE LAST MAINTENANCE | STAFF MEMBER OR CONTRACTOR WHO PERFORMED MAINTENANCE | CONDITION | ISSUE RESOLVED (YES/NO) |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

FOLLOW-UP REQUIRED:

_____

_____

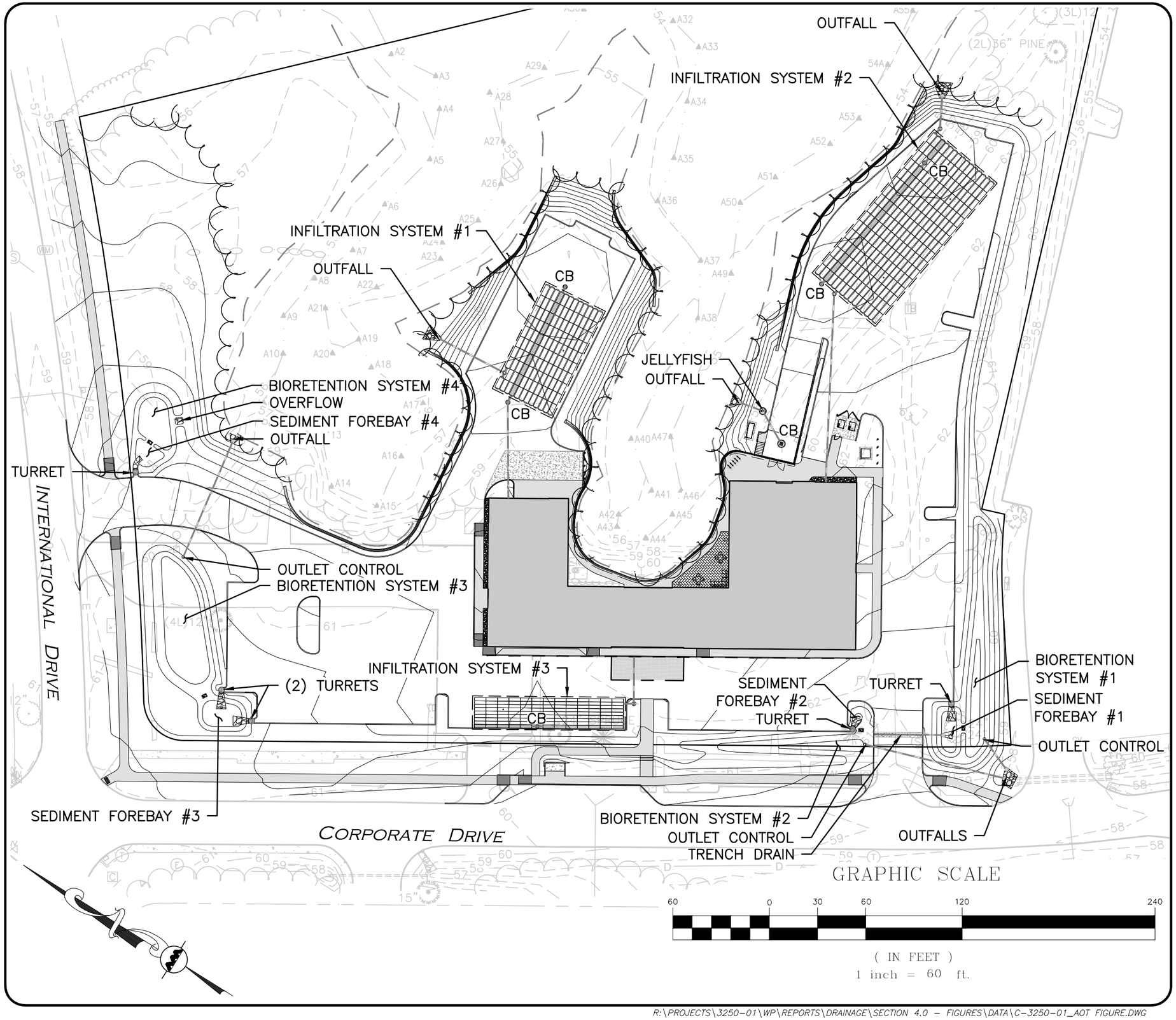
TO BE PERFORMED BY:_____ ON OR BEFORE:_____

NOTES:

1. Attach copies of maintenance work orders.
2. Owner must keep a minimum of the past 7 years of inspections / operations and maintenance records onsite.

| Anti-icing Route Data Form | | | | |
|---|---|---|---|---|
| Truck Station: | | | | |
| Date: | | | | |
| Air Temperature | Pavement Temperature | Relative Humidity | Dew Point | Sky |
| Reason for applying: | | | | |
| Route: | | | | |
| Chemical: | | | | |
| Application Time: | | | | |
| Application Amount: | | | | |
| Observation (first day): | | | | |
| Observation (after event): | | | | |
| Observation (before next application): | | | | |
| Name: | | | | |

Figure 4-2. Example Documentation Form for Anti-Icing




| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 2 | 09-18-23 | REVS PER TAC COMMENTS |
| 1 | 08-28-23 | ISSUED TO AOT |

APPLICANT/LESSEE:

ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:

# ASC / MEDICAL OFFICE
# 360 CORPORATE DRIVE
# PORTSMOUTH, NH

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 60' | DWG. NAME: | C3250-01-FIGURES |
| DESIGNED BY: | SM | CHECKED BY: | BDJ |


PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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DRAWING TITLE:

## OPERATION & MAINTENANCE FIGURE

SHEET No.

5


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R:\PROJECTS\3250-01\WP\REPORTS\DRAINAGE\SECTION 4.0 - FIGURES\DATA\C-3250-01_AOT FIGURE.DWG

# Mechanical Control of Terrestrial Invasives Plants

*Mechanical control strategies for managing terrestial invasive plants.*

The best tools and techniques for controlling invasive plants will be determined by a site's characteristics, the type of plants present, the size of the infestation, and the resources available to implement a control plan. Since each invasive plant species responds to a given control method differently, it is important to determine which methods are best suited to a situation. Often a combination of control techniques is needed, including mechanical, chemical or biological techniques.

Here we focus on prevention and mechanical methods, which are common techniques used at the start of a project, and techniques that can work on a range of projects from small to large.

*It's important to begin a project with a goal in mind, in this case clearing a treeline to allow native shrubs and seedlings to thrive.*

## Prevention

Preventing invasive plants from getting a foothold is always the best strategy of control. It is fairly easy to snuff out a small population of invasive plants, but once the infestation spreads, the cost and effort needed to control the plants escalates and they become harder to remove. This is the idea behind "early detection and rapid response."

A major avenue for invasive plants spreading is via materials moved around by humans. A seed or fragment of an invasive plant can stow away in a potted plant or in haybales, in mulch, soil, gravel or other material, or on boots or clothing. Invasive plants can be inadvertently moved along roadsides by mowers, graders, or plows.

### Here are some strategies to prevent invasive plants from hitching a ride to new areas:

- Know the source of purchased plants to ensure the soil is free of invasive plant material
- Compost food waste, leaves, and grass clippings and make your own wood chips to reduce the need to buy mulch, which may contain invasive seeds
- When buying or selling haybales, ask the farmer about invasive plants in their fields
- When building trails, use on-site rocks, soil, sand, and gravel whenever possible
- Consult with your town's Department of Public Works to ensure they use local materials when possible, have roadside mowing protocols for invasive plants, and employ other best practices to prevent invasive plant spread
- Consult with your town planner to ensure zoning ordinances require developers to pay attention to invasive plants
- When working around invasive plants, clean off tools and shoes before moving to another location, and avoid wearing clothing (such as fleece) that enables seeds to stick to you and catch a ride

Before embarking on the physical removal or treatment of invasive plants, recognize that it will require a long-term plan and a multi-year effort. Once an invasive plant infestation spreads, the cost and effort escalate.

## Mechanical Control

Mechanical removal can be very labor intensive and may create significant site disturbance. Before embarking on the physical removal or treatment of invasive plants, recognize that it will require a long-term plan and a multi-year effort. Otherwise, efforts may not succeed and may even get worse. “Picking Our Battles: A Guide to Planning Successful Invasive Plant Projects” published by the New Hampshire Fish and Game Department is helpful in crafting a plan. Mechanical methods for controlling invasive plants usually do not require special permits or licensing. However, there are a few situations, such as around historical foundations or in wetland areas, where mechanical control requires special care and in some cases a permit if disturbing soil in sensitive areas.

Your on-site project goal when conducting mechanical control will usually be to halt seed production of the invasive plants, which can remain viable for years. The seed bank in the soil already dictates a multi-year project. Without halting seed production, the project timeframe will continue to stretch into the future. There is a lot to consider even before pulling or digging any plants. Have a vison for the future and find incremental successes along the way.

Plants that are pulled, dug, or cut should be piled on site. Depending on the size of the project, you can pile the material on a tarp or pallet or directly on the ground if there is little chance that the plants will take root. Create “weed drying stations” where non-viable, seed-free plants are piled to desiccate in the sun. Pile plants that contain seeds or other viable plant parts in separate “hot spots,” where any resprouts can be easily contained. See “Methods for Disposing Non-Native Invasive Plants,” by UNH Cooperative Extension for more information.

Recognize that repeat visits are almost always needed whether you use mechanical techniques, herbicides, or a combination of methods. The number of repeat treatments may depend on site conditions as well as the species of plant.

Safety is an important consideration when working with invasive plants. Woodchuck holes, barbed wire, wasp nests, poison ivy, dehydration, thorns, ticks, and skin rashes are all potential hazards. Additional care is needed when pulling plants, such as wild parsnip or giant hogweed, that can cause a severe rash if skin comes in contact with the plant sap; consider getting guidance from a professional before trying to handle these plants. Be prepared for field work: wear eye protection, long-sleeved shirt and pants, gloves, sturdy shoes, and a sun hat; carry water and a first aid kit; consider using a white 5-gallon bucket to carry your gear.

*Sturdy hoes and similar tools are useful for digging out roots.*

*Make sure to remove the entire root system when hand pulling, which is easiest in moist soil.*

*When smothering a woody stem, the covering should left in place for at least one year.*

## Methods

### Hand Pulling & Digging

Gloved hands work amazingly well on soft or small stems. Rubber kitchen gloves offer protection when pulling plants that exude sap that can cause a rash, such as wild parsnip. Soft, well-fitting garden gloves work well for pulling soft-stemmed plants such as garlic mustard or small seedlings of woody plants. Thicker work gloves are a must for larger shrubs, especially when pulling plants with thorns, such as barberry and multiflora rose.

The best approach to hand pulling is slow and steady. Reach down to the base of the plant and pull with both hands. This will help ensure that you pull up all or most of the roots. Hand-pulling is most effective if the ground is somewhat moist. Dry, hard-packed ground will often result in plants snapping off before the entire root system is extracted. Plants should be pulled when viable fruits or seeds are not present on the plant, to avoid spreading the fruits to a new spot.

Plants that are less than 2-3 inches in diameter, but too large to hand pull, can be removed by digging. Dig using traditional gardening tools, such as a mattock, hoe, or soil knife, or try specialized invasive plant tools available on the market today. Some tools use body weight to lever the root system out of the ground. When selecting a tool, consider the weight and size, as some may be cumbersome to carry around a large project area.

Areas of disturbed soil provide ideal conditions for invasive plant and weed germination. After a plant is pulled or dug up, tamp down the soil and replace any leaf litter or other native plant material. Repeat visits are essential to check for resprouts or sprouts from the soil seed bank.

### Smothering

The smothering or suffocating of small seedlings or herbaceous plants may be effective with some infestations. This technique is also used with some stands of Japanese knotweed, but it requires vigilance and patience to maintain a heavy plastic layer for five continuous years. This technique will kill all vegetation in the affected area such that replanting will be required when plastic is removed.

Another smothering technique involves cutting a woody stem at six inches above ground and covering with a heavy plastic bag, tying it closed with a zip-tie. The covering should be left in place for at least one year before removing.

## Cutting*

Repeated cutting of invasive shrubs and vines can help stop seed production of large plants. This may be accomplished with loppers or hand saws. With some training or supervision, weed trimmers, brush saws and chain saws may also be used.

Woody invasive shrubs will need to be cut multiple times over several years. The number of repeat treatments may depend on the site conditions as well as the species of plant. The goal is to initially stop seed production and then with each subsequent cut to reduce the plant's energy reserves. Time the first cut for late spring or early summer (before July 4th), followed by a second cut in late summer or fall (as late as November), and do the third cut the following spring.

Cut the stems at ground level or at waist height. The latter technique allows you to find the plants for the repeat treatments and it is easier on your body. Large bittersweet vines should be cut as close to the ground as possible and then cut off another 4 to 5 feet along the stem to create a gap between the ground and the treetop vines. Again, monitoring is important, so check back every year for a while.

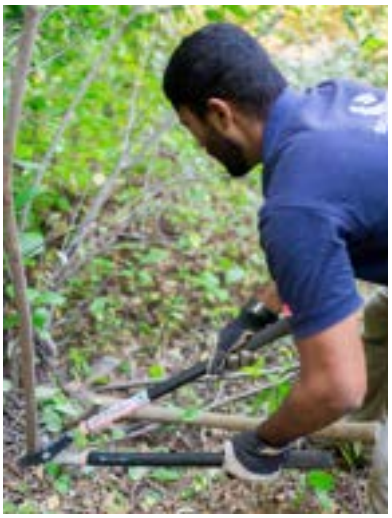
## Girdling*

Girdling can be used on large invasive shrubs if other techniques are not viable. At waist height, cut into the bark approximately ¼ - ½" and all the way around the tree. Repeat 6 inches above that cut, then strip off all the bark in between. This severs the phloem, which is the living tissue just under the bark, and cuts off the flow of sugars from the leaves to the roots. While the portion of the plant above the cut will die back it may sprout below the cut, so you will need to check back to see if there are any new sprouts. If so, just strip them off with gloved hands or use clippers and continue removing any new sprouts until the entire plant is dead. Girdling can be done with hand tools including an ax, hand saw or specialized tool. Similar to cutting, spring and early summer are the best time to girdle a plant after it has used energy from its reserves for leaf production. The bark is also more easily removed at this time of year.

## Mowing/Shredding*

Some large invasive plant infestations may require large equipment, such as tractors with brush or rotary mowers or excavators with special attachments (such as a "brontosaurus"). It is best to use this equipment before seed production (usually before July 4th) to avoid disturbing the soil when the plants have viable seeds. Some contractors have the ability to uproot and shred large shrubs. Others can grind shrubs down to the ground. As long as some of the root system remains in the ground, repeat visits with hand tools or other methods will be needed. When plants are top-killed, the size of the root system increases, resulting in more vigorous re-spouting after the initial mowing. In order to deplete the energy reserves, repeat

*Cutting, girdling and mowing are sometimes used in combination with herbicide treatments. Cutting and mowing can be used to reduce the above-ground biomass and foliage, thus reducing the amount of herbicide needed as well as improving access to the site.



*Cut woody invasives at ground level or waist height, best done late spring to early summer.*

*Girdling is best done in spring and early summer after a plant has used energy to produce leaves.*

*Use mowing equipment before seeds are produced, and avoid disturbing soil after plants have viable seeds.*

*Mechanical equipment has the potential to spread invasives. Inspection and cleaning is essential.*

*A "weed drying station"*

mowing is necessary. This can mean re-mowing 3-4 times a year for multiple years following the initial mow.

Mowing or shredding have the benefit of halting seed production over a large area. Make sure to ask the contractor details about their equipment, technique, and expected outcomes before embarking on a project. While it can increase the complexity of a project, depending on the plant composition on the site, you can flag and retain mature native plants during mowing projects. Skilled operators will be able to maneuver around retained plants. All mechanical equipment used in treating invasive plant infestation has the potential to transport seeds, roots, rhizomes, and spores to other sites. Equipment inspection and cleaning is essential to stop subsequent invasive plant spread.

## Monitoring

Persistence and monitoring are key for all invasive plant projects to be successful. A monitoring schedule should be built into your project plan. It may be necessary to adapt your plan based on the results of your monitoring.

*It's important to wear appropriate protective equipment when managing invasive plants, including work gloves.*

*Always map and monitor your invasive plant control efforts.*

## References

Invasive Species Outreach Group. *Methods for Disposing Non-Native Invasive Plants*. UNH Extension, 2010.

Invasive Plant Working Group. *Picking Our Battles: A Guide to Planning Successful Invasive Plant Management Projects*. NH Fish and Game, 2015.

## Learn More

For more information on invasive plants and management options, see UNH Extension's webpage *nhinvasives.org.*

## Photo Credits

Many of the photos are courtesy of Ellen Snyder.

## About the Author

Ellen Snyder is a certified wildlife biologist and sole owner of Ibis Wildlife Consulting.

She specializes in habitat management, invasive plant control, land stewardship planning, biodiversity conservation, and ecological writing

Ellen served as the Land Stewardship Coordinator for the Town of Durham from 2017-2021. From 1993-2003 she was the Wildlife Specialist for UNH Cooperative Extension. Ellen currently serves on her Conservation Commission in Newmarket, NH.

### Contact Information

Ellen Snyder | (603) 583-0039 | ellensnyder1@gmail.com

## Editing Assitance

Mike Bald, Got Weeds?



The University of New Hampshire Cooperative Extension is an equal opportunity educator and employer. University of New Hampshire, U.S. Department of Agriculture and N.H. counties cooperating.

# Isolator® Row Plus
## O&M Manual

ADS StormTech™

# The Isolator® Row Plus

### Introduction

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row Plus is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

### The Isolator Row Plus

The Isolator Row Plus is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-7200 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row Plus and passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow stormwater to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row Plus protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row Plus chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the chamber's sidewall. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-7200 models as these chambers do not have perforated side walls.

The Isolator Row Plus is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole provides access to the Isolator Row Plus and includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row Plus bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row Plus row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row Plus. After Stormwater flows through the Isolator Row Plus and into the rest of the chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

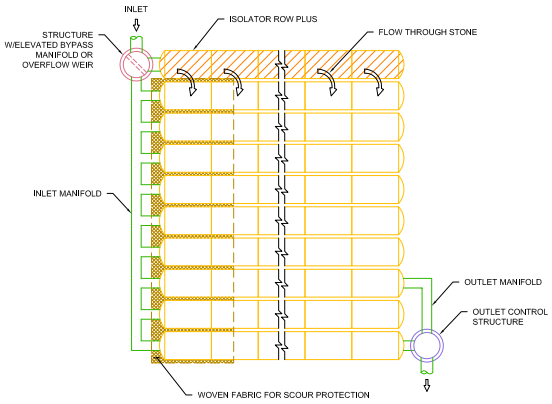
The Isolator Row FLAMP™ (patent pending) is a flared end ramp apparatus attached to the inlet pipe on the inside of the chamber end cap. The FLAMP provides a smooth transition from pipe invert to fabric bottom. It is configured to improve chamber function performance by enhancing outflow of solid debris that would otherwise collect at the chamber's end. It also serves to improve the fluid and solid flow into the access pipe during maintenance and cleaning and to guide cleaning and inspection equipment back into the inlet pipe when complete.

The Isolator Row Plus may be part of a treatment train system. The treatment train design and pretreatment device selection by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, StormTech recommend using the Isolator Row Plus to minimize maintenance requirements and maintenance costs.

***Note:*** *See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row Plus.*

**Looking down the Isolator Row PLUS from the manhole opening, ADS PLUS Fabric is shown between the chamber and stone base.**

**StormTech Isolator Row PLUS with Overflow Spillway (not to scale)**



# Isolator Row Plus Inspection/Maintenance

**Inspection**

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row Plus should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

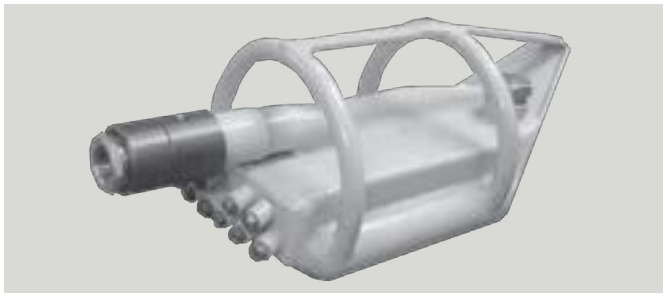
The Isolator Row Plus incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row Plus, clean-out should be performed.

**Maintenance**

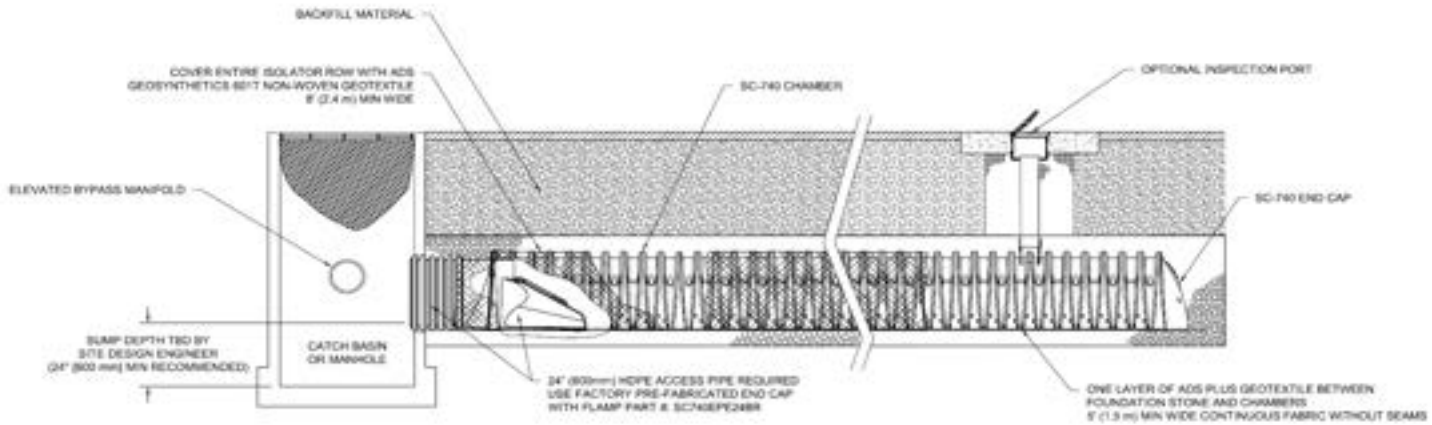
The Isolator Row Plus was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row Plus while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row Plus lengths up to 200' (61 m). **The JetVac process shall only be performed on StormTech Isolator Row Plus that have ADS Plus Fabric (as specified by StormTech) over their angular base stone.**



**StormTech Isolator Row PLUS** (*not to scale*)

***Note:*** *Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-7200 chamber models and is not required over the entire Isolator Row PLUS.*



# Isolator Row Plus Step By Step Maintenance Procedures

**Step 1**

Inspect Isolator Row Plus for sediment.

A) Inspection ports (if present)
   i. Remove lid from floor box frame
   ii. Remove cap from inspection riser
   iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
   iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row Plus
   i. Remove cover from manhole at upstream end of Isolator Row Plus
   ii. Using a flashlight, inspect down Isolator Row Plus through outlet pipe
      1. Mirrors on poles or cameras may be used to avoid a confined space entry
      2. Follow OSHA regulations for confined space entry if entering manhole
   iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2.
   If not, proceed to Step 3.

**Step 2**

Clean out Isolator Row Plus using the JetVac process.

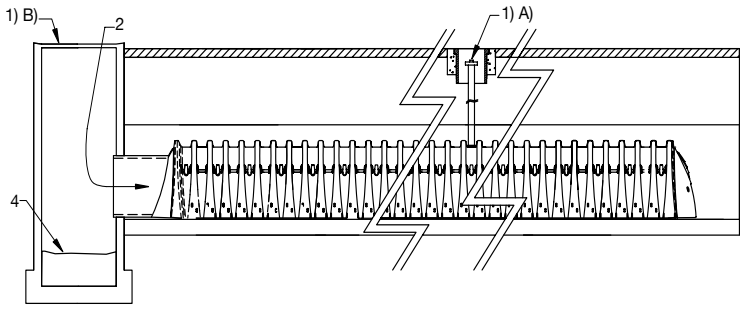
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

**Step 3**

Replace all caps, lids and covers, record observations and actions.

**Step 4**

Inspect & clean catch basins and manholes upstream of the StormTech system.




**Sample Maintenance Log**

| Date | Stadia Rod Readings | | Sedi-ment Depth (1)–(2) | Observations/Actions | Inspector |
|---|---|---|---|---|---|
| | Fixed point to chamber bottom (1) | Fixed point to top of sediment (2) | | | |
| 3/15/11 | 6.3 ft | none | | New installation. Fixed point is CI frame at grade | DJM |
| 9/24/11 | | 6.2 | 0.1 ft | Some grit felt | SM |
| 6/20/13 | | 5.8 | 0.5 ft | Mucky feel, debris visible in manhole and in Isolator Row PLUS, maintenance due | NV |
| 7/7/13 | 6.3 ft | | 0 | System jetted and vacuumed | DJM |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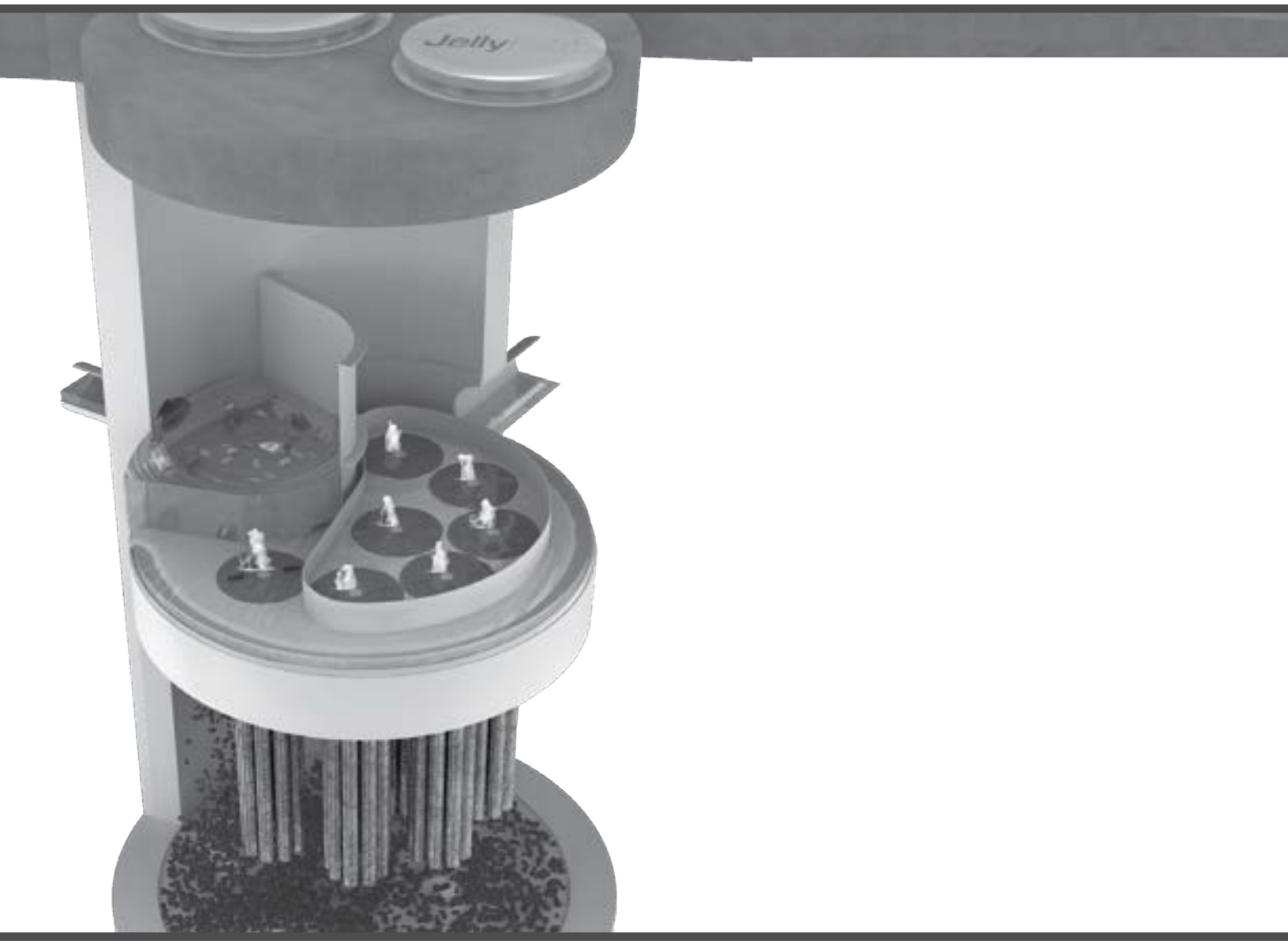
# Jellyfish® Filter Maintenance Guide




Jellyfish®

# JELLYFISH® FILTER
# INSPECTION & MAINTENANCE GUIDE

Jellyfish units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the Jellyfish filter to be successful, it is imperative that all other components be properly maintained. The maintenance and repair of upstream facilities should be carried out prior to Jellyfish maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.

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Maintenance Procedure.....4

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# 1.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.

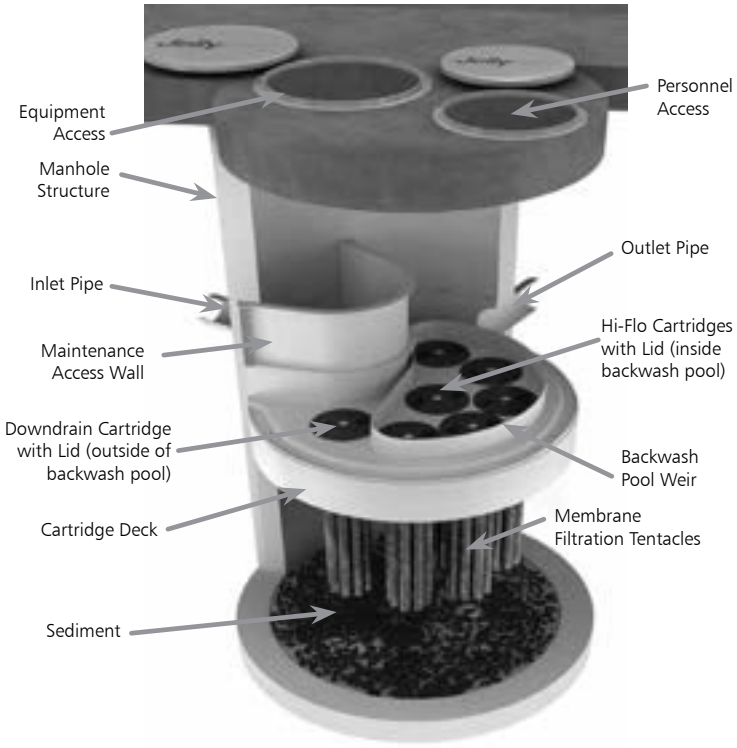
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed




*Note: Separator Skirt not shown*

# 2.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

# 3.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

### 3.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

*Inspection Utilizing Sediment Probe*

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

**3.2 Wet weather inspections**

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

# 4.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

# 5.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

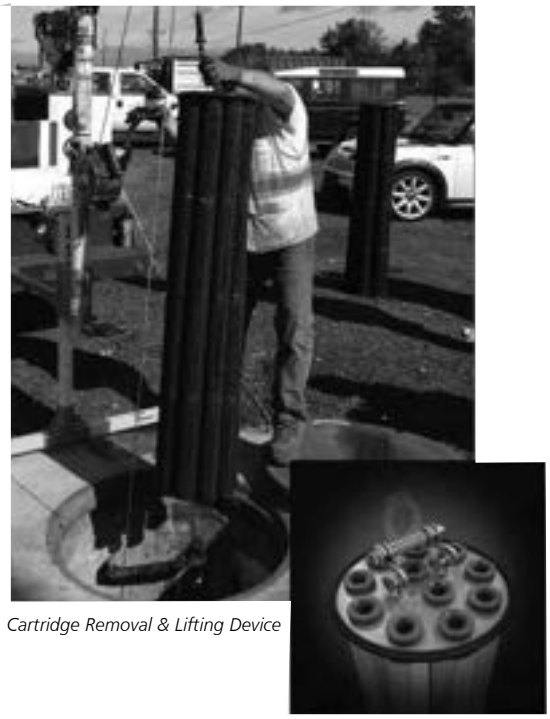
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

**5.1 Filter Cartridge Removal**

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs*.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

**5.2 Filter Cartridge Rinsing**

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.



*Cartridge Removal & Lifting Device*

2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.
3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.

4. Collected rinse water is typically removed by vacuum hose.
5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

### 5.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.

*Vacuuming Sump Through MAW*

3. Pressure wash cartridge deck and receptacles to remove all sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.
4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.

*Vacuuming Sump Through MAW*

6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

### 5.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. ***Caution: Do not force the cartridge downward; damage may occur.***
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

### 5.5 Chemical Spills

*Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.*

### 5.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

# Jellyfish Filter Components & Filter Cartridge Assembly and Installation

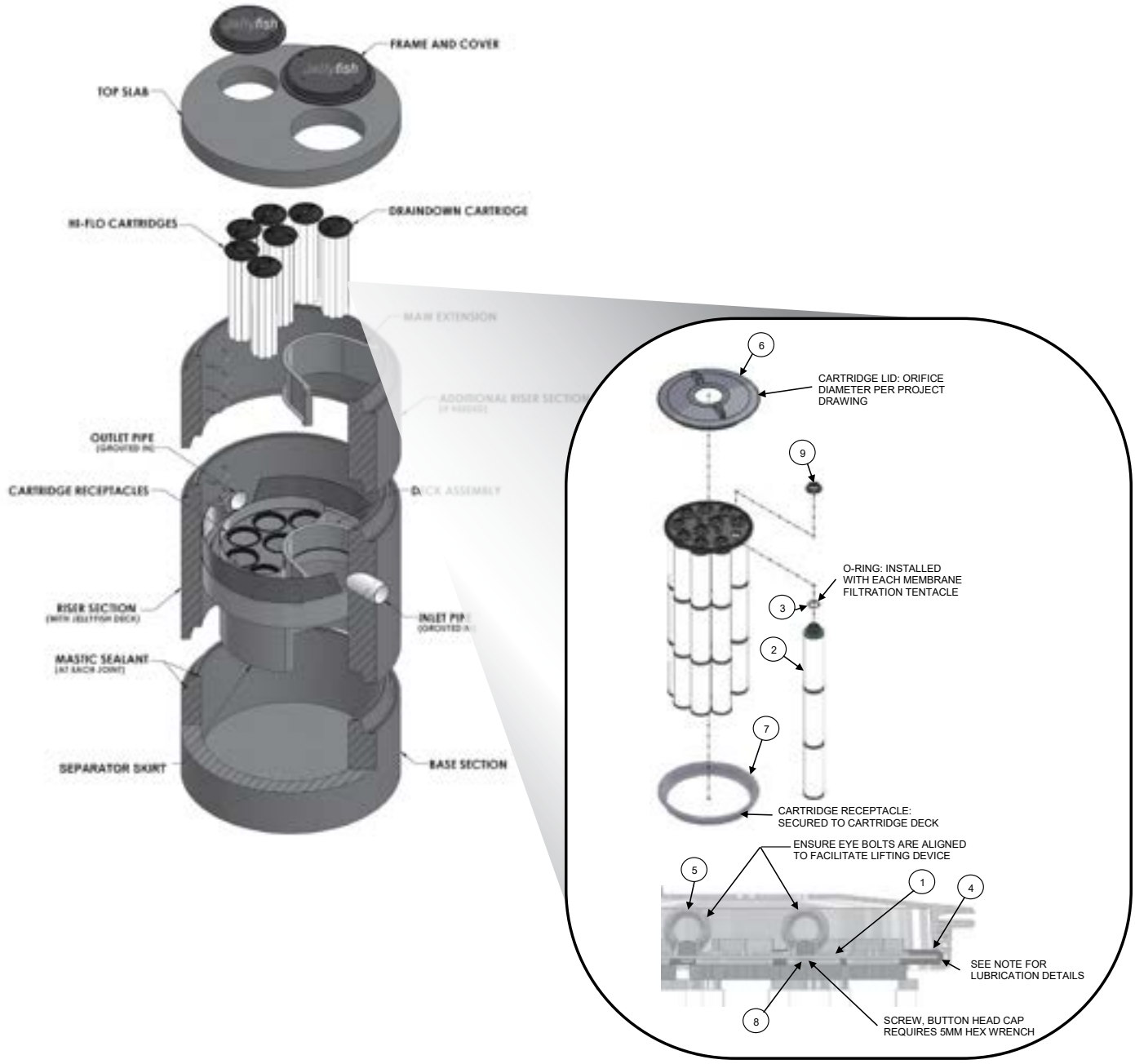



TABLE 1: BOM

| ITEM NO. | DESCRIPTION |
|---|---|
| 1 | JF HEAD PLATE |
| 2 | JF TENTACLE |
| 3 | JF O-RING |
| 4 | JF HEAD PLATE GASKET |
| 5 | JF CARTRIDGE EYELET |
| 6 | JF 14IN COVER |
| 7 | JF RECEPTACLE |
| 8 | BUTTON HEAD CAP SCREW M6X14MM SS |
| 9 | JF CARTRIDGE NUT |

TABLE 2: APPROVED GASKET LUBRICANTS

| PART NO. | MFR | DESCRIPTION |
|---|---|---|
| 78713 | LA-CO | LUBRI-JOINT |
| 40501 | HERCULES | DUCK BUTTER |
| 30600 | OATEY | PIPE LUBRICANT |
| PSLUBXL1Q | PROSELECT | PIPE JOINT LUBRICANT |

**NOTES:**

**Head Plate Gasket Installation:**
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lide (ITem 6). Follow Lubricant manufacturer's instructions.

**Lid Assembly:**
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

# Jellyfish Filter Inspection and Maintenance Log

| | | | | | | |
|---|---|---|---|---|---|---|
| Owner: | | | | Jellyfish Model No: | | |
| Location: | | | | GPS Coordinates: | | |
| Land Use: | Commercial: | | Industrial: | | Service Station: | |
| | Roadway/Highway: | | Airport: | | Residential: | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Date/Time: | | | | | | |
| Inspector: | | | | | | |
| Maintenance Contractor: | | | | | | |
| Visible Oil Present: (Y/N) | | | | | | |
| Oil Quantity Removed: | | | | | | |
| Floatable Debris Present: (Y/N) | | | | | | |
| Floatable Debris Removed: (Y/N) | | | | | | |
| Water Depth in Backwash Pool | | | | | | |
| Draindown Cartridges externally rinsed and recommissioned: (Y/N) | | | | | | |
| New tentacles put on Draindown Cartridges: (Y/N) | | | | | | |
| Hi-Flo Cartridges externally rinsed and recommissioned: (Y/N) | | | | | | |
| New tentacles put on Hi-Flo Cartridges: (Y/N) | | | | | | |
| Sediment Depth Measured: (Y/N) | | | | | | |
| Sediment Depth (inches or mm): | | | | | | |
| Sediment Removed: (Y/N) | | | | | | |
| Cartridge Lids intact: (Y/N) | | | | | | |
| Observed Damage: | | | | | | |
| Comments: | | | | | | |

**Support**

- Drawings and specifications are available at www.conteches.com/jellyfish.
- Site-specific design support is available from Contech Engineered Solutions.
- Find a Certified Maintenance Provider at www.conteches.com/ccmp

Jellyfish®

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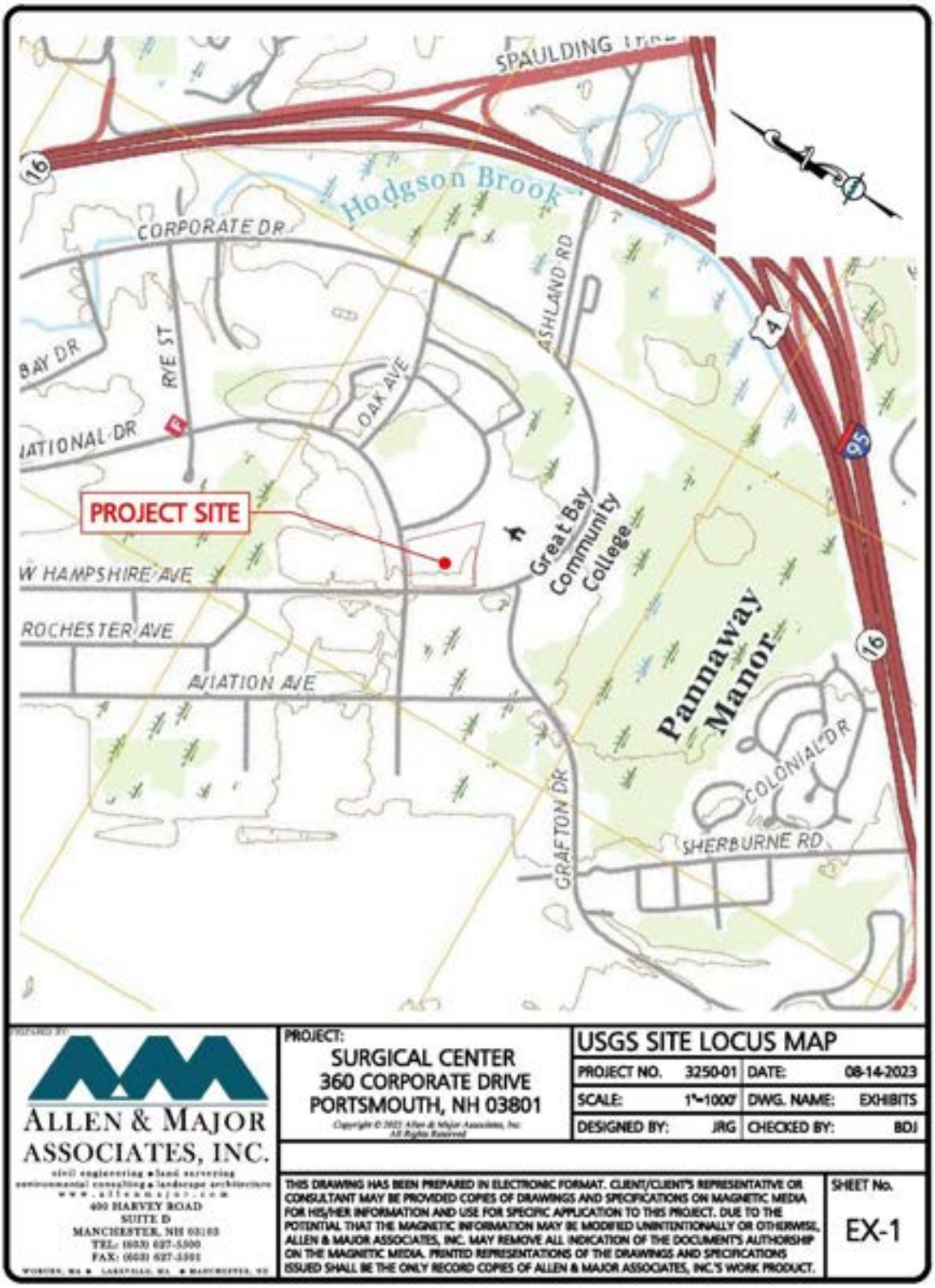
# SECTION 4.0 -
## FIGURES

## USGS Map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Hodgson Brook
CORPORATE DR
ASHLAND RD
BAY DR
RYE ST
OAK AVE
NATIONAL DR
PROJECT SITE
W HAMPSHIRE AVE
ROCHESTER AVE
AVIATION AVE
Great Bay Community College
Pannaway Manor
COLONIAL DR
SHERBURNE RD
GRAFTON DR
16
4
95
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MANCHESTER, NH 03103
PROJECT:
SURGICAL CENTER
360 CORPORATE DRIVE
PORTSMOUTH, NH 03801
USGS SITE LOCUS MAP
PROJECT NO. 3250-01
DATE: 08-14-2023
SCALE: 1"=1000'
DWG. NAME: EXHIBITS
DESIGNED BY: JRG
CHECKED BY: BDJ
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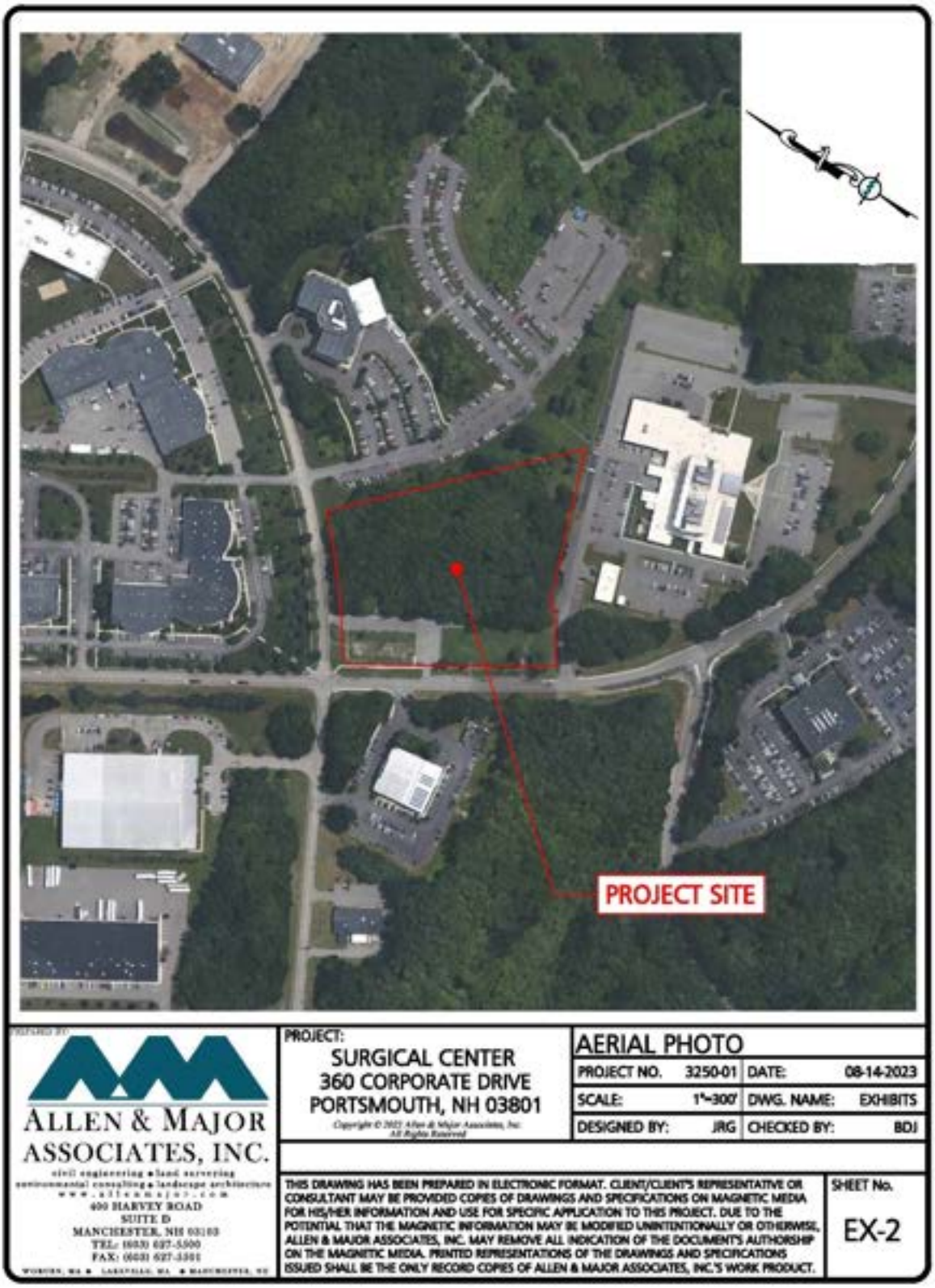
## Aerial Map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MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
PROJECT:
SURGICAL CENTER
360 CORPORATE DRIVE
PORTSMOUTH, NH 03801
AERIAL PHOTO
PROJECT NO. 3250-01
DATE: 08-14-2023
SCALE: 1"=300'
DWG. NAME: EXHIBITS
DESIGNED BY: JRG
CHECKED BY: BDJ
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EX-2

## NRCS Soils Map

**LEGEND**

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 609 | Urban land | 0.9 | 6.3% |
| 799 | Urban land-Canton complex, 3 to 15 percent slopes | 13.5 | 93.7% |
| Totals for Area of Interest | | 14.4 | 100.0% |

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering • land surveying
environmental consulting • landscape architecture
400 HARVEY ROAD
SUITE D
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501

PROJECT:
SURGICAL CENTER
360 CORPORATE DRIVE
PORTSMOUTH, NH 03801

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NRCS SOILS MAP

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-2023 |
| SCALE: | 1"=200' | DWG. NAME: | EXHIBITS |
| DESIGNED BY: | JRG | CHECKED BY: | BDJ |

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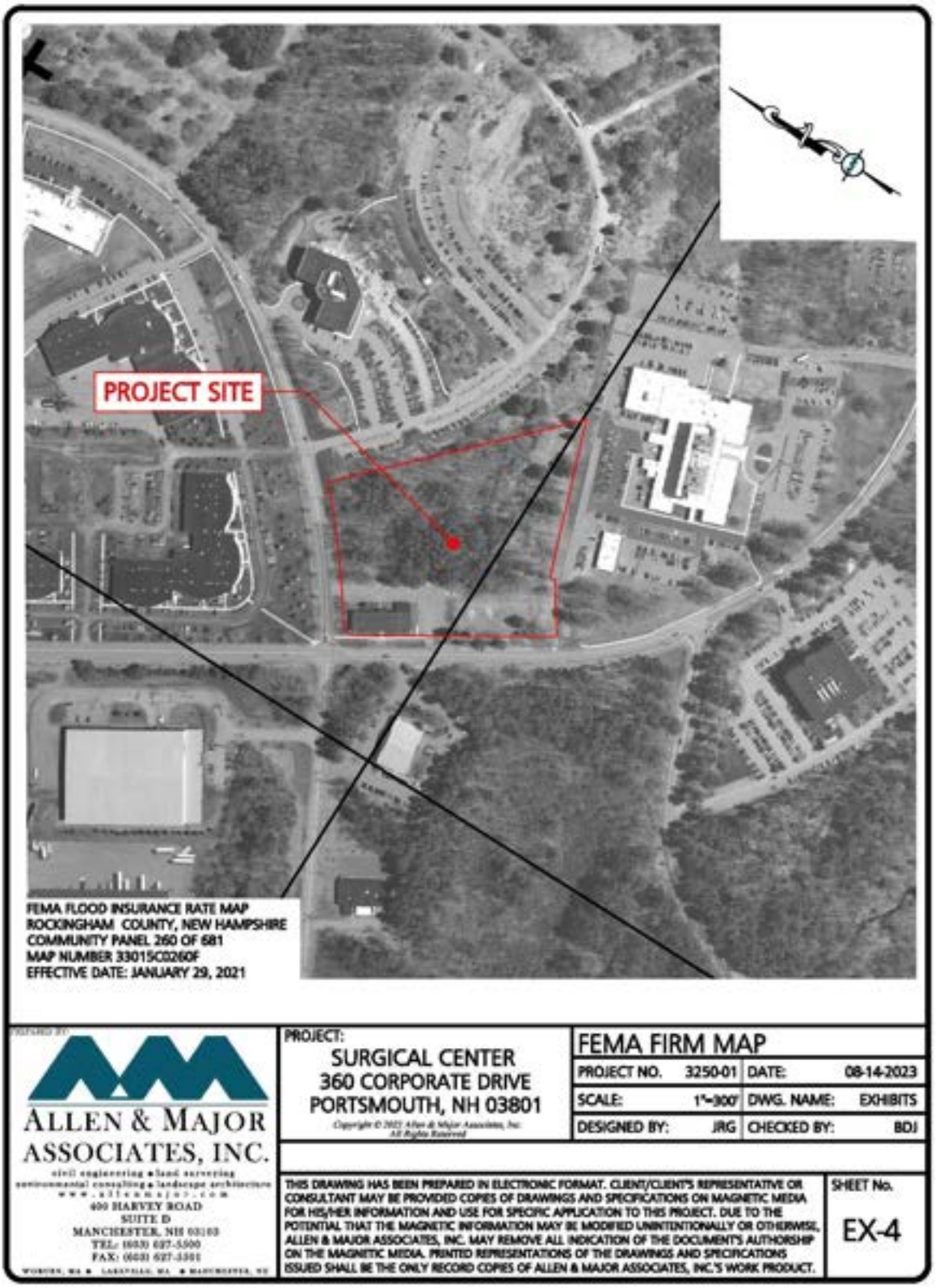
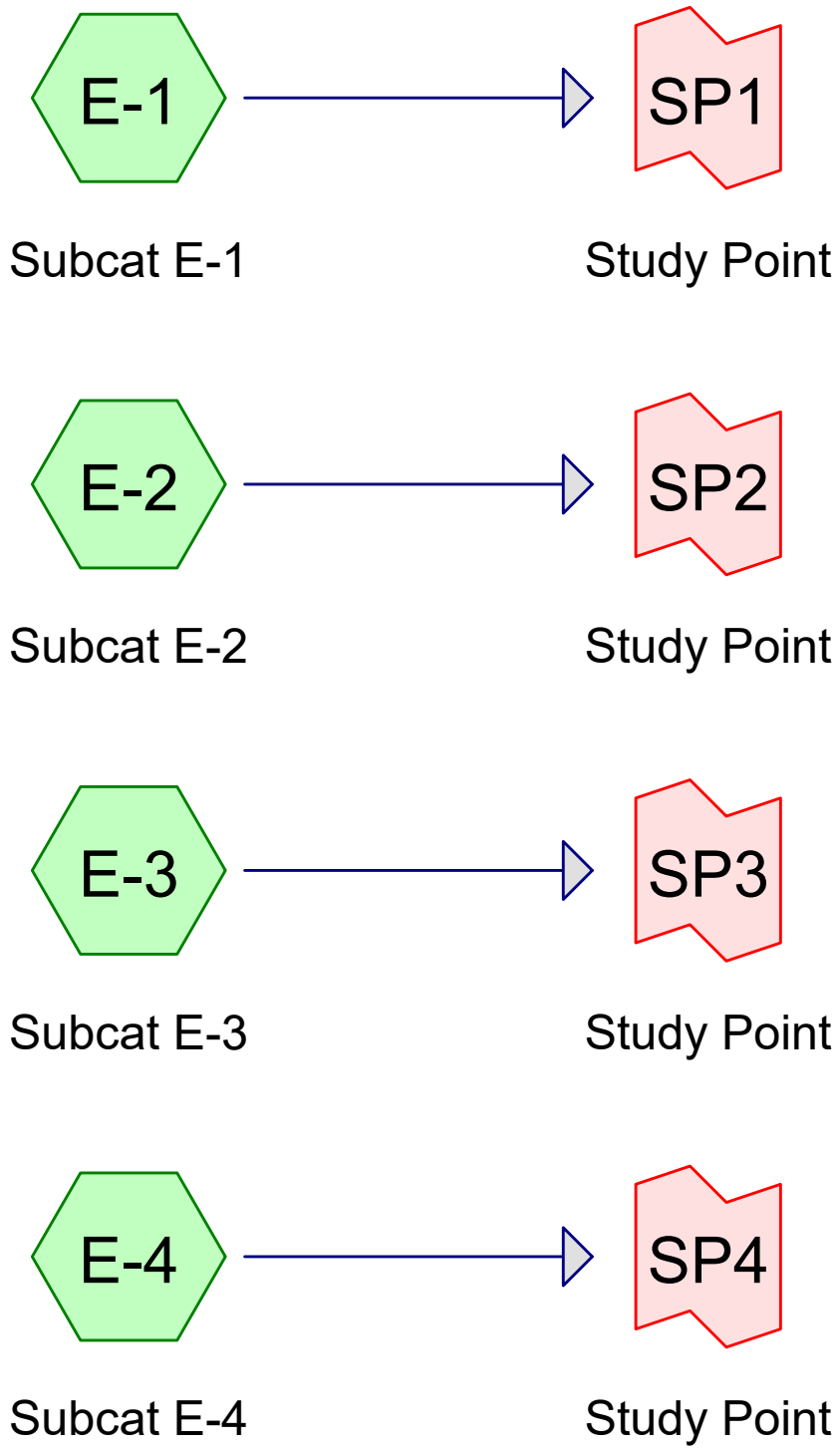
SHEET No.
EX-3

## Flood Insurance Rate (FIRM) Map



# SECTION 5.0 -
## EXISTING DRAINAGE ANALYSIS

## Existing HydroCAD




Subcat Reach Pond Link

**Routing Diagram for 3250-01 - Existing HydroCAD**
Prepared by Allen & Major Associates, Inc, Printed 8/10/2023
HydroCAD® 10.20-3c s/n 02881 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-year | Type III 24-hr | | Default | 24.00 | 1 | 3.69 | 2 |
| 2 | 10-year | Type III 24-hr | | Default | 24.00 | 1 | 5.60 | 2 |
| 3 | 25-year | Type III 24-hr | | Default | 24.00 | 1 | 7.10 | 2 |
| 4 | 50-year | Type III 24-hr | | Default | 24.00 | 1 | 8.51 | 2 |

## Area Listing (all nodes)

| Area (sq-ft) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 66,856 | 61 | >75% Grass cover, Good, HSG B (E-1, E-2, E-3, E-4) |
| 16,949 | 98 | Paved parking, HSG B (E-1, E-3) |
| 193 | 98 | Roofs, HSG B (E-1) |
| 134,965 | 55 | Woods, Good, HSG B (E-1, E-2, E-3, E-4) |
| 5,544 | 70 | Woods, Good, HSG C (E-1) |
| **224,507** | **60** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (sq-ft) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0 | HSG A | |
| 218,963 | HSG B | E-1, E-2, E-3, E-4 |
| 5,544 | HSG C | E-1 |
| 0 | HSG D | |
| 0 | Other | |
| **224,507** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (sq-ft) | HSG-B (sq-ft) | HSG-C (sq-ft) | HSG-D (sq-ft) | Other (sq-ft) | Total (sq-ft) | Ground Cover | Sub Num |
|---|---|---|---|---|---|---|---|
| 0 | 66,856 | 0 | 0 | 0 | 66,856 | >75% Grass cover, Good | |
| 0 | 16,949 | 0 | 0 | 0 | 16,949 | Paved parking | |
| 0 | 193 | 0 | 0 | 0 | 193 | Roofs | |
| 0 | 134,965 | 5,544 | 0 | 0 | 140,509 | Woods, Good | |
| **0** | **218,963** | **5,544** | **0** | **0** | **224,507** | **TOTAL AREA** | |

## Notes Listing (all nodes)

| Line# | Node Number | Notes |
|---|---|---|
| 1 | Project | For Coastal and Great Bay Communities, a 15% increase was added to each storm event per Env-Wq 1503.08(l). |

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E-1: Subcat E-1** Runoff Area=161,512 sf 8.19% Impervious Runoff Depth=0.62"
Flow Length=178' Tc=14.8 min CN=60 Runoff=1.46 cfs 8,284 cf

**Subcatchment E-2: Subcat E-2** Runoff Area=13,855 sf 0.00% Impervious Runoff Depth=0.53"
Flow Length=67' Tc=8.5 min CN=58 Runoff=0.12 cfs 612 cf

**Subcatchment E-3: Subcat E-3** Runoff Area=34,845 sf 11.24% Impervious Runoff Depth=0.85"
Flow Length=151' Tc=7.5 min CN=65 Runoff=0.63 cfs 2,479 cf

**Subcatchment E-4: Subcat E-4** Runoff Area=14,295 sf 0.00% Impervious Runoff Depth=0.41"
Flow Length=134' Tc=13.0 min CN=55 Runoff=0.07 cfs 491 cf

**Link SP1: Study Point** Inflow=1.46 cfs 8,284 cf
Primary=1.46 cfs 8,284 cf

**Link SP2: Study Point** Inflow=0.12 cfs 612 cf
Primary=0.12 cfs 612 cf

**Link SP3: Study Point** Inflow=0.63 cfs 2,479 cf
Primary=0.63 cfs 2,479 cf

**Link SP4: Study Point** Inflow=0.07 cfs 491 cf
Primary=0.07 cfs 491 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 11,866 cf Average Runoff Depth = 0.63"**
**92.36% Pervious = 207,365 sf 7.64% Impervious = 17,142 sf**

## Summary for Subcatchment E-1: Subcat E-1

Runoff = 1.46 cfs @ 12.27 hrs, Volume= 8,284 cf, Depth= 0.62"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 5,544 | 70 | Woods, Good, HSG C |
| 114,320 | 55 | Woods, Good, HSG B |
| 28,424 | 61 | >75% Grass cover, Good, HSG B |
| 13,031 | 98 | Paved parking, HSG B |
| 193 | 98 | Roofs, HSG B |
| 161,512 | 60 | Weighted Average |
| 148,288 | | 91.81% Pervious Area |
| 13,224 | | 8.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 128 | 0.0270 | 0.82 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 14.8 | 178 | Total | | | |

## Summary for Subcatchment E-2: Subcat E-2

Runoff = 0.12 cfs @ 12.17 hrs, Volume= 612 cf, Depth= 0.53"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 6,956 | 61 | >75% Grass cover, Good, HSG B |
| 6,899 | 55 | Woods, Good, HSG B |
| 13,855 | 58 | Weighted Average |
| 13,855 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.4 | 50 | 0.0500 | 0.10 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 0.1 | 17 | 0.0400 | 3.00 | | **Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps |
| 8.5 | 67 | Total | | | |

## Summary for Subcatchment E-3: Subcat E-3

Runoff = 0.63 cfs @ 12.13 hrs, Volume= 2,479 cf, Depth= 0.85"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 3,918 | 98 | Paved parking, HSG B |
| 169 | 55 | Woods, Good, HSG B |
| 30,757 | 61 | >75% Grass cover, Good, HSG B |
| 34,845 | 65 | Weighted Average |
| 30,927 | | 88.76% Pervious Area |
| 3,918 | | 11.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 50 | 0.0200 | 0.15 | | **Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.28" |
| 1.9 | 101 | 0.0300 | 0.87 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 7.5 | 151 | Total | | | |

## Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.07 cfs @ 12.34 hrs, Volume= 491 cf, Depth= 0.41"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 718 | 61 | >75% Grass cover, Good, HSG B |
| 13,577 | 55 | Woods, Good, HSG B |
| 14,295 | 55 | Weighted Average |
| 14,295 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.4 | 50 | 0.0300 | 0.08 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 84 | 0.0120 | 0.55 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.0 | 134 | Total | | | |

## Summary for Link SP1: Study Point

Inflow Area = 161,512 sf, 8.19% Impervious, Inflow Depth = 0.62" for 2-year event
Inflow = 1.46 cfs @ 12.27 hrs, Volume= 8,284 cf
Primary = 1.46 cfs @ 12.27 hrs, Volume= 8,284 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 13,855 sf, 0.00% Impervious, Inflow Depth = 0.53" for 2-year event
Inflow = 0.12 cfs @ 12.17 hrs, Volume= 612 cf
Primary = 0.12 cfs @ 12.17 hrs, Volume= 612 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 34,845 sf, 11.24% Impervious, Inflow Depth = 0.85" for 2-year event
Inflow = 0.63 cfs @ 12.13 hrs, Volume= 2,479 cf
Primary = 0.63 cfs @ 12.13 hrs, Volume= 2,479 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 14,295 sf, 0.00% Impervious, Inflow Depth = 0.41" for 2-year event
Inflow = 0.07 cfs @ 12.34 hrs, Volume= 491 cf
Primary = 0.07 cfs @ 12.34 hrs, Volume= 491 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E-1: Subcat E-1** Runoff Area=161,512 sf 8.19% Impervious Runoff Depth=1.67"
Flow Length=178' Tc=14.8 min CN=60 Runoff=5.06 cfs 22,410 cf

**Subcatchment E-2: Subcat E-2** Runoff Area=13,855 sf 0.00% Impervious Runoff Depth=1.51"
Flow Length=67' Tc=8.5 min CN=58 Runoff=0.46 cfs 1,747 cf

**Subcatchment E-3: Subcat E-3** Runoff Area=34,845 sf 11.24% Impervious Runoff Depth=2.06"
Flow Length=151' Tc=7.5 min CN=65 Runoff=1.76 cfs 5,996 cf

**Subcatchment E-4: Subcat E-4** Runoff Area=14,295 sf 0.00% Impervious Runoff Depth=1.29"
Flow Length=134' Tc=13.0 min CN=55 Runoff=0.34 cfs 1,541 cf

**Link SP1: Study Point** Inflow=5.06 cfs 22,410 cf
Primary=5.06 cfs 22,410 cf

**Link SP2: Study Point** Inflow=0.46 cfs 1,747 cf
Primary=0.46 cfs 1,747 cf

**Link SP3: Study Point** Inflow=1.76 cfs 5,996 cf
Primary=1.76 cfs 5,996 cf

**Link SP4: Study Point** Inflow=0.34 cfs 1,541 cf
Primary=0.34 cfs 1,541 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 31,694 cf Average Runoff Depth = 1.69"**
**92.36% Pervious = 207,365 sf 7.64% Impervious = 17,142 sf**

## Summary for Subcatchment E-1: Subcat E-1

Runoff = 5.06 cfs @ 12.22 hrs, Volume= 22,410 cf, Depth= 1.67"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 5,544 | 70 | Woods, Good, HSG C |
| 114,320 | 55 | Woods, Good, HSG B |
| 28,424 | 61 | >75% Grass cover, Good, HSG B |
| 13,031 | 98 | Paved parking, HSG B |
| 193 | 98 | Roofs, HSG B |
| 161,512 | 60 | Weighted Average |
| 148,288 | | 91.81% Pervious Area |
| 13,224 | | 8.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 128 | 0.0270 | 0.82 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 14.8 | 178 | Total | | | |

## Summary for Subcatchment E-2: Subcat E-2

Runoff = 0.46 cfs @ 12.14 hrs, Volume= 1,747 cf, Depth= 1.51"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 6,956 | 61 | >75% Grass cover, Good, HSG B |
| 6,899 | 55 | Woods, Good, HSG B |
| 13,855 | 58 | Weighted Average |
| 13,855 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.4 | 50 | 0.0500 | 0.10 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 0.1 | 17 | 0.0400 | 3.00 | | **Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps |
| 8.5 | 67 | Total | | | |

## Summary for Subcatchment E-3: Subcat E-3

Runoff = 1.76 cfs @ 12.12 hrs, Volume= 5,996 cf, Depth= 2.06"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 3,918 | 98 | Paved parking, HSG B |
| 169 | 55 | Woods, Good, HSG B |
| 30,757 | 61 | >75% Grass cover, Good, HSG B |
| 34,845 | 65 | Weighted Average |
| 30,927 | | 88.76% Pervious Area |
| 3,918 | | 11.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 50 | 0.0200 | 0.15 | | **Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.28" |
| 1.9 | 101 | 0.0300 | 0.87 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 7.5 | 151 | Total | | | |

## Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.34 cfs @ 12.21 hrs, Volume= 1,541 cf, Depth= 1.29"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 718 | 61 | >75% Grass cover, Good, HSG B |
| 13,577 | 55 | Woods, Good, HSG B |
| 14,295 | 55 | Weighted Average |
| 14,295 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.4 | 50 | 0.0300 | 0.08 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 84 | 0.0120 | 0.55 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.0 | 134 | Total | | | |

## Summary for Link SP1: Study Point

Inflow Area = 161,512 sf, 8.19% Impervious, Inflow Depth = 1.67" for 10-year event
Inflow = 5.06 cfs @ 12.22 hrs, Volume= 22,410 cf
Primary = 5.06 cfs @ 12.22 hrs, Volume= 22,410 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 13,855 sf, 0.00% Impervious, Inflow Depth = 1.51" for 10-year event
Inflow = 0.46 cfs @ 12.14 hrs, Volume= 1,747 cf
Primary = 0.46 cfs @ 12.14 hrs, Volume= 1,747 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 34,845 sf, 11.24% Impervious, Inflow Depth = 2.06" for 10-year event
Inflow = 1.76 cfs @ 12.12 hrs, Volume= 5,996 cf
Primary = 1.76 cfs @ 12.12 hrs, Volume= 5,996 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 14,295 sf, 0.00% Impervious, Inflow Depth = 1.29" for 10-year event
Inflow = 0.34 cfs @ 12.21 hrs, Volume= 1,541 cf
Primary = 0.34 cfs @ 12.21 hrs, Volume= 1,541 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E-1: Subcat E-1** Runoff Area=161,512 sf 8.19% Impervious Runoff Depth=2.67"
Flow Length=178' Tc=14.8 min CN=60 Runoff=8.52 cfs 35,999 cf

**Subcatchment E-2: Subcat E-2** Runoff Area=13,855 sf 0.00% Impervious Runoff Depth=2.48"
Flow Length=67' Tc=8.5 min CN=58 Runoff=0.79 cfs 2,860 cf

**Subcatchment E-3: Subcat E-3** Runoff Area=34,845 sf 11.24% Impervious Runoff Depth=3.18"
Flow Length=151' Tc=7.5 min CN=65 Runoff=2.77 cfs 9,234 cf

**Subcatchment E-4: Subcat E-4** Runoff Area=14,295 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=134' Tc=13.0 min CN=55 Runoff=0.62 cfs 2,606 cf

**Link SP1: Study Point** Inflow=8.52 cfs 35,999 cf
Primary=8.52 cfs 35,999 cf

**Link SP2: Study Point** Inflow=0.79 cfs 2,860 cf
Primary=0.79 cfs 2,860 cf

**Link SP3: Study Point** Inflow=2.77 cfs 9,234 cf
Primary=2.77 cfs 9,234 cf

**Link SP4: Study Point** Inflow=0.62 cfs 2,606 cf
Primary=0.62 cfs 2,606 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 50,699 cf Average Runoff Depth = 2.71"**
**92.36% Pervious = 207,365 sf 7.64% Impervious = 17,142 sf**

## Summary for Subcatchment E-1: Subcat E-1

Runoff = 8.52 cfs @ 12.22 hrs, Volume= 35,999 cf, Depth= 2.67"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 5,544 | 70 | Woods, Good, HSG C |
| 114,320 | 55 | Woods, Good, HSG B |
| 28,424 | 61 | >75% Grass cover, Good, HSG B |
| 13,031 | 98 | Paved parking, HSG B |
| 193 | 98 | Roofs, HSG B |
| 161,512 | 60 | Weighted Average |
| 148,288 | | 91.81% Pervious Area |
| 13,224 | | 8.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 128 | 0.0270 | 0.82 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 14.8 | 178 | Total | | | |

## Summary for Subcatchment E-2: Subcat E-2

Runoff = 0.79 cfs @ 12.13 hrs, Volume= 2,860 cf, Depth= 2.48"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 6,956 | 61 | >75% Grass cover, Good, HSG B |
| 6,899 | 55 | Woods, Good, HSG B |
| 13,855 | 58 | Weighted Average |
| 13,855 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.4 | 50 | 0.0500 | 0.10 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 0.1 | 17 | 0.0400 | 3.00 | | **Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps |
| 8.5 | 67 | Total | | | |

## Summary for Subcatchment E-3: Subcat E-3

Runoff = 2.77 cfs @ 12.11 hrs, Volume= 9,234 cf, Depth= 3.18"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 3,918 | 98 | Paved parking, HSG B |
| 169 | 55 | Woods, Good, HSG B |
| 30,757 | 61 | >75% Grass cover, Good, HSG B |
| 34,845 | 65 | Weighted Average |
| 30,927 | | 88.76% Pervious Area |
| 3,918 | | 11.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 50 | 0.0200 | 0.15 | | **Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.28" |
| 1.9 | 101 | 0.0300 | 0.87 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 7.5 | 151 | Total | | | |

## Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.62 cfs @ 12.20 hrs, Volume= 2,606 cf, Depth= 2.19"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 718 | 61 | >75% Grass cover, Good, HSG B |
| 13,577 | 55 | Woods, Good, HSG B |
| 14,295 | 55 | Weighted Average |
| 14,295 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.4 | 50 | 0.0300 | 0.08 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 84 | 0.0120 | 0.55 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.0 | 134 | Total | | | |

## Summary for Link SP1: Study Point

Inflow Area = 161,512 sf, 8.19% Impervious, Inflow Depth = 2.67" for 25-year event
Inflow = 8.52 cfs @ 12.22 hrs, Volume= 35,999 cf
Primary = 8.52 cfs @ 12.22 hrs, Volume= 35,999 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 13,855 sf, 0.00% Impervious, Inflow Depth = 2.48" for 25-year event
Inflow = 0.79 cfs @ 12.13 hrs, Volume= 2,860 cf
Primary = 0.79 cfs @ 12.13 hrs, Volume= 2,860 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 34,845 sf, 11.24% Impervious, Inflow Depth = 3.18" for 25-year event
Inflow = 2.77 cfs @ 12.11 hrs, Volume= 9,234 cf
Primary = 2.77 cfs @ 12.11 hrs, Volume= 9,234 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 14,295 sf, 0.00% Impervious, Inflow Depth = 2.19" for 25-year event
Inflow = 0.62 cfs @ 12.20 hrs, Volume= 2,606 cf
Primary = 0.62 cfs @ 12.20 hrs, Volume= 2,606 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E-1: Subcat E-1** Runoff Area=161,512 sf 8.19% Impervious Runoff Depth=3.72"
Flow Length=178' Tc=14.8 min CN=60 Runoff=12.08 cfs 50,076 cf

**Subcatchment E-2: Subcat E-2** Runoff Area=13,855 sf 0.00% Impervious Runoff Depth=3.49"
Flow Length=67' Tc=8.5 min CN=58 Runoff=1.14 cfs 4,025 cf

**Subcatchment E-3: Subcat E-3** Runoff Area=34,845 sf 11.24% Impervious Runoff Depth=4.31"
Flow Length=151' Tc=7.5 min CN=65 Runoff=3.78 cfs 12,516 cf

**Subcatchment E-4: Subcat E-4** Runoff Area=14,295 sf 0.00% Impervious Runoff Depth=3.14"
Flow Length=134' Tc=13.0 min CN=55 Runoff=0.92 cfs 3,738 cf

**Link SP1: Study Point** Inflow=12.08 cfs 50,076 cf
Primary=12.08 cfs 50,076 cf

**Link SP2: Study Point** Inflow=1.14 cfs 4,025 cf
Primary=1.14 cfs 4,025 cf

**Link SP3: Study Point** Inflow=3.78 cfs 12,516 cf
Primary=3.78 cfs 12,516 cf

**Link SP4: Study Point** Inflow=0.92 cfs 3,738 cf
Primary=0.92 cfs 3,738 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 70,356 cf Average Runoff Depth = 3.76"**
**92.36% Pervious = 207,365 sf 7.64% Impervious = 17,142 sf**

## Summary for Subcatchment E-1: Subcat E-1

Runoff = 12.08 cfs @ 12.21 hrs, Volume= 50,076 cf, Depth= 3.72"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 5,544 | 70 | Woods, Good, HSG C |
| 114,320 | 55 | Woods, Good, HSG B |
| 28,424 | 61 | >75% Grass cover, Good, HSG B |
| 13,031 | 98 | Paved parking, HSG B |
| 193 | 98 | Roofs, HSG B |
| 161,512 | 60 | Weighted Average |
| 148,288 | | 91.81% Pervious Area |
| 13,224 | | 8.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 128 | 0.0270 | 0.82 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 14.8 | 178 | Total | | | |

## Summary for Subcatchment E-2: Subcat E-2

Runoff = 1.14 cfs @ 12.13 hrs, Volume= 4,025 cf, Depth= 3.49"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 6,956 | 61 | >75% Grass cover, Good, HSG B |
| 6,899 | 55 | Woods, Good, HSG B |
| 13,855 | 58 | Weighted Average |
| 13,855 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.4 | 50 | 0.0500 | 0.10 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 0.1 | 17 | 0.0400 | 3.00 | | **Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps |
| 8.5 | 67 | Total | | | |

## Summary for Subcatchment E-3: Subcat E-3

Runoff = 3.78 cfs @ 12.11 hrs, Volume= 12,516 cf, Depth= 4.31"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 3,918 | 98 | Paved parking, HSG B |
| 169 | 55 | Woods, Good, HSG B |
| 30,757 | 61 | >75% Grass cover, Good, HSG B |
| 34,845 | 65 | Weighted Average |
| 30,927 | | 88.76% Pervious Area |
| 3,918 | | 11.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 50 | 0.0200 | 0.15 | | **Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.28" |
| 1.9 | 101 | 0.0300 | 0.87 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 7.5 | 151 | Total | | | |

## Summary for Subcatchment E-4: Subcat E-4

Runoff = 0.92 cfs @ 12.19 hrs, Volume= 3,738 cf, Depth= 3.14"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 718 | 61 | >75% Grass cover, Good, HSG B |
| 13,577 | 55 | Woods, Good, HSG B |
| 14,295 | 55 | Weighted Average |
| 14,295 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.4 | 50 | 0.0300 | 0.08 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 2.6 | 84 | 0.0120 | 0.55 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.0 | 134 | Total | | | |

## Summary for Link SP1: Study Point

Inflow Area = 161,512 sf, 8.19% Impervious, Inflow Depth = 3.72" for 50-year event
Inflow = 12.08 cfs @ 12.21 hrs, Volume= 50,076 cf
Primary = 12.08 cfs @ 12.21 hrs, Volume= 50,076 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 13,855 sf, 0.00% Impervious, Inflow Depth = 3.49" for 50-year event
Inflow = 1.14 cfs @ 12.13 hrs, Volume= 4,025 cf
Primary = 1.14 cfs @ 12.13 hrs, Volume= 4,025 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 34,845 sf, 11.24% Impervious, Inflow Depth = 4.31" for 50-year event
Inflow = 3.78 cfs @ 12.11 hrs, Volume= 12,516 cf
Primary = 3.78 cfs @ 12.11 hrs, Volume= 12,516 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 14,295 sf, 0.00% Impervious, Inflow Depth = 3.14" for 50-year event
Inflow = 0.92 cfs @ 12.19 hrs, Volume= 3,738 cf
Primary = 0.92 cfs @ 12.19 hrs, Volume= 3,738 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Existing Watershed Plan

## LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT LABEL (E-1)
- Tc FLOW PATH (A — B)
- SCS SOILS BOUNDARY
- FLOW DIRECTION

## PLAN NOTES:

1. THE EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED TO ALLEN & MAJOR ASSOCIATES, INC. (A&M) BY THE APPLICANT AND ARE TAKEN FROM A DRAWING ENTITLED "EXISTING CONDITIONS PLAN FOR ATDG, LLC", PREPARED BY DOUCET SURVEY LLC, DATED APRIL 5, 2023.
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GRAPHIC SCALE

40 0 20 40 80 160

( IN FEET )
1 inch = 40 ft.

| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
# ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 40' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH

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DRAWING TITLE:
EXISTING WATERSHED PLAN

SHEET No.
EWS-1

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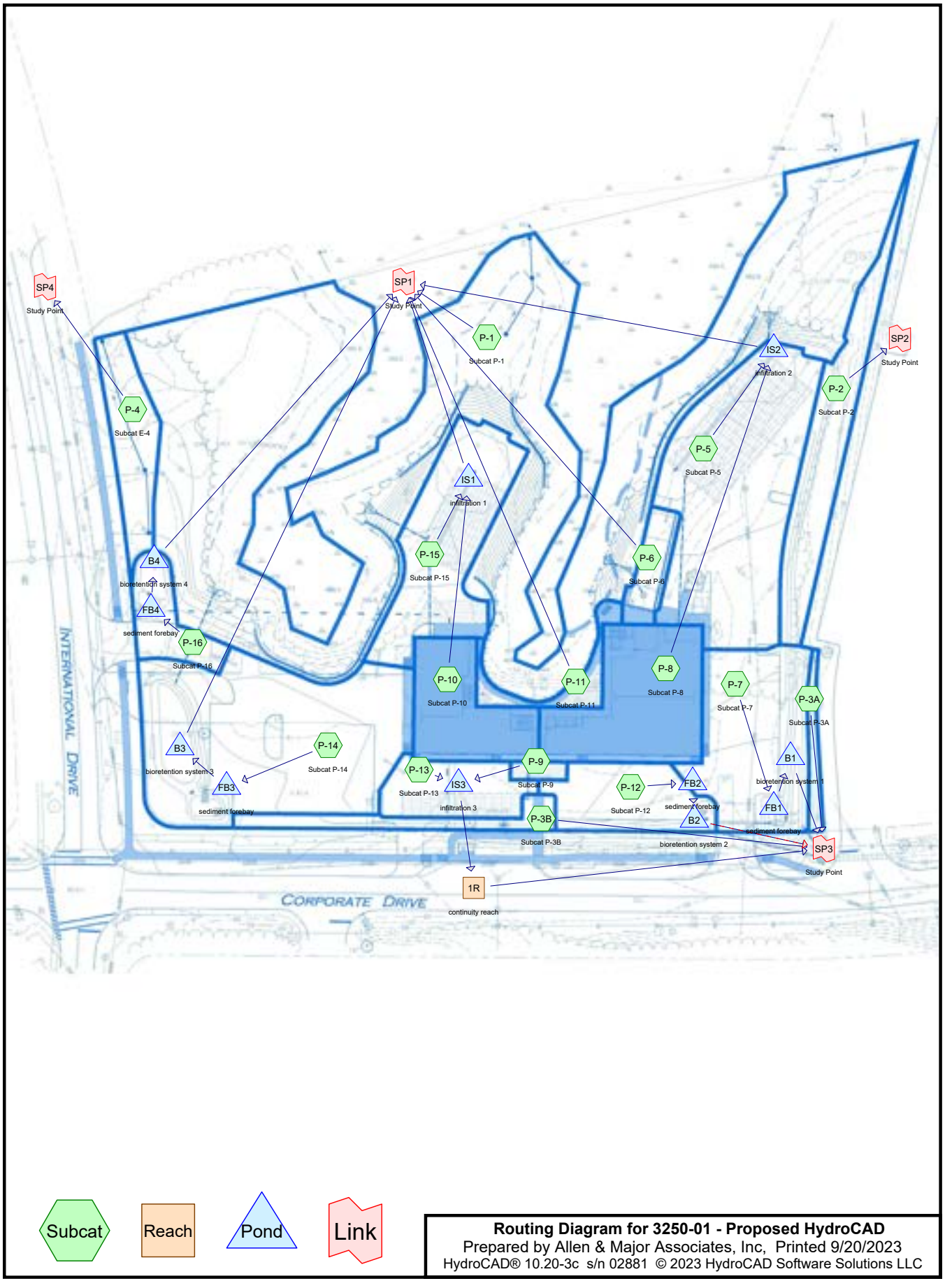
# SECTION 6.0 -
## PROPOSED DRAINAGE ANALYSIS

## Proposed HydroCAD




Subcat Reach Pond Link

**Routing Diagram for 3250-01 - Proposed HydroCAD**
Prepared by Allen & Major Associates, Inc, Printed 9/20/2023
HydroCAD® 10.20-3c s/n 02881 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-year | Type III 24-hr | | Default | 24.00 | 1 | 3.69 | 2 |
| 2 | 10-year | Type III 24-hr | | Default | 24.00 | 1 | 5.60 | 2 |
| 3 | 25-year | Type III 24-hr | | Default | 24.00 | 1 | 7.10 | 2 |
| 4 | 50-year | Type III 24-hr | | Default | 24.00 | 1 | 8.51 | 2 |

## Area Listing (all nodes)

| Area (sq-ft) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 69,200 | 61 | >75% Grass cover, Good, HSG B (P-1, P-11, P-12, P-13, P-14, P-15, P-16, P-2, P-3A, P-3B, P-4, P-5, P-6, P-7, P-8) |
| 478 | 74 | >75% Grass cover, Good, HSG C (P-1) |
| 73,447 | 98 | Paved parking, HSG B (P-1, P-11, P-12, P-13, P-14, P-15, P-16, P-3B, P-5, P-6, P-7, P-8) |
| 35 | 98 | Paved parking, HSG C (P-11) |
| 18,586 | 98 | Roofs, HSG B (P-10, P-11, P-5, P-6, P-7, P-8, P-9) |
| 57,731 | 55 | Woods, Good, HSG B (P-1) |
| 5,030 | 70 | Woods, Good, HSG C (P-1) |
| **224,507** | **75** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (sq-ft) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0 | HSG A | |
| 218,963 | HSG B | P-1, P-10, P-11, P-12, P-13, P-14, P-15, P-16, P-2, P-3A, P-3B, P-4, P-5, P-6, P-7, P-8, P-9 |
| 5,544 | HSG C | P-1, P-11 |
| 0 | HSG D | |
| 0 | Other | |
| **224,507** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (sq-ft) | HSG-B (sq-ft) | HSG-C (sq-ft) | HSG-D (sq-ft) | Other (sq-ft) | Total (sq-ft) | Ground Cover | Sub Num |
|---|---|---|---|---|---|---|---|
| 0 | 69,200 | 478 | 0 | 0 | 69,678 | >75% Grass cover, Good | |
| 0 | 73,447 | 35 | 0 | 0 | 73,482 | Paved parking | |
| 0 | 18,586 | 0 | 0 | 0 | 18,586 | Roofs | |
| 0 | 57,731 | 5,030 | 0 | 0 | 62,761 | Woods, Good | |
| **0** | **218,963** | **5,544** | **0** | **0** | **224,507** | **TOTAL AREA** | |

## Pipe Listing (all nodes)

| Line# | Node Number | In-Invert (feet) | Out-Invert (feet) | Length (feet) | Slope (ft/ft) | n | Width (inches) | Diam/Height (inches) | Inside-Fill (inches) | Node Name |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B1 | 58.22 | 57.50 | 22.0 | 0.0327 | 0.013 | 0.0 | 8.0 | 0.0 | |
| 2 | B2 | 58.00 | 57.50 | 88.0 | 0.0057 | 0.013 | 0.0 | 8.0 | 0.0 | |
| 3 | B3 | 58.40 | 57.00 | 77.0 | 0.0182 | 0.013 | 0.0 | 8.0 | 0.0 | |
| 4 | IS1 | 59.50 | 57.25 | 32.0 | 0.0703 | 0.013 | 0.0 | 8.0 | 0.0 | |
| 5 | IS2 | 58.65 | 58.00 | 19.0 | 0.0342 | 0.013 | 0.0 | 10.0 | 0.0 | |

## Notes Listing (all nodes)

| Line# | Node Number | Notes |
|---|---|---|
| 1 | Project | For Coastal and Great Bay Communities, a 15% increase was added to each storm event per Env-Wq 1503.08(I). |
| 2 | B1 | GW from TP4 |
| 3 | | NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate. |
| 4 | B2 | GW from TP4 |
| 5 | | NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate. |
| 6 | B3 | GW from TP1 |
| 7 | | NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate. |
| 8 | B4 | GW assumed based on surrounding data. confirmatory TP to be performed. |
| 9 | | NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate. |
| 10 | IS1 | GW elevation from TP8 |
| 11 | | NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate. |
| 12 | IS2 | GW from TP5 |
| 13 | | NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate. |
| 14 | IS3 | GW from TP2 |
| 15 | | NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate. |

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P-1: Subcat P-1** Runoff Area=96,465 sf 0.06% Impervious Runoff Depth=0.53"
Flow Length=85' Tc=13.7 min CN=58 Runoff=0.69 cfs 4,260 cf

**Subcatchment P-10: Subcat P-10** Runoff Area=7,046 sf 100.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.57 cfs 2,029 cf

**Subcatchment P-11: Subcat P-11** Runoff Area=2,310 sf 85.16% Impervious Runoff Depth=2.92"
Tc=6.0 min CN=93 Runoff=0.17 cfs 562 cf

**Subcatchment P-12: Subcat P-12** Runoff Area=6,287 sf 75.97% Impervious Runoff Depth=2.53"
Tc=6.0 min CN=89 Runoff=0.41 cfs 1,327 cf

**Subcatchment P-13: Subcat P-13** Runoff Area=4,999 sf 98.84% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.40 cfs 1,440 cf

**Subcatchment P-14: Subcat P-14** Runoff Area=24,922 sf 65.24% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=85 Runoff=1.43 cfs 4,533 cf

**Subcatchment P-15: Subcat P-15** Runoff Area=11,933 sf 98.06% Impervious Runoff Depth=3.34"
Tc=6.0 min CN=97 Runoff=0.95 cfs 3,324 cf

**Subcatchment P-16: Subcat P-16** Runoff Area=3,691 sf 53.10% Impervious Runoff Depth=1.86"
Tc=6.0 min CN=81 Runoff=0.18 cfs 573 cf

**Subcatchment P-2: Subcat P-2** Runoff Area=8,852 sf 0.00% Impervious Runoff Depth=0.66"
Tc=6.0 min CN=61 Runoff=0.12 cfs 487 cf

**Subcatchment P-3A: Subcat P-3A** Runoff Area=1,190 sf 0.00% Impervious Runoff Depth=0.66"
Tc=6.0 min CN=61 Runoff=0.02 cfs 65 cf

**Subcatchment P-3B: Subcat P-3B** Runoff Area=3,169 sf 7.20% Impervious Runoff Depth=0.80"
Tc=6.0 min CN=64 Runoff=0.06 cfs 212 cf

**Subcatchment P-4: Subcat E-4** Runoff Area=5,412 sf 0.00% Impervious Runoff Depth=0.66"
Flow Length=162' Tc=9.6 min CN=61 Runoff=0.06 cfs 298 cf

**Subcatchment P-5: Subcat P-5** Runoff Area=21,847 sf 97.06% Impervious Runoff Depth=3.34"
Tc=6.0 min CN=97 Runoff=1.74 cfs 6,087 cf

**Subcatchment P-6: Subcat P-6** Runoff Area=2,391 sf 88.45% Impervious Runoff Depth=3.02"
Tc=6.0 min CN=94 Runoff=0.18 cfs 602 cf

**Subcatchment P-7: Subcat P-7** Runoff Area=12,459 sf 66.41% Impervious Runoff Depth=2.27"
Tc=6.0 min CN=86 Runoff=0.74 cfs 2,354 cf

**Subcatchment P-8: Subcat P-8** Runoff Area=10,876 sf 99.99% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.88 cfs 3,132 cf

**Subcatchment P-9: Subcat P-9** Runoff Area=657 sf 100.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.05 cfs 189 cf

**Reach 1R: continuity reach** Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

**Pond B1: bioretention system 1** Peak Elev=60.05' Storage=1,024 cf Inflow=0.72 cfs 2,218 cf
Discarded=0.03 cfs 1,845 cf Primary=0.14 cfs 373 cf Outflow=0.17 cfs 2,218 cf

**Pond B2: bioretention system 2** Peak Elev=60.66' Storage=531 cf Inflow=0.41 cfs 1,273 cf
Discarded=0.02 cfs 939 cf Primary=0.12 cfs 334 cf Outflow=0.14 cfs 1,273 cf

**Pond B3: bioretention system 3** Peak Elev=59.67' Storage=2,288 cf Inflow=1.39 cfs 4,335 cf
Discarded=0.09 cfs 4,335 cf Primary=0.00 cfs 0 cf Outflow=0.09 cfs 4,335 cf

**Pond B4: bioretention system 4** Peak Elev=58.99' Storage=231 cf Inflow=0.18 cfs 529 cf
Discarded=0.02 cfs 529 cf Primary=0.00 cfs 0 cf Outflow=0.02 cfs 529 cf

**Pond FB1: sediment forebay** Peak Elev=59.71' Storage=209 cf Inflow=0.74 cfs 2,354 cf
Outflow=0.72 cfs 2,218 cf

**Pond FB2: sediment forebay** Peak Elev=60.84' Storage=71 cf Inflow=0.41 cfs 1,327 cf
Outflow=0.41 cfs 1,273 cf

**Pond FB3: sediment forebay** Peak Elev=59.82' Storage=355 cf Inflow=1.43 cfs 4,533 cf
Outflow=1.39 cfs 4,335 cf

**Pond FB4: sediment forebay** Peak Elev=59.88' Storage=58 cf Inflow=0.18 cfs 573 cf
Outflow=0.18 cfs 529 cf

**Pond IS1: infiltration 1** Peak Elev=59.78' Storage=2,198 cf Inflow=1.52 cfs 5,354 cf
Discarded=0.07 cfs 4,298 cf Primary=0.24 cfs 1,055 cf Outflow=0.31 cfs 5,354 cf

**Pond IS2: infiltration 2** Peak Elev=58.82' Storage=4,106 cf Inflow=2.62 cfs 9,219 cf
Discarded=0.13 cfs 8,393 cf Primary=0.12 cfs 826 cf Outflow=0.25 cfs 9,219 cf

**Pond IS3: infiltration 3** Peak Elev=60.25' Storage=616 cf Inflow=0.46 cfs 1,629 cf
Discarded=0.04 cfs 1,629 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 1,629 cf

**Link SP1: Study Point** Inflow=1.00 cfs 7,305 cf
Primary=1.00 cfs 7,305 cf

**Link SP2: Study Point** Inflow=0.12 cfs 487 cf
Primary=0.12 cfs 487 cf

**Link SP3: Study Point** Inflow=0.27 cfs 985 cf
Primary=0.27 cfs 985 cf

**Link SP4: Study Point** Inflow=0.06 cfs 298 cf
Primary=0.06 cfs 298 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 31,476 cf Average Runoff Depth = 1.68"**
**58.99% Pervious = 132,439 sf 41.01% Impervious = 92,068 sf**

## Summary for Subcatchment P-1: Subcat P-1

Runoff = 0.69 cfs @ 12.27 hrs, Volume= 4,260 cf, Depth= 0.53"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 33,163 | 61 | >75% Grass cover, Good, HSG B |
| 478 | 74 | >75% Grass cover, Good, HSG C |
| 57,731 | 55 | Woods, Good, HSG B |
| 5,030 | 70 | Woods, Good, HSG C |
| 63 | 98 | Paved parking, HSG B |
| 96,465 | 58 | Weighted Average |
| 96,403 | | 99.94% Pervious Area |
| 63 | | 0.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 1.5 | 35 | 0.0060 | 0.39 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.7 | 85 | Total | | | |

## Summary for Subcatchment P-10: Subcat P-10

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 2,029 cf, Depth= 3.46"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 7,046 | 98 | Roofs, HSG B |
| 7,046 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-11: Subcat P-11

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 562 cf, Depth= 2.92"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 35 | 98 | Paved parking, HSG C |
| 343 | 61 | >75% Grass cover, Good, HSG B |
| 0 | 98 | Roofs, HSG B |
| 1,932 | 98 | Paved parking, HSG B |
| 2,310 | 93 | Weighted Average |
| 343 | | 14.84% Pervious Area |
| 1,967 | | 85.16% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-12: Subcat P-12

Runoff = 0.41 cfs @ 12.09 hrs, Volume= 1,327 cf, Depth= 2.53"
Routed to Pond FB2 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 4,776 | 98 | Paved parking, HSG B |
| 1,511 | 61 | >75% Grass cover, Good, HSG B |
| 6,287 | 89 | Weighted Average |
| 1,511 | | 24.03% Pervious Area |
| 4,776 | | 75.97% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-13: Subcat P-13

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 1,440 cf, Depth= 3.46"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 4,941 | 98 | Paved parking, HSG B |
| 58 | 61 | >75% Grass cover, Good, HSG B |
| 4,999 | 98 | Weighted Average |
| 58 | | 1.16% Pervious Area |
| 4,941 | | 98.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-14: Subcat P-14

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 4,533 cf, Depth= 2.18"
Routed to Pond FB3 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 8,662 | 61 | >75% Grass cover, Good, HSG B |
| 16,259 | 98 | Paved parking, HSG B |
| 24,922 | 85 | Weighted Average |
| 8,662 | | 34.76% Pervious Area |
| 16,259 | | 65.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-15: Subcat P-15

Runoff = 0.95 cfs @ 12.09 hrs, Volume= 3,324 cf, Depth= 3.34"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 231 | 61 | >75% Grass cover, Good, HSG B |
| 11,702 | 98 | Paved parking, HSG B |
| 11,933 | 97 | Weighted Average |
| 231 | | 1.94% Pervious Area |
| 11,702 | | 98.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-16: Subcat P-16

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 573 cf, Depth= 1.86"
Routed to Pond FB4 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 1,960 | 98 | Paved parking, HSG B |
| 1,731 | 61 | >75% Grass cover, Good, HSG B |
| 3,691 | 81 | Weighted Average |
| 1,731 | | 46.90% Pervious Area |
| 1,960 | | 53.10% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.12 cfs @ 12.11 hrs, Volume= 487 cf, Depth= 0.66"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 8,852 | 61 | >75% Grass cover, Good, HSG B |
| 8,852 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 min** |

## Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.02 cfs @ 12.11 hrs, Volume= 65 cf, Depth= 0.66"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 1,190 | 61 | >75% Grass cover, Good, HSG B |
| 1,190 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-3B: Subcat P-3B

Runoff = 0.06 cfs @ 12.11 hrs, Volume= 212 cf, Depth= 0.80"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 2,941 | 61 | >75% Grass cover, Good, HSG B |
| 228 | 98 | Paved parking, HSG B |
| 3,169 | 64 | Weighted Average |
| 2,941 | | 92.80% Pervious Area |
| 228 | | 7.20% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-4: Subcat E-4

Runoff = 0.06 cfs @ 12.17 hrs, Volume= 298 cf, Depth= 0.66"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 5,412 | 61 | >75% Grass cover, Good, HSG B |
| 5,412 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.1 | 50 | 0.0200 | 0.10 | | **Sheet Flow, A-B**<br>Grass: Dense n= 0.240 P2= 3.28" |
| 1.5 | 112 | 0.0310 | 1.23 | | **Shallow Concentrated Flow, B-C**<br>Short Grass Pasture Kv= 7.0 fps |
| 9.6 | 162 | Total | | | |

## Summary for Subcatchment P-5: Subcat P-5

Runoff = 1.74 cfs @ 12.09 hrs, Volume= 6,087 cf, Depth= 3.34"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 643 | 61 | >75% Grass cover, Good, HSG B |
| 21,197 | 98 | Paved parking, HSG B |
| 7 | 98 | Roofs, HSG B |
| 21,847 | 97 | Weighted Average |
| 643 | | 2.94% Pervious Area |
| 21,204 | | 97.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-6: Subcat P-6

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 602 cf, Depth= 3.02"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 276 | 61 | >75% Grass cover, Good, HSG B |
| 1 | 98 | Roofs, HSG B |
| 2,114 | 98 | Paved parking, HSG B |
| 2,391 | 94 | Weighted Average |
| 276 | | 11.55% Pervious Area |
| 2,115 | | 88.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-7: Subcat P-7

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 2,354 cf, Depth= 2.27"
Routed to Pond FB1 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 9 | 98 | Roofs, HSG B |
| 8,265 | 98 | Paved parking, HSG B |
| 4,185 | 61 | >75% Grass cover, Good, HSG B |
| 12,459 | 86 | Weighted Average |
| 4,185 | | 33.59% Pervious Area |
| 8,274 | | 66.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-8: Subcat P-8

Runoff = 0.88 cfs @ 12.09 hrs, Volume= 3,132 cf, Depth= 3.46"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 1 | 61 | >75% Grass cover, Good, HSG B |
| 10,865 | 98 | Roofs, HSG B |
| 10 | 98 | Paved parking, HSG B |
| 10,876 | 98 | Weighted Average |
| 1 | | 0.01% Pervious Area |
| 10,875 | | 99.99% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-9: Subcat P-9

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 189 cf, Depth= 3.46"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.69"

| Area (sf) | CN | Description |
|---|---|---|
| 657 | 98 | Roofs, HSG B |
| 657 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Reach 1R: continuity reach

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link SP3 : Study Point

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Pond B1: bioretention system 1

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

[81] Warning: Exceeded Pond FB1 by 0.48' @ 12.65 hrs

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 2.14" for 2-year event
Inflow = 0.72 cfs @ 12.11 hrs, Volume= 2,218 cf
Outflow = 0.17 cfs @ 12.54 hrs, Volume= 2,218 cf, Atten= 76%, Lag= 25.8 min
Discarded = 0.03 cfs @ 12.54 hrs, Volume= 1,845 cf
Primary = 0.14 cfs @ 12.54 hrs, Volume= 373 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.05' @ 12.54 hrs Surf.Area= 318 sf Storage= 1,024 cf
Flood Elev= 61.00' Surf.Area= 318 sf Storage= 2,822 cf

Plug-Flow detention time= 323.3 min calculated for 2,218 cf (100% of inflow)
Center-of-Mass det. time= 323.2 min ( 1,156.8 - 833.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 58.50' | 2,632 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 56.50' | 191 cf | **media storage (Irregular)**Listed below (Recalc)<br>636 cf Overall x 30.0% Voids |
| | | 2,822 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 58.50 | 118 | 118.0 | 0 | 0 | 118 |
| 59.00 | 318 | 140.0 | 105 | 105 | 574 |
| 60.00 | 1,109 | 299.0 | 674 | 779 | 6,133 |
| 61.00 | 2,715 | 349.0 | 1,853 | 2,632 | 8,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 56.50 | 318 | 140.0 | 0 | 0 | 318 |
| 58.50 | 318 | 140.0 | 636 | 636 | 598 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 56.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.00' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.22' | **8.0" Round Culvert** L= 22.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.22' / 57.50' S= 0.0327 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.03 cfs @ 12.54 hrs HW=60.05' (Free Discharge)
└**1=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.13 cfs @ 12.54 hrs HW=60.05' (Free Discharge)
└**3=Culvert** (Passes 0.13 cfs of 2.05 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.13 cfs @ 0.71 fps)

## Summary for Pond B2: bioretention system 2

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 2.43" for 2-year event
Inflow = 0.41 cfs @ 12.10 hrs, Volume= 1,273 cf
Outflow = 0.14 cfs @ 12.40 hrs, Volume= 1,273 cf, Atten= 66%, Lag= 18.3 min
Discarded = 0.02 cfs @ 12.40 hrs, Volume= 939 cf
Primary = 0.12 cfs @ 12.40 hrs, Volume= 334 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.66' @ 12.40 hrs Surf.Area= 258 sf Storage= 531 cf
Flood Elev= 61.00' Surf.Area= 258 sf Storage= 800 cf

Plug-Flow detention time= 244.2 min calculated for 1,272 cf (100% of inflow)
Center-of-Mass det. time= 244.5 min ( 1,063.0 - 818.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 645 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 155 cf | **media storage (Irregular)**Listed below (Recalc)<br>516 cf Overall x 30.0% Voids |
| | | 800 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 98 | 88.0 | 0 | 0 | 98 |
| 60.00 | 258 | 114.0 | 86 | 86 | 519 |
| 61.00 | 930 | 204.0 | 559 | 645 | 2,802 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 258 | 114.0 | 0 | 0 | 258 |
| 59.50 | 258 | 114.0 | 516 | 516 | 486 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.50' | **15.0" Vert. overflow orifice** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.00' | **8.0" Round Culvert** L= 88.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 57.50' S= 0.0057 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.02 cfs @ 12.40 hrs HW=60.66' (Free Discharge)
└**1=Exfiltration** ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.12 cfs @ 12.40 hrs HW=60.66' (Free Discharge)
└**3=Culvert** (Passes 0.12 cfs of 1.77 cfs potential flow)
└**2=overflow orifice** (Orifice Controls 0.12 cfs @ 1.35 fps)

## Summary for Pond B3: bioretention system 3

GW from TP1

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB3 by 0.12' @ 14.45 hrs

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 2.09" for 2-year event
Inflow = 1.39 cfs @ 12.11 hrs, Volume= 4,335 cf
Outflow = 0.09 cfs @ 14.20 hrs, Volume= 4,335 cf, Atten= 94%, Lag= 125.0 min
Discarded = 0.09 cfs @ 14.20 hrs, Volume= 4,335 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.67' @ 14.20 hrs Surf.Area= 1,639 sf Storage= 2,288 cf
Flood Elev= 61.00' Surf.Area= 1,639 sf Storage= 6,870 cf

Plug-Flow detention time= 304.2 min calculated for 4,329 cf (100% of inflow)
Center-of-Mass det. time= 304.2 min ( 1,138.5 - 834.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 5,886 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.00' | 983 cf | **media storage (Irregular)**Listed below (Recalc)<br>3,278 cf Overall x 30.0% Voids |
| | | 6,870 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 60.00 | 2,580 | 217.0 | 2,092 | 2,092 | 2,711 |
| 61.00 | 5,156 | 323.0 | 3,794 | 5,886 | 7,274 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 59.00 | 1,639 | 184.0 | 3,278 | 3,278 | 2,007 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 60.80' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #2 | Primary | 58.40' | **8.0" Round Culvert** L= 77.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.40' / 57.00' S= 0.0182 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |
| #3 | Discarded | 57.00' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.09 cfs @ 14.20 hrs HW=59.67' (Free Discharge)
└**3=Exfiltration** ( Controls 0.09 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
└**2=Culvert** ( Controls 0.00 cfs)
└**1=Orifice/Grate** ( Controls 0.00 cfs)

## Summary for Pond B4: bioretention system 4

GW assumed based on surrounding data. confirmatory TP to be performed.

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 1.72" for 2-year event
Inflow = 0.18 cfs @ 12.11 hrs, Volume= 529 cf
Outflow = 0.02 cfs @ 13.10 hrs, Volume= 529 cf, Atten= 90%, Lag= 59.5 min
Discarded = 0.02 cfs @ 13.10 hrs, Volume= 529 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 58.99' @ 13.10 hrs Surf.Area= 516 sf Storage= 231 cf
Flood Elev= 61.00' Surf.Area= 516 sf Storage= 1,358 cf

Plug-Flow detention time= 151.3 min calculated for 529 cf (100% of inflow)
Center-of-Mass det. time= 151.2 min ( 1,001.4 - 850.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 1,049 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 310 cf | **media storage (Irregular)**Listed below (Recalc)<br>1,032 cf Overall x 30.0% Voids |
| | | 1,358 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 391 | 79.0 | 0 | 0 | 391 |
| 60.00 | 516 | 88.0 | 226 | 226 | 518 |
| 61.00 | 1,174 | 135.0 | 823 | 1,049 | 1,359 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 516 | 88.0 | 0 | 0 | 516 |
| 59.50 | 516 | 88.0 | 1,032 | 1,032 | 692 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.75' | **5.0' long x 4.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32 |
| #2 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.02 cfs @ 13.10 hrs HW=58.99' (Free Discharge)
↑—**2=Exfiltration** ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.50' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond FB1: sediment forebay

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 2.27" for 2-year event
Inflow = 0.74 cfs @ 12.09 hrs, Volume= 2,354 cf
Outflow = 0.72 cfs @ 12.11 hrs, Volume= 2,218 cf, Atten= 3%, Lag= 1.2 min
Primary = 0.72 cfs @ 12.11 hrs, Volume= 2,218 cf
Routed to Pond B1 : bioretention system 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.71' @ 12.11 hrs Surf.Area= 374 sf Storage= 209 cf
Flood Elev= 61.00' Surf.Area= 448 sf Storage= 328 cf

Plug-Flow detention time= 47.9 min calculated for 2,215 cf (94% of inflow)
Center-of-Mass det. time= 17.1 min ( 833.5 - 816.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 328 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 222 | 64.0 | 0 | 0 | 222 |
| 60.00 | 448 | 84.0 | 328 | 328 | 469 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=0.71 cfs @ 12.11 hrs HW=59.70' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.71 cfs @ 1.15 fps)

## Summary for Pond FB2: sediment forebay

Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 2.53" for 2-year event
Inflow = 0.41 cfs @ 12.09 hrs, Volume= 1,327 cf
Outflow = 0.41 cfs @ 12.10 hrs, Volume= 1,273 cf, Atten= 0%, Lag= 0.5 min
Primary = 0.41 cfs @ 12.10 hrs, Volume= 1,273 cf
Routed to Pond B2 : bioretention system 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.84' @ 12.10 hrs Surf.Area= 128 sf Storage= 71 cf
Flood Elev= 61.00' Surf.Area= 152 sf Storage= 93 cf

Plug-Flow detention time= 35.9 min calculated for 1,272 cf (96% of inflow)
Center-of-Mass det. time= 13.1 min ( 818.6 - 805.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 93 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 1 | 1.0 | 0 | 0 | 1 |
| 60.00 | 34 | 25.0 | 7 | 7 | 51 |
| 61.00 | 152 | 51.0 | 86 | 93 | 213 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.70' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=0.41 cfs @ 12.10 hrs HW=60.84' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 0.41 cfs @ 0.96 fps)

## Summary for Pond FB3: sediment forebay

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 2.18" for 2-year event
Inflow = 1.43 cfs @ 12.09 hrs, Volume= 4,533 cf
Outflow = 1.39 cfs @ 12.11 hrs, Volume= 4,335 cf, Atten= 3%, Lag= 1.3 min
Primary = 1.39 cfs @ 12.11 hrs, Volume= 4,335 cf
Routed to Pond B3 : bioretention system 3

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.82' @ 12.11 hrs Surf.Area= 536 sf Storage= 355 cf
Flood Elev= 61.00' Surf.Area= 586 sf Storage= 457 cf

Plug-Flow detention time= 38.5 min calculated for 4,329 cf (96% of inflow)
Center-of-Mass det. time= 14.4 min ( 834.3 - 819.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 457 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 340 | 70.0 | 0 | 0 | 340 |
| 60.00 | 586 | 91.0 | 457 | 457 | 621 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=1.35 cfs @ 12.11 hrs HW=59.81' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 1.35 cfs @ 1.44 fps)

## Summary for Pond FB4: sediment forebay

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 1.86" for 2-year event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 573 cf
Outflow = 0.18 cfs @ 12.11 hrs, Volume= 529 cf, Atten= 2%, Lag= 1.0 min
Primary = 0.18 cfs @ 12.11 hrs, Volume= 529 cf
Routed to Pond B4 : bioretention system 4

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.88' @ 12.11 hrs Surf.Area= 184 sf Storage= 58 cf
Flood Elev= 60.00' Surf.Area= 205 sf Storage= 81 cf

Plug-Flow detention time= 56.6 min calculated for 529 cf (92% of inflow)
Center-of-Mass det. time= 17.7 min ( 850.3 - 832.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 81 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 124 | 42.0 | 0 | 0 | 124 |
| 60.00 | 205 | 56.0 | 81 | 81 | 236 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.80' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=0.17 cfs @ 12.11 hrs HW=59.88' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.72 fps)

## Summary for Pond IS1: infiltration 1

GW elevation from TP8

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

Inflow Area = 18,979 sf, 98.78% Impervious, Inflow Depth = 3.39" for 2-year event
Inflow = 1.52 cfs @ 12.09 hrs, Volume= 5,354 cf
Outflow = 0.31 cfs @ 12.51 hrs, Volume= 5,354 cf, Atten= 80%, Lag= 25.4 min
Discarded = 0.07 cfs @ 12.51 hrs, Volume= 4,298 cf
Primary = 0.24 cfs @ 12.51 hrs, Volume= 1,055 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.78' @ 12.51 hrs Surf.Area= 3,088 sf Storage= 2,198 cf
Flood Elev= 60.93' Surf.Area= 3,088 sf Storage= 3,939 cf

Plug-Flow detention time= 205.6 min calculated for 5,346 cf (100% of inflow)
Center-of-Mass det. time= 205.5 min ( 964.6 - 759.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 58.60' | 2,174 cf | **41.50'W x 74.40'L x 2.33'H Field A**<br>7,204 cf Overall - 1,769 cf Embedded = 5,435 cf x 40.0% Voids |
| #2A | 59.10' | 1,769 cf | **ADS_StormTech SC-310 +Cap** x 120 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 12 Rows |
| | | 3,943 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 58.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 54.60' Phase-In= 0.01' |
| #2 | Primary | 59.50' | **8.0" Round Culvert** L= 32.0' Ke= 0.500<br>Inlet / Outlet Invert= 59.50' / 57.25' S= 0.0703 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.07 cfs @ 12.51 hrs HW=59.78' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.07 cfs)

**Primary OutFlow** Max=0.24 cfs @ 12.51 hrs HW=59.78' (Free Discharge)
↑**2=Culvert** (Inlet Controls 0.24 cfs @ 1.79 fps)

## Summary for Pond IS2: infiltration 2

GW from TP5

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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Inflow Area = 32,723 sf, 98.03% Impervious, Inflow Depth = 3.38" for 2-year event
Inflow = 2.62 cfs @ 12.09 hrs, Volume= 9,219 cf
Outflow = 0.25 cfs @ 12.92 hrs, Volume= 9,219 cf, Atten= 91%, Lag= 50.2 min
Discarded = 0.13 cfs @ 12.92 hrs, Volume= 8,393 cf
Primary = 0.12 cfs @ 12.92 hrs, Volume= 826 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 58.82' @ 12.92 hrs Surf.Area= 6,032 sf Storage= 4,106 cf
Flood Elev= 60.03' Surf.Area= 6,032 sf Storage= 7,744 cf

Plug-Flow detention time= 245.7 min calculated for 9,206 cf (100% of inflow)
Center-of-Mass det. time= 245.6 min ( 1,005.1 - 759.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.70' | 4,214 cf | **51.50'W x 117.12'L x 2.33'H Field A**<br>14,074 cf Overall - 3,538 cf Embedded = 10,536 cf x 40.0% Voids |
| #2A | 58.20' | 3,538 cf | **ADS_StormTech SC-310 +Cap** x 240 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>240 Chambers in 15 Rows |
| | | 7,752 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.70' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 53.70' Phase-In= 0.01' |
| #2 | Primary | 58.65' | **10.0" Round Culvert** L= 19.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.65' / 58.00' S= 0.0342 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf |

**Discarded OutFlow** Max=0.13 cfs @ 12.92 hrs HW=58.82' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.13 cfs)

**Primary OutFlow** Max=0.12 cfs @ 12.92 hrs HW=58.82' (Free Discharge)
↑**2=Culvert** (Inlet Controls 0.12 cfs @ 1.42 fps)

## Summary for Pond IS3: infiltration 3

GW from TP2

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 3.46" for 2-year event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 1,629 cf
Outflow = 0.04 cfs @ 13.02 hrs, Volume= 1,629 cf, Atten= 92%, Lag= 56.3 min
Discarded = 0.04 cfs @ 13.02 hrs, Volume= 1,629 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 1R : continuity reach

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.25' @ 13.02 hrs Surf.Area= 1,972 sf Storage= 616 cf
Flood Elev= 61.60' Surf.Area= 1,972 sf Storage= 2,057 cf

Plug-Flow detention time= 123.9 min calculated for 1,629 cf (100% of inflow)
Center-of-Mass det. time= 123.8 min ( 877.3 - 753.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 59.60' | 1,257 cf | **20.75'W x 95.03'L x 2.00'H Field A**<br>3,944 cf Overall - 800 cf Embedded = 3,144 cf x 40.0% Voids |
| #2A | 60.10' | 800 cf | **ADS_StormTech SC-160LP +Cap** x 117 Inside #1<br>Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf<br>Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap<br>117 Chambers in 9 Rows |
| | | 2,057 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 61.60' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 59.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 55.60' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.04 cfs @ 13.02 hrs HW=60.25' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=59.60' (Free Discharge)

## Summary for Link SP1: Study Point

Inflow Area = 181,482 sf, 40.33% Impervious, Inflow Depth = 0.48" for 2-year event
Inflow = 1.00 cfs @ 12.38 hrs, Volume= 7,305 cf
Primary = 1.00 cfs @ 12.38 hrs, Volume= 7,305 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 8,852 sf, 0.00% Impervious, Inflow Depth = 0.66" for 2-year event
Inflow = 0.12 cfs @ 12.11 hrs, Volume= 487 cf
Primary = 0.12 cfs @ 12.11 hrs, Volume= 487 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 28,761 sf, 65.63% Impervious, Inflow Depth = 0.41" for 2-year event
Inflow = 0.27 cfs @ 12.51 hrs, Volume= 985 cf
Primary = 0.27 cfs @ 12.51 hrs, Volume= 985 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 5,412 sf, 0.00% Impervious, Inflow Depth = 0.66" for 2-year event
Inflow = 0.06 cfs @ 12.17 hrs, Volume= 298 cf
Primary = 0.06 cfs @ 12.17 hrs, Volume= 298 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P-1: Subcat P-1** Runoff Area=96,465 sf 0.06% Impervious Runoff Depth=1.51"
Flow Length=85' Tc=13.7 min CN=58 Runoff=2.75 cfs 12,162 cf

**Subcatchment P-10: Subcat P-10** Runoff Area=7,046 sf 100.00% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=0.87 cfs 3,149 cf

**Subcatchment P-11: Subcat P-11** Runoff Area=2,310 sf 85.16% Impervious Runoff Depth=4.79"
Tc=6.0 min CN=93 Runoff=0.27 cfs 922 cf

**Subcatchment P-12: Subcat P-12** Runoff Area=6,287 sf 75.97% Impervious Runoff Depth=4.35"
Tc=6.0 min CN=89 Runoff=0.69 cfs 2,278 cf

**Subcatchment P-13: Subcat P-13** Runoff Area=4,999 sf 98.84% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=0.61 cfs 2,234 cf

**Subcatchment P-14: Subcat P-14** Runoff Area=24,922 sf 65.24% Impervious Runoff Depth=3.93"
Tc=6.0 min CN=85 Runoff=2.54 cfs 8,155 cf

**Subcatchment P-15: Subcat P-15** Runoff Area=11,933 sf 98.06% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=97 Runoff=1.46 cfs 5,216 cf

**Subcatchment P-16: Subcat P-16** Runoff Area=3,691 sf 53.10% Impervious Runoff Depth=3.52"
Tc=6.0 min CN=81 Runoff=0.34 cfs 1,083 cf

**Subcatchment P-2: Subcat P-2** Runoff Area=8,852 sf 0.00% Impervious Runoff Depth=1.74"
Tc=6.0 min CN=61 Runoff=0.38 cfs 1,286 cf

**Subcatchment P-3A: Subcat P-3A** Runoff Area=1,190 sf 0.00% Impervious Runoff Depth=1.74"
Tc=6.0 min CN=61 Runoff=0.05 cfs 173 cf

**Subcatchment P-3B: Subcat P-3B** Runoff Area=3,169 sf 7.20% Impervious Runoff Depth=1.98"
Tc=6.0 min CN=64 Runoff=0.16 cfs 524 cf

**Subcatchment P-4: Subcat E-4** Runoff Area=5,412 sf 0.00% Impervious Runoff Depth=1.74"
Flow Length=162' Tc=9.6 min CN=61 Runoff=0.21 cfs 786 cf

**Subcatchment P-5: Subcat P-5** Runoff Area=21,847 sf 97.06% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=97 Runoff=2.67 cfs 9,550 cf

**Subcatchment P-6: Subcat P-6** Runoff Area=2,391 sf 88.45% Impervious Runoff Depth=4.90"
Tc=6.0 min CN=94 Runoff=0.28 cfs 977 cf

**Subcatchment P-7: Subcat P-7** Runoff Area=12,459 sf 66.41% Impervious Runoff Depth=4.03"
Tc=6.0 min CN=86 Runoff=1.30 cfs 4,185 cf

**Subcatchment P-8: Subcat P-8** Runoff Area=10,876 sf 99.99% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=1.34 cfs 4,860 cf

**Subcatchment P-9: Subcat P-9** Runoff Area=657 sf 100.00% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=0.08 cfs 294 cf

**Reach 1R: continuity reach** Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

**Pond B1: bioretention system 1** Peak Elev=60.19' Storage=1,199 cf Inflow=1.27 cfs 4,049 cf
Discarded=0.03 cfs 2,183 cf Primary=1.03 cfs 1,866 cf Outflow=1.07 cfs 4,049 cf

**Pond B2: bioretention system 2** Peak Elev=60.83' Storage=657 cf Inflow=0.69 cfs 2,224 cf
Discarded=0.02 cfs 1,125 cf Primary=0.52 cfs 1,099 cf Outflow=0.54 cfs 2,224 cf

**Pond B3: bioretention system 3** Peak Elev=60.54' Storage=4,814 cf Inflow=2.47 cfs 7,957 cf
Discarded=0.10 cfs 7,829 cf Primary=0.00 cfs 0 cf Outflow=0.10 cfs 7,829 cf

**Pond B4: bioretention system 4** Peak Elev=59.98' Storage=526 cf Inflow=0.34 cfs 1,039 cf
Discarded=0.02 cfs 1,039 cf Primary=0.00 cfs 0 cf Outflow=0.02 cfs 1,039 cf

**Pond FB1: sediment forebay** Peak Elev=59.80' Storage=244 cf Inflow=1.30 cfs 4,185 cf
Outflow=1.27 cfs 4,049 cf

**Pond FB2: sediment forebay** Peak Elev=60.90' Storage=79 cf Inflow=0.69 cfs 2,278 cf
Outflow=0.69 cfs 2,224 cf

**Pond FB3: sediment forebay** Peak Elev=59.96' Storage=436 cf Inflow=2.54 cfs 8,155 cf
Outflow=2.47 cfs 7,957 cf

**Pond FB4: sediment forebay** Peak Elev=59.93' Storage=67 cf Inflow=0.34 cfs 1,083 cf
Outflow=0.34 cfs 1,039 cf

**Pond IS1: infiltration 1** Peak Elev=60.15' Storage=2,919 cf Inflow=2.33 cfs 8,364 cf
Discarded=0.07 cfs 5,058 cf Primary=0.95 cfs 3,307 cf Outflow=1.02 cfs 8,364 cf

**Pond IS2: infiltration 2** Peak Elev=59.23' Storage=5,685 cf Inflow=4.01 cfs 14,410 cf
Discarded=0.14 cfs 9,872 cf Primary=1.04 cfs 4,537 cf Outflow=1.18 cfs 14,410 cf

**Pond IS3: infiltration 3** Peak Elev=60.59' Storage=1,112 cf Inflow=0.70 cfs 2,528 cf
Discarded=0.04 cfs 2,528 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 2,528 cf

**Link SP1: Study Point** Inflow=4.73 cfs 21,904 cf
Primary=4.73 cfs 21,904 cf

**Link SP2: Study Point** Inflow=0.38 cfs 1,286 cf
Primary=0.38 cfs 1,286 cf

**Link SP3: Study Point** Inflow=1.72 cfs 3,661 cf
Primary=1.72 cfs 3,661 cf

**Link SP4: Study Point** Inflow=0.21 cfs 786 cf
Primary=0.21 cfs 786 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 57,831 cf Average Runoff Depth = 3.09"**
**58.99% Pervious = 132,439 sf 41.01% Impervious = 92,068 sf**

## Summary for Subcatchment P-1: Subcat P-1

Runoff = 2.75 cfs @ 12.21 hrs, Volume= 12,162 cf, Depth= 1.51"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 33,163 | 61 | >75% Grass cover, Good, HSG B |
| 478 | 74 | >75% Grass cover, Good, HSG C |
| 57,731 | 55 | Woods, Good, HSG B |
| 5,030 | 70 | Woods, Good, HSG C |
| 63 | 98 | Paved parking, HSG B |
| 96,465 | 58 | Weighted Average |
| 96,403 | | 99.94% Pervious Area |
| 63 | | 0.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 1.5 | 35 | 0.0060 | 0.39 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.7 | 85 | Total | | | |

## Summary for Subcatchment P-10: Subcat P-10

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 3,149 cf, Depth= 5.36"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 7,046 | 98 | Roofs, HSG B |
| 7,046 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-11: Subcat P-11

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 922 cf, Depth= 4.79"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 35 | 98 | Paved parking, HSG C |
| 343 | 61 | >75% Grass cover, Good, HSG B |
| 0 | 98 | Roofs, HSG B |
| 1,932 | 98 | Paved parking, HSG B |
| 2,310 | 93 | Weighted Average |
| 343 | | 14.84% Pervious Area |
| 1,967 | | 85.16% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-12: Subcat P-12

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 2,278 cf, Depth= 4.35"
Routed to Pond FB2 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 4,776 | 98 | Paved parking, HSG B |
| 1,511 | 61 | >75% Grass cover, Good, HSG B |
| 6,287 | 89 | Weighted Average |
| 1,511 | | 24.03% Pervious Area |
| 4,776 | | 75.97% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-13: Subcat P-13

Runoff = 0.61 cfs @ 12.09 hrs, Volume= 2,234 cf, Depth= 5.36"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 4,941 | 98 | Paved parking, HSG B |
| 58 | 61 | >75% Grass cover, Good, HSG B |
| 4,999 | 98 | Weighted Average |
| 58 | | 1.16% Pervious Area |
| 4,941 | | 98.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-14: Subcat P-14

Runoff = 2.54 cfs @ 12.09 hrs, Volume= 8,155 cf, Depth= 3.93"
Routed to Pond FB3 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 8,662 | 61 | >75% Grass cover, Good, HSG B |
| 16,259 | 98 | Paved parking, HSG B |
| 24,922 | 85 | Weighted Average |
| 8,662 | | 34.76% Pervious Area |
| 16,259 | | 65.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-15: Subcat P-15

Runoff = 1.46 cfs @ 12.09 hrs, Volume= 5,216 cf, Depth= 5.25"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 231 | 61 | >75% Grass cover, Good, HSG B |
| 11,702 | 98 | Paved parking, HSG B |
| 11,933 | 97 | Weighted Average |
| 231 | | 1.94% Pervious Area |
| 11,702 | | 98.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-16: Subcat P-16

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 1,083 cf, Depth= 3.52"
Routed to Pond FB4 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 1,960 | 98 | Paved parking, HSG B |
| 1,731 | 61 | >75% Grass cover, Good, HSG B |
| 3,691 | 81 | Weighted Average |
| 1,731 | | 46.90% Pervious Area |
| 1,960 | | 53.10% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.38 cfs @ 12.10 hrs, Volume= 1,286 cf, Depth= 1.74"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 8,852 | 61 | >75% Grass cover, Good, HSG B |
| 8,852 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 min** |

## Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.05 cfs @ 12.10 hrs, Volume= 173 cf, Depth= 1.74"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 1,190 | 61 | >75% Grass cover, Good, HSG B |
| 1,190 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-3B: Subcat P-3B

Runoff = 0.16 cfs @ 12.10 hrs, Volume= 524 cf, Depth= 1.98"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 2,941 | 61 | >75% Grass cover, Good, HSG B |
| 228 | 98 | Paved parking, HSG B |
| 3,169 | 64 | Weighted Average |
| 2,941 | | 92.80% Pervious Area |
| 228 | | 7.20% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-4: Subcat E-4

Runoff = 0.21 cfs @ 12.15 hrs, Volume= 786 cf, Depth= 1.74"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 5,412 | 61 | >75% Grass cover, Good, HSG B |
| 5,412 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.1 | 50 | 0.0200 | 0.10 | | **Sheet Flow, A-B**<br>Grass: Dense n= 0.240 P2= 3.28" |
| 1.5 | 112 | 0.0310 | 1.23 | | **Shallow Concentrated Flow, B-C**<br>Short Grass Pasture Kv= 7.0 fps |
| 9.6 | 162 | Total | | | |

## Summary for Subcatchment P-5: Subcat P-5

Runoff = 2.67 cfs @ 12.09 hrs, Volume= 9,550 cf, Depth= 5.25"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 643 | 61 | >75% Grass cover, Good, HSG B |
| 21,197 | 98 | Paved parking, HSG B |
| 7 | 98 | Roofs, HSG B |
| 21,847 | 97 | Weighted Average |
| 643 | | 2.94% Pervious Area |
| 21,204 | | 97.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-6: Subcat P-6

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 977 cf, Depth= 4.90"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 276 | 61 | >75% Grass cover, Good, HSG B |
| 1 | 98 | Roofs, HSG B |
| 2,114 | 98 | Paved parking, HSG B |
| 2,391 | 94 | Weighted Average |
| 276 | | 11.55% Pervious Area |
| 2,115 | | 88.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-7: Subcat P-7

Runoff = 1.30 cfs @ 12.09 hrs, Volume= 4,185 cf, Depth= 4.03"
Routed to Pond FB1 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 9 | 98 | Roofs, HSG B |
| 8,265 | 98 | Paved parking, HSG B |
| 4,185 | 61 | >75% Grass cover, Good, HSG B |
| 12,459 | 86 | Weighted Average |
| 4,185 | | 33.59% Pervious Area |
| 8,274 | | 66.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-8: Subcat P-8

Runoff = 1.34 cfs @ 12.09 hrs, Volume= 4,860 cf, Depth= 5.36"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 1 | 61 | >75% Grass cover, Good, HSG B |
| 10,865 | 98 | Roofs, HSG B |
| 10 | 98 | Paved parking, HSG B |
| 10,876 | 98 | Weighted Average |
| 1 | | 0.01% Pervious Area |
| 10,875 | | 99.99% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-9: Subcat P-9

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 294 cf, Depth= 5.36"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.60"

| Area (sf) | CN | Description |
|---|---|---|
| 657 | 98 | Roofs, HSG B |
| 657 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Reach 1R: continuity reach

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 0.00" for 10-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link SP3 : Study Point

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Pond B1: bioretention system 1

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

[81] Warning: Exceeded Pond FB1 by 0.48' @ 16.10 hrs

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 3.90" for 10-year event
Inflow = 1.27 cfs @ 12.11 hrs, Volume= 4,049 cf
Outflow = 1.07 cfs @ 12.17 hrs, Volume= 4,049 cf, Atten= 16%, Lag= 4.0 min
Discarded = 0.03 cfs @ 12.17 hrs, Volume= 2,183 cf
Primary = 1.03 cfs @ 12.17 hrs, Volume= 1,866 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.19' @ 12.17 hrs Surf.Area= 318 sf Storage= 1,199 cf
Flood Elev= 61.00' Surf.Area= 318 sf Storage= 2,822 cf

Plug-Flow detention time= 218.9 min calculated for 4,049 cf (100% of inflow)
Center-of-Mass det. time= 218.9 min ( 1,032.3 - 813.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 58.50' | 2,632 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 56.50' | 191 cf | **media storage (Irregular)**Listed below (Recalc)<br>636 cf Overall x 30.0% Voids |
| | | 2,822 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 58.50 | 118 | 118.0 | 0 | 0 | 118 |
| 59.00 | 318 | 140.0 | 105 | 105 | 574 |
| 60.00 | 1,109 | 299.0 | 674 | 779 | 6,133 |
| 61.00 | 2,715 | 349.0 | 1,853 | 2,632 | 8,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 56.50 | 318 | 140.0 | 0 | 0 | 318 |
| 58.50 | 318 | 140.0 | 636 | 636 | 598 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 56.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.00' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.22' | **8.0" Round Culvert** L= 22.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.22' / 57.50' S= 0.0327 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.03 cfs @ 12.17 hrs HW=60.18' (Free Discharge)
└**1=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.98 cfs @ 12.17 hrs HW=60.18' (Free Discharge)
└**3=Culvert** (Passes 0.98 cfs of 2.14 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.98 cfs @ 1.39 fps)

## Summary for Pond B2: bioretention system 2

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[79] Warning: Submerged Pond FB2 Primary device # 1 by 0.13'

Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 4.25" for 10-year event
Inflow = 0.69 cfs @ 12.10 hrs, Volume= 2,224 cf
Outflow = 0.54 cfs @ 12.17 hrs, Volume= 2,224 cf, Atten= 23%, Lag= 4.4 min
Discarded = 0.02 cfs @ 12.17 hrs, Volume= 1,125 cf
Primary = 0.52 cfs @ 12.17 hrs, Volume= 1,099 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.83' @ 12.17 hrs Surf.Area= 258 sf Storage= 657 cf
Flood Elev= 61.00' Surf.Area= 258 sf Storage= 800 cf

Plug-Flow detention time= 176.8 min calculated for 2,221 cf (100% of inflow)
Center-of-Mass det. time= 177.2 min ( 977.8 - 800.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 645 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 155 cf | **media storage (Irregular)**Listed below (Recalc)<br>516 cf Overall x 30.0% Voids |
| | | 800 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 98 | 88.0 | 0 | 0 | 98 |
| 60.00 | 258 | 114.0 | 86 | 86 | 519 |
| 61.00 | 930 | 204.0 | 559 | 645 | 2,802 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 258 | 114.0 | 0 | 0 | 258 |
| 59.50 | 258 | 114.0 | 516 | 516 | 486 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.50' | **15.0" Vert. overflow orifice** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.00' | **8.0" Round Culvert** L= 88.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 57.50' S= 0.0057 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.02 cfs @ 12.17 hrs HW=60.83' (Free Discharge)
└**1=Exfiltration** ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.50 cfs @ 12.17 hrs HW=60.83' (Free Discharge)
└**3=Culvert** (Passes 0.50 cfs of 1.83 cfs potential flow)
└**2=overflow orifice** (Orifice Controls 0.50 cfs @ 1.95 fps)

## Summary for Pond B3: bioretention system 3

GW from TP1

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB3 by 0.99' @ 15.75 hrs

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 3.83" for 10-year event
Inflow = 2.47 cfs @ 12.11 hrs, Volume= 7,957 cf
Outflow = 0.10 cfs @ 15.34 hrs, Volume= 7,829 cf, Atten= 96%, Lag= 193.5 min
Discarded = 0.10 cfs @ 15.34 hrs, Volume= 7,829 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.54' @ 15.34 hrs Surf.Area= 1,639 sf Storage= 4,814 cf
Flood Elev= 61.00' Surf.Area= 1,639 sf Storage= 6,870 cf

Plug-Flow detention time= 511.0 min calculated for 7,829 cf (98% of inflow)
Center-of-Mass det. time= 501.2 min ( 1,315.5 - 814.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 5,886 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.00' | 983 cf | **media storage (Irregular)**Listed below (Recalc)<br>3,278 cf Overall x 30.0% Voids |
| | | 6,870 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 60.00 | 2,580 | 217.0 | 2,092 | 2,092 | 2,711 |
| 61.00 | 5,156 | 323.0 | 3,794 | 5,886 | 7,274 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 59.00 | 1,639 | 184.0 | 3,278 | 3,278 | 2,007 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 60.80' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #2 | Primary | 58.40' | **8.0" Round Culvert** L= 77.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.40' / 57.00' S= 0.0182 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |
| #3 | Discarded | 57.00' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.10 cfs @ 15.34 hrs HW=60.54' (Free Discharge)
└**3=Exfiltration** ( Controls 0.10 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
└**2=Culvert** ( Controls 0.00 cfs)
└**1=Orifice/Grate** ( Controls 0.00 cfs)

## Summary for Pond B4: bioretention system 4

GW assumed based on surrounding data. confirmatory TP to be performed.

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB4 by 0.16' @ 13.85 hrs

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 3.38" for 10-year event
Inflow = 0.34 cfs @ 12.10 hrs, Volume= 1,039 cf
Outflow = 0.02 cfs @ 13.76 hrs, Volume= 1,039 cf, Atten= 93%, Lag= 99.1 min
Discarded = 0.02 cfs @ 13.76 hrs, Volume= 1,039 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.98' @ 13.76 hrs Surf.Area= 516 sf Storage= 526 cf
Flood Elev= 61.00' Surf.Area= 516 sf Storage= 1,358 cf

Plug-Flow detention time= 253.4 min calculated for 1,038 cf (100% of inflow)
Center-of-Mass det. time= 253.3 min ( 1,080.6 - 827.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 1,049 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 310 cf | **media storage (Irregular)**Listed below (Recalc)<br>1,032 cf Overall x 30.0% Voids |
| | | 1,358 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 391 | 79.0 | 0 | 0 | 391 |
| 60.00 | 516 | 88.0 | 226 | 226 | 518 |
| 61.00 | 1,174 | 135.0 | 823 | 1,049 | 1,359 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 516 | 88.0 | 0 | 0 | 516 |
| 59.50 | 516 | 88.0 | 1,032 | 1,032 | 692 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.75' | **5.0' long x 4.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32 |
| #2 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.02 cfs @ 13.76 hrs HW=59.98' (Free Discharge)
↑—**2=Exfiltration** ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.50' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond FB1: sediment forebay

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 4.03" for 10-year event
Inflow = 1.30 cfs @ 12.09 hrs, Volume= 4,185 cf
Outflow = 1.27 cfs @ 12.11 hrs, Volume= 4,049 cf, Atten= 2%, Lag= 1.0 min
Primary = 1.27 cfs @ 12.11 hrs, Volume= 4,049 cf
Routed to Pond B1 : bioretention system 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.80' @ 12.11 hrs Surf.Area= 397 sf Storage= 244 cf
Flood Elev= 61.00' Surf.Area= 448 sf Storage= 328 cf

Plug-Flow detention time= 31.9 min calculated for 4,043 cf (97% of inflow)
Center-of-Mass det. time= 13.2 min ( 813.4 - 800.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 328 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 222 | 64.0 | 0 | 0 | 222 |
| 60.00 | 448 | 84.0 | 328 | 328 | 469 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=1.25 cfs @ 12.11 hrs HW=59.80' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 1.40 fps)

## Summary for Pond FB2: sediment forebay

Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 4.35" for 10-year event
Inflow = 0.69 cfs @ 12.09 hrs, Volume= 2,278 cf
Outflow = 0.69 cfs @ 12.10 hrs, Volume= 2,224 cf, Atten= 0%, Lag= 0.5 min
Primary = 0.69 cfs @ 12.10 hrs, Volume= 2,224 cf
Routed to Pond B2 : bioretention system 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.90' @ 12.10 hrs Surf.Area= 137 sf Storage= 79 cf
Flood Elev= 61.00' Surf.Area= 152 sf Storage= 93 cf

Plug-Flow detention time= 24.4 min calculated for 2,224 cf (98% of inflow)
Center-of-Mass det. time= 10.1 min ( 800.6 - 790.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 93 cf | **surface storage (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 1 | 1.0 | 0 | 0 | 1 |
| 60.00 | 34 | 25.0 | 7 | 7 | 51 |
| 61.00 | 152 | 51.0 | 86 | 93 | 213 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.70' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=0.69 cfs @ 12.10 hrs HW=60.90' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 0.69 cfs @ 1.14 fps)

## Summary for Pond FB3: sediment forebay

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 3.93" for 10-year event
Inflow = 2.54 cfs @ 12.09 hrs, Volume= 8,155 cf
Outflow = 2.47 cfs @ 12.11 hrs, Volume= 7,957 cf, Atten= 3%, Lag= 1.2 min
Primary = 2.47 cfs @ 12.11 hrs, Volume= 7,957 cf
Routed to Pond B3 : bioretention system 3

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.96' @ 12.11 hrs Surf.Area= 576 sf Storage= 436 cf
Flood Elev= 61.00' Surf.Area= 586 sf Storage= 457 cf

Plug-Flow detention time= 25.6 min calculated for 7,957 cf (98% of inflow)

Center-of-Mass det. time= 11.1 min ( 814.3 - 803.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 457 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 340 | 70.0 | 0 | 0 | 340 |
| 60.00 | 586 | 91.0 | 457 | 457 | 621 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=2.42 cfs @ 12.11 hrs HW=59.96' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.42 cfs @ 1.76 fps)

## Summary for Pond FB4: sediment forebay

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 3.52" for 10-year event
Inflow = 0.34 cfs @ 12.09 hrs, Volume= 1,083 cf
Outflow = 0.34 cfs @ 12.10 hrs, Volume= 1,039 cf, Atten= 1%, Lag= 0.8 min
Primary = 0.34 cfs @ 12.10 hrs, Volume= 1,039 cf
Routed to Pond B4 : bioretention system 4

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.93' @ 12.11 hrs Surf.Area= 192 sf Storage= 67 cf
Flood Elev= 60.00' Surf.Area= 205 sf Storage= 81 cf

Plug-Flow detention time= 35.8 min calculated for 1,039 cf (96% of inflow)
Center-of-Mass det. time= 13.0 min ( 827.3 - 814.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 81 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 124 | 42.0 | 0 | 0 | 124 |
| 60.00 | 205 | 56.0 | 81 | 81 | 236 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.80' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=0.33 cfs @ 12.10 hrs HW=59.92' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 0.33 cfs @ 0.90 fps)

## Summary for Pond IS1: infiltration 1

GW elevation from TP8

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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Inflow Area = 18,979 sf, 98.78% Impervious, Inflow Depth = 5.29" for 10-year event
Inflow = 2.33 cfs @ 12.09 hrs, Volume= 8,364 cf
Outflow = 1.02 cfs @ 12.27 hrs, Volume= 8,364 cf, Atten= 56%, Lag= 11.3 min
Discarded = 0.07 cfs @ 12.27 hrs, Volume= 5,058 cf
Primary = 0.95 cfs @ 12.27 hrs, Volume= 3,307 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.15' @ 12.27 hrs Surf.Area= 3,088 sf Storage= 2,919 cf
Flood Elev= 60.93' Surf.Area= 3,088 sf Storage= 3,939 cf

Plug-Flow detention time= 167.8 min calculated for 8,353 cf (100% of inflow)
Center-of-Mass det. time= 167.9 min ( 918.7 - 750.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 58.60' | 2,174 cf | **41.50'W x 74.40'L x 2.33'H Field A**<br>7,204 cf Overall - 1,769 cf Embedded = 5,435 cf x 40.0% Voids |
| #2A | 59.10' | 1,769 cf | **ADS_StormTech SC-310 +Cap** x 120 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 12 Rows |
| | | 3,943 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 58.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 54.60' Phase-In= 0.01' |
| #2 | Primary | 59.50' | **8.0" Round Culvert** L= 32.0' Ke= 0.500<br>Inlet / Outlet Invert= 59.50' / 57.25' S= 0.0703 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.07 cfs @ 12.27 hrs HW=60.14' (Free Discharge)
**1=Exfiltration** ( Controls 0.07 cfs)

**Primary OutFlow** Max=0.94 cfs @ 12.27 hrs HW=60.14' (Free Discharge)
**2=Culvert** (Inlet Controls 0.94 cfs @ 2.73 fps)

## Summary for Pond IS2: infiltration 2

GW from TP5

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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Inflow Area = 32,723 sf, 98.03% Impervious, Inflow Depth = 5.28" for 10-year event
Inflow = 4.01 cfs @ 12.09 hrs, Volume= 14,410 cf
Outflow = 1.18 cfs @ 12.41 hrs, Volume= 14,410 cf, Atten= 71%, Lag= 19.5 min
Discarded = 0.14 cfs @ 12.41 hrs, Volume= 9,872 cf
Primary = 1.04 cfs @ 12.41 hrs, Volume= 4,537 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.23' @ 12.41 hrs Surf.Area= 6,032 sf Storage= 5,685 cf
Flood Elev= 60.03' Surf.Area= 6,032 sf Storage= 7,744 cf

Plug-Flow detention time= 202.4 min calculated for 14,410 cf (100% of inflow)
Center-of-Mass det. time= 202.2 min ( 953.3 - 751.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.70' | 4,214 cf | **51.50'W x 117.12'L x 2.33'H Field A**<br>14,074 cf Overall - 3,538 cf Embedded = 10,536 cf x 40.0% Voids |
| #2A | 58.20' | 3,538 cf | **ADS_StormTech SC-310 +Cap** x 240 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>240 Chambers in 15 Rows |
| | | 7,752 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.70' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 53.70' Phase-In= 0.01' |
| #2 | Primary | 58.65' | **10.0" Round Culvert** L= 19.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.65' / 58.00' S= 0.0342 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf |

**Discarded OutFlow** Max=0.14 cfs @ 12.41 hrs HW=59.23' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.14 cfs)

**Primary OutFlow** Max=1.04 cfs @ 12.41 hrs HW=59.23' (Free Discharge)
↑**2=Culvert** (Inlet Controls 1.04 cfs @ 2.58 fps)

## Summary for Pond IS3: infiltration 3

GW from TP2

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 5.36" for 10-year event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 2,528 cf
Outflow = 0.04 cfs @ 13.80 hrs, Volume= 2,528 cf, Atten= 94%, Lag= 102.8 min
Discarded = 0.04 cfs @ 13.80 hrs, Volume= 2,528 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 1R : continuity reach

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.59' @ 13.80 hrs Surf.Area= 1,972 sf Storage= 1,112 cf
Flood Elev= 61.60' Surf.Area= 1,972 sf Storage= 2,057 cf

Plug-Flow detention time= 230.6 min calculated for 2,528 cf (100% of inflow)
Center-of-Mass det. time= 230.5 min ( 976.7 - 746.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 59.60' | 1,257 cf | **20.75'W x 95.03'L x 2.00'H Field A**<br>3,944 cf Overall - 800 cf Embedded = 3,144 cf x 40.0% Voids |
| #2A | 60.10' | 800 cf | **ADS_StormTech SC-160LP +Cap** x 117 Inside #1<br>Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf<br>Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap<br>117 Chambers in 9 Rows |
| | | 2,057 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 61.60' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 59.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 55.60' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.04 cfs @ 13.80 hrs HW=60.59' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=59.60' (Free Discharge)

## Summary for Link SP1: Study Point

Inflow Area = 181,482 sf, 40.33% Impervious, Inflow Depth = 1.45" for 10-year event
Inflow = 4.73 cfs @ 12.24 hrs, Volume= 21,904 cf
Primary = 4.73 cfs @ 12.24 hrs, Volume= 21,904 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 8,852 sf, 0.00% Impervious, Inflow Depth = 1.74" for 10-year event
Inflow = 0.38 cfs @ 12.10 hrs, Volume= 1,286 cf
Primary = 0.38 cfs @ 12.10 hrs, Volume= 1,286 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 28,761 sf, 65.63% Impervious, Inflow Depth = 1.53" for 10-year event
Inflow = 1.72 cfs @ 12.17 hrs, Volume= 3,661 cf
Primary = 1.72 cfs @ 12.17 hrs, Volume= 3,661 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 5,412 sf, 0.00% Impervious, Inflow Depth = 1.74" for 10-year event
Inflow = 0.21 cfs @ 12.15 hrs, Volume= 786 cf
Primary = 0.21 cfs @ 12.15 hrs, Volume= 786 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P-1: Subcat P-1** Runoff Area=96,465 sf 0.06% Impervious Runoff Depth=2.48"
Flow Length=85' Tc=13.7 min CN=58 Runoff=4.78 cfs 19,916 cf

**Subcatchment P-10: Subcat P-10** Runoff Area=7,046 sf 100.00% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=1.10 cfs 4,029 cf

**Subcatchment P-11: Subcat P-11** Runoff Area=2,310 sf 85.16% Impervious Runoff Depth=6.27"
Tc=6.0 min CN=93 Runoff=0.35 cfs 1,207 cf

**Subcatchment P-12: Subcat P-12** Runoff Area=6,287 sf 75.97% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=89 Runoff=0.91 cfs 3,042 cf

**Subcatchment P-13: Subcat P-13** Runoff Area=4,999 sf 98.84% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=0.78 cfs 2,858 cf

**Subcatchment P-14: Subcat P-14** Runoff Area=24,922 sf 65.24% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=85 Runoff=3.41 cfs 11,107 cf

**Subcatchment P-15: Subcat P-15** Runoff Area=11,933 sf 98.06% Impervious Runoff Depth=6.74"
Tc=6.0 min CN=97 Runoff=1.86 cfs 6,704 cf

**Subcatchment P-16: Subcat P-16** Runoff Area=3,691 sf 53.10% Impervious Runoff Depth=4.90"
Tc=6.0 min CN=81 Runoff=0.47 cfs 1,507 cf

**Subcatchment P-2: Subcat P-2** Runoff Area=8,852 sf 0.00% Impervious Runoff Depth=2.77"
Tc=6.0 min CN=61 Runoff=0.63 cfs 2,046 cf

**Subcatchment P-3A: Subcat P-3A** Runoff Area=1,190 sf 0.00% Impervious Runoff Depth=2.77"
Tc=6.0 min CN=61 Runoff=0.09 cfs 275 cf

**Subcatchment P-3B: Subcat P-3B** Runoff Area=3,169 sf 7.20% Impervious Runoff Depth=3.08"
Tc=6.0 min CN=64 Runoff=0.25 cfs 813 cf

**Subcatchment P-4: Subcat E-4** Runoff Area=5,412 sf 0.00% Impervious Runoff Depth=2.77"
Flow Length=162' Tc=9.6 min CN=61 Runoff=0.34 cfs 1,251 cf

**Subcatchment P-5: Subcat P-5** Runoff Area=21,847 sf 97.06% Impervious Runoff Depth=6.74"
Tc=6.0 min CN=97 Runoff=3.40 cfs 12,274 cf

**Subcatchment P-6: Subcat P-6** Runoff Area=2,391 sf 88.45% Impervious Runoff Depth=6.39"
Tc=6.0 min CN=94 Runoff=0.37 cfs 1,273 cf

**Subcatchment P-7: Subcat P-7** Runoff Area=12,459 sf 66.41% Impervious Runoff Depth=5.46"
Tc=6.0 min CN=86 Runoff=1.73 cfs 5,671 cf

**Subcatchment P-8: Subcat P-8** Runoff Area=10,876 sf 99.99% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=1.70 cfs 6,218 cf

**Subcatchment P-9: Subcat P-9** Runoff Area=657 sf 100.00% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=0.10 cfs 376 cf

**Reach 1R: continuity reach** Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

**Pond B1: bioretention system 1** Peak Elev=60.24' Storage=1,275 cf Inflow=1.71 cfs 5,535 cf
Discarded=0.03 cfs 2,391 cf Primary=1.52 cfs 3,143 cf Outflow=1.56 cfs 5,534 cf

**Pond B2: bioretention system 2** Peak Elev=60.91' Storage=716 cf Inflow=0.91 cfs 2,988 cf
Discarded=0.02 cfs 1,241 cf Primary=0.75 cfs 1,747 cf Outflow=0.77 cfs 2,988 cf

**Pond B3: bioretention system 3** Peak Elev=60.85' Storage=6,151 cf Inflow=3.75 cfs 10,909 cf
Discarded=0.11 cfs 9,059 cf Primary=0.17 cfs 1,128 cf Outflow=0.28 cfs 10,187 cf

**Pond B4: bioretention system 4** Peak Elev=60.42' Storage=800 cf Inflow=0.47 cfs 1,463 cf
Discarded=0.03 cfs 1,463 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 1,463 cf

**Pond FB1: sediment forebay** Peak Elev=59.86' Storage=270 cf Inflow=1.73 cfs 5,671 cf
Outflow=1.71 cfs 5,535 cf

**Pond FB2: sediment forebay** Peak Elev=60.94' Storage=84 cf Inflow=0.91 cfs 3,042 cf
Outflow=0.91 cfs 2,988 cf

**Pond FB3: sediment forebay** Peak Elev=60.11' Storage=457 cf Inflow=3.41 cfs 11,107 cf
Outflow=3.75 cfs 10,909 cf

**Pond FB4: sediment forebay** Peak Elev=59.96' Storage=72 cf Inflow=0.47 cfs 1,507 cf
Outflow=0.47 cfs 1,463 cf

**Pond IS1: infiltration 1** Peak Elev=60.55' Storage=3,472 cf Inflow=2.96 cfs 10,733 cf
Discarded=0.08 cfs 5,525 cf Primary=1.42 cfs 5,208 cf Outflow=1.50 cfs 10,733 cf

**Pond IS2: infiltration 2** Peak Elev=59.61' Storage=6,720 cf Inflow=5.10 cfs 18,493 cf
Discarded=0.15 cfs 10,773 cf Primary=1.93 cfs 7,719 cf Outflow=2.08 cfs 18,493 cf

**Pond IS3: infiltration 3** Peak Elev=60.97' Storage=1,549 cf Inflow=0.88 cfs 3,234 cf
Discarded=0.04 cfs 3,234 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 3,234 cf

**Link SP1: Study Point** Inflow=8.44 cfs 36,451 cf
Primary=8.44 cfs 36,451 cf

**Link SP2: Study Point** Inflow=0.63 cfs 2,046 cf
Primary=0.63 cfs 2,046 cf

**Link SP3: Study Point** Inflow=2.56 cfs 5,978 cf
Primary=2.56 cfs 5,978 cf

**Link SP4: Study Point** Inflow=0.34 cfs 1,251 cf
Primary=0.34 cfs 1,251 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 80,567 cf Average Runoff Depth = 4.31"**
**58.99% Pervious = 132,439 sf 41.01% Impervious = 92,068 sf**

## Summary for Subcatchment P-1: Subcat P-1

Runoff = 4.78 cfs @ 12.20 hrs, Volume= 19,916 cf, Depth= 2.48"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 33,163 | 61 | >75% Grass cover, Good, HSG B |
| 478 | 74 | >75% Grass cover, Good, HSG C |
| 57,731 | 55 | Woods, Good, HSG B |
| 5,030 | 70 | Woods, Good, HSG C |
| 63 | 98 | Paved parking, HSG B |
| 96,465 | 58 | Weighted Average |
| 96,403 | | 99.94% Pervious Area |
| 63 | | 0.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 1.5 | 35 | 0.0060 | 0.39 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.7 | 85 | Total | | | |

## Summary for Subcatchment P-10: Subcat P-10

Runoff = 1.10 cfs @ 12.09 hrs, Volume= 4,029 cf, Depth= 6.86"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 7,046 | 98 | Roofs, HSG B |
| 7,046 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-11: Subcat P-11

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 1,207 cf, Depth= 6.27"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 35 | 98 | Paved parking, HSG C |
| 343 | 61 | >75% Grass cover, Good, HSG B |
| 0 | 98 | Roofs, HSG B |
| 1,932 | 98 | Paved parking, HSG B |
| 2,310 | 93 | Weighted Average |
| 343 | | 14.84% Pervious Area |
| 1,967 | | 85.16% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-12: Subcat P-12

Runoff = 0.91 cfs @ 12.09 hrs, Volume= 3,042 cf, Depth= 5.81"
Routed to Pond FB2 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 4,776 | 98 | Paved parking, HSG B |
| 1,511 | 61 | >75% Grass cover, Good, HSG B |
| 6,287 | 89 | Weighted Average |
| 1,511 | | 24.03% Pervious Area |
| 4,776 | | 75.97% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-13: Subcat P-13

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 2,858 cf, Depth= 6.86"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 4,941 | 98 | Paved parking, HSG B |
| 58 | 61 | >75% Grass cover, Good, HSG B |
| 4,999 | 98 | Weighted Average |
| 58 | | 1.16% Pervious Area |
| 4,941 | | 98.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-14: Subcat P-14

Runoff = 3.41 cfs @ 12.09 hrs, Volume= 11,107 cf, Depth= 5.35"
Routed to Pond FB3 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 8,662 | 61 | >75% Grass cover, Good, HSG B |
| 16,259 | 98 | Paved parking, HSG B |
| 24,922 | 85 | Weighted Average |
| 8,662 | | 34.76% Pervious Area |
| 16,259 | | 65.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-15: Subcat P-15

Runoff = 1.86 cfs @ 12.09 hrs, Volume= 6,704 cf, Depth= 6.74"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 231 | 61 | >75% Grass cover, Good, HSG B |
| 11,702 | 98 | Paved parking, HSG B |
| 11,933 | 97 | Weighted Average |
| 231 | | 1.94% Pervious Area |
| 11,702 | | 98.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-16: Subcat P-16

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 1,507 cf, Depth= 4.90"
Routed to Pond FB4 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 1,960 | 98 | Paved parking, HSG B |
| 1,731 | 61 | >75% Grass cover, Good, HSG B |
| 3,691 | 81 | Weighted Average |
| 1,731 | | 46.90% Pervious Area |
| 1,960 | | 53.10% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.63 cfs @ 12.10 hrs, Volume= 2,046 cf, Depth= 2.77"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 8,852 | 61 | >75% Grass cover, Good, HSG B |
| 8,852 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 min** |

## Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.09 cfs @ 12.10 hrs, Volume= 275 cf, Depth= 2.77"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 1,190 | 61 | >75% Grass cover, Good, HSG B |
| 1,190 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-3B: Subcat P-3B

Runoff = 0.25 cfs @ 12.10 hrs, Volume= 813 cf, Depth= 3.08"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 2,941 | 61 | >75% Grass cover, Good, HSG B |
| 228 | 98 | Paved parking, HSG B |
| 3,169 | 64 | Weighted Average |
| 2,941 | | 92.80% Pervious Area |
| 228 | | 7.20% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-4: Subcat E-4

Runoff = 0.34 cfs @ 12.15 hrs, Volume= 1,251 cf, Depth= 2.77"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 5,412 | 61 | >75% Grass cover, Good, HSG B |
| 5,412 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.1 | 50 | 0.0200 | 0.10 | | **Sheet Flow, A-B**<br>Grass: Dense n= 0.240 P2= 3.28" |
| 1.5 | 112 | 0.0310 | 1.23 | | **Shallow Concentrated Flow, B-C**<br>Short Grass Pasture Kv= 7.0 fps |
| 9.6 | 162 | Total | | | |

## Summary for Subcatchment P-5: Subcat P-5

Runoff = 3.40 cfs @ 12.09 hrs, Volume= 12,274 cf, Depth= 6.74"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 643 | 61 | >75% Grass cover, Good, HSG B |
| 21,197 | 98 | Paved parking, HSG B |
| 7 | 98 | Roofs, HSG B |
| 21,847 | 97 | Weighted Average |
| 643 | | 2.94% Pervious Area |
| 21,204 | | 97.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-6: Subcat P-6

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 1,273 cf, Depth= 6.39"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 276 | 61 | >75% Grass cover, Good, HSG B |
| 1 | 98 | Roofs, HSG B |
| 2,114 | 98 | Paved parking, HSG B |
| 2,391 | 94 | Weighted Average |
| 276 | | 11.55% Pervious Area |
| 2,115 | | 88.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-7: Subcat P-7

Runoff = 1.73 cfs @ 12.09 hrs, Volume= 5,671 cf, Depth= 5.46"
Routed to Pond FB1 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 9 | 98 | Roofs, HSG B |
| 8,265 | 98 | Paved parking, HSG B |
| 4,185 | 61 | >75% Grass cover, Good, HSG B |
| 12,459 | 86 | Weighted Average |
| 4,185 | | 33.59% Pervious Area |
| 8,274 | | 66.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-8: Subcat P-8

Runoff = 1.70 cfs @ 12.09 hrs, Volume= 6,218 cf, Depth= 6.86"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 1 | 61 | >75% Grass cover, Good, HSG B |
| 10,865 | 98 | Roofs, HSG B |
| 10 | 98 | Paved parking, HSG B |
| 10,876 | 98 | Weighted Average |
| 1 | | 0.01% Pervious Area |
| 10,875 | | 99.99% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-9: Subcat P-9

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 376 cf, Depth= 6.86"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=7.10"

| Area (sf) | CN | Description |
|---|---|---|
| 657 | 98 | Roofs, HSG B |
| 657 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Reach 1R: continuity reach

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 0.00" for 25-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link SP3 : Study Point

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Pond B1: bioretention system 1

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

[81] Warning: Exceeded Pond FB1 by 0.48' @ 17.20 hrs

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 5.33" for 25-year event
Inflow = 1.71 cfs @ 12.10 hrs, Volume= 5,535 cf
Outflow = 1.56 cfs @ 12.15 hrs, Volume= 5,534 cf, Atten= 9%, Lag= 2.6 min
Discarded = 0.03 cfs @ 12.15 hrs, Volume= 2,391 cf
Primary = 1.52 cfs @ 12.15 hrs, Volume= 3,143 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.24' @ 12.15 hrs Surf.Area= 318 sf Storage= 1,275 cf
Flood Elev= 61.00' Surf.Area= 318 sf Storage= 2,822 cf

Plug-Flow detention time= 179.9 min calculated for 5,534 cf (100% of inflow)
Center-of-Mass det. time= 179.8 min ( 983.0 - 803.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 58.50' | 2,632 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 56.50' | 191 cf | **media storage (Irregular)**Listed below (Recalc)<br>636 cf Overall x 30.0% Voids |
| | | 2,822 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 58.50 | 118 | 118.0 | 0 | 0 | 118 |
| 59.00 | 318 | 140.0 | 105 | 105 | 574 |
| 60.00 | 1,109 | 299.0 | 674 | 779 | 6,133 |
| 61.00 | 2,715 | 349.0 | 1,853 | 2,632 | 8,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 56.50 | 318 | 140.0 | 0 | 0 | 318 |
| 58.50 | 318 | 140.0 | 636 | 636 | 598 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 56.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.00' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.22' | **8.0" Round Culvert** L= 22.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.22' / 57.50' S= 0.0327 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.03 cfs @ 12.15 hrs HW=60.24' (Free Discharge)
└**1=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=1.51 cfs @ 12.15 hrs HW=60.24' (Free Discharge)
└**3=Culvert** (Passes 1.51 cfs of 2.18 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.51 cfs @ 1.60 fps)

## Summary for Pond B2: bioretention system 2

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB2 by 0.01' @ 12.20 hrs

Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 5.70" for 25-year event
Inflow = 0.91 cfs @ 12.10 hrs, Volume= 2,988 cf
Outflow = 0.77 cfs @ 12.15 hrs, Volume= 2,988 cf, Atten= 16%, Lag= 3.4 min
Discarded = 0.02 cfs @ 12.15 hrs, Volume= 1,241 cf
Primary = 0.75 cfs @ 12.15 hrs, Volume= 1,747 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.91' @ 12.15 hrs Surf.Area= 258 sf Storage= 716 cf
Flood Elev= 61.00' Surf.Area= 258 sf Storage= 800 cf

Plug-Flow detention time= 150.1 min calculated for 2,984 cf (100% of inflow)
Center-of-Mass det. time= 150.6 min ( 942.1 - 791.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 645 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 155 cf | **media storage (Irregular)**Listed below (Recalc)<br>516 cf Overall x 30.0% Voids |
| | | 800 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 98 | 88.0 | 0 | 0 | 98 |
| 60.00 | 258 | 114.0 | 86 | 86 | 519 |
| 61.00 | 930 | 204.0 | 559 | 645 | 2,802 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 258 | 114.0 | 0 | 0 | 258 |
| 59.50 | 258 | 114.0 | 516 | 516 | 486 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.50' | **15.0" Vert. overflow orifice** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.00' | **8.0" Round Culvert** L= 88.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 57.50' S= 0.0057 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.02 cfs @ 12.15 hrs HW=60.90' (Free Discharge)
└**1=Exfiltration** ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.74 cfs @ 12.15 hrs HW=60.90' (Free Discharge)
└**3=Culvert** (Passes 0.74 cfs of 1.85 cfs potential flow)
└**2=overflow orifice** (Orifice Controls 0.74 cfs @ 2.17 fps)

## Summary for Pond B3: bioretention system 3

GW from TP1

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB3 by 1.25' @ 14.15 hrs

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 5.25" for 25-year event
Inflow = 3.75 cfs @ 12.10 hrs, Volume= 10,909 cf
Outflow = 0.28 cfs @ 13.15 hrs, Volume= 10,187 cf, Atten= 92%, Lag= 62.9 min
Discarded = 0.11 cfs @ 13.15 hrs, Volume= 9,059 cf
Primary = 0.17 cfs @ 13.15 hrs, Volume= 1,128 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.85' @ 13.15 hrs Surf.Area= 1,639 sf Storage= 6,151 cf
Flood Elev= 61.00' Surf.Area= 1,639 sf Storage= 6,870 cf

Plug-Flow detention time= 512.2 min calculated for 10,187 cf (93% of inflow)
Center-of-Mass det. time= 476.9 min ( 1,281.1 - 804.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 5,886 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.00' | 983 cf | **media storage (Irregular)**Listed below (Recalc)<br>3,278 cf Overall x 30.0% Voids |
| | | 6,870 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 60.00 | 2,580 | 217.0 | 2,092 | 2,092 | 2,711 |
| 61.00 | 5,156 | 323.0 | 3,794 | 5,886 | 7,274 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 59.00 | 1,639 | 184.0 | 3,278 | 3,278 | 2,007 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 60.80' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #2 | Primary | 58.40' | **8.0" Round Culvert** L= 77.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.40' / 57.00' S= 0.0182 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |
| #3 | Discarded | 57.00' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.11 cfs @ 13.15 hrs HW=60.85' (Free Discharge)
└**3=Exfiltration** ( Controls 0.11 cfs)

**Primary OutFlow** Max=0.16 cfs @ 13.15 hrs HW=60.85' (Free Discharge)
└**2=Culvert** (Passes 0.16 cfs of 2.10 cfs potential flow)
└**1=Orifice/Grate** (Weir Controls 0.16 cfs @ 0.76 fps)

## Summary for Pond B4: bioretention system 4

GW assumed based on surrounding data. confirmatory TP to be performed.

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB4 by 0.60' @ 14.35 hrs

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 4.76" for 25-year event
Inflow = 0.47 cfs @ 12.10 hrs, Volume= 1,463 cf
Outflow = 0.03 cfs @ 14.25 hrs, Volume= 1,463 cf, Atten= 94%, Lag= 129.0 min
Discarded = 0.03 cfs @ 14.25 hrs, Volume= 1,463 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.42' @ 14.25 hrs Surf.Area= 516 sf Storage= 800 cf
Flood Elev= 61.00' Surf.Area= 516 sf Storage= 1,358 cf

Plug-Flow detention time= 343.6 min calculated for 1,461 cf (100% of inflow)
Center-of-Mass det. time= 343.7 min ( 1,159.8 - 816.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 1,049 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 310 cf | **media storage (Irregular)**Listed below (Recalc)<br>1,032 cf Overall x 30.0% Voids |
| | | 1,358 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 391 | 79.0 | 0 | 0 | 391 |
| 60.00 | 516 | 88.0 | 226 | 226 | 518 |
| 61.00 | 1,174 | 135.0 | 823 | 1,049 | 1,359 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 516 | 88.0 | 0 | 0 | 516 |
| 59.50 | 516 | 88.0 | 1,032 | 1,032 | 692 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.75' | **5.0' long x 4.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32 |
| #2 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.03 cfs @ 14.25 hrs HW=60.42' (Free Discharge)
↑—**2=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.50' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond FB1: sediment forebay

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 5.46" for 25-year event
Inflow = 1.73 cfs @ 12.09 hrs, Volume= 5,671 cf
Outflow = 1.71 cfs @ 12.10 hrs, Volume= 5,535 cf, Atten= 1%, Lag= 1.0 min
Primary = 1.71 cfs @ 12.10 hrs, Volume= 5,535 cf
Routed to Pond B1 : bioretention system 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.86' @ 12.11 hrs Surf.Area= 413 sf Storage= 270 cf
Flood Elev= 61.00' Surf.Area= 448 sf Storage= 328 cf

Plug-Flow detention time= 25.7 min calculated for 5,527 cf (97% of inflow)
Center-of-Mass det. time= 11.5 min ( 803.3 - 791.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 328 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 222 | 64.0 | 0 | 0 | 222 |
| 60.00 | 448 | 84.0 | 328 | 328 | 469 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=1.69 cfs @ 12.10 hrs HW=59.86' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 1.69 cfs @ 1.56 fps)

## Summary for Pond FB2: sediment forebay

Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 5.81" for 25-year event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 3,042 cf
Outflow = 0.91 cfs @ 12.10 hrs, Volume= 2,988 cf, Atten= 0%, Lag= 0.5 min
Primary = 0.91 cfs @ 12.10 hrs, Volume= 2,988 cf
Routed to Pond B2 : bioretention system 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.94' @ 12.10 hrs Surf.Area= 143 sf Storage= 84 cf
Flood Elev= 61.00' Surf.Area= 152 sf Storage= 93 cf

Plug-Flow detention time= 19.5 min calculated for 2,984 cf (98% of inflow)
Center-of-Mass det. time= 8.7 min ( 791.4 - 782.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 93 cf | **surface storage (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 1 | 1.0 | 0 | 0 | 1 |
| 60.00 | 34 | 25.0 | 7 | 7 | 51 |
| 61.00 | 152 | 51.0 | 86 | 93 | 213 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.70' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=0.90 cfs @ 12.10 hrs HW=60.94' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 0.90 cfs @ 1.25 fps)

## Summary for Pond FB3: sediment forebay

[93] Warning: Storage range exceeded by 0.11'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 5.35" for 25-year event
Inflow = 3.41 cfs @ 12.09 hrs, Volume= 11,107 cf
Outflow = 3.75 cfs @ 12.10 hrs, Volume= 10,909 cf, Atten= 0%, Lag= 0.5 min
Primary = 3.75 cfs @ 12.10 hrs, Volume= 10,909 cf
Routed to Pond B3 : bioretention system 3

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Peak Elev= 60.11' @ 12.10 hrs Surf.Area= 586 sf Storage= 457 cf
Flood Elev= 61.00' Surf.Area= 586 sf Storage= 457 cf

Plug-Flow detention time= 20.4 min calculated for 10,894 cf (98% of inflow)
Center-of-Mass det. time= 9.6 min ( 804.2 - 794.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 457 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 340 | 70.0 | 0 | 0 | 340 |
| 60.00 | 586 | 91.0 | 457 | 457 | 621 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=3.70 cfs @ 12.10 hrs HW=60.11' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.70 cfs @ 2.03 fps)

## Summary for Pond FB4: sediment forebay

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 4.90" for 25-year event
Inflow = 0.47 cfs @ 12.09 hrs, Volume= 1,507 cf
Outflow = 0.47 cfs @ 12.10 hrs, Volume= 1,463 cf, Atten= 1%, Lag= 0.8 min
Primary = 0.47 cfs @ 12.10 hrs, Volume= 1,463 cf
Routed to Pond B4 : bioretention system 4

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.96' @ 12.10 hrs Surf.Area= 197 sf Storage= 72 cf
Flood Elev= 60.00' Surf.Area= 205 sf Storage= 81 cf

Plug-Flow detention time= 28.2 min calculated for 1,463 cf (97% of inflow)
Center-of-Mass det. time= 11.1 min ( 816.1 - 805.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 81 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 124 | 42.0 | 0 | 0 | 124 |
| 60.00 | 205 | 56.0 | 81 | 81 | 236 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.80' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 |

Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

**Primary OutFlow** Max=0.46 cfs @ 12.10 hrs HW=59.95' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 0.46 cfs @ 1.00 fps)

## Summary for Pond IS1: infiltration 1

GW elevation from TP8

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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Inflow Area = 18,979 sf, 98.78% Impervious, Inflow Depth = 6.79" for 25-year event
Inflow = 2.96 cfs @ 12.09 hrs, Volume= 10,733 cf
Outflow = 1.50 cfs @ 12.23 hrs, Volume= 10,733 cf, Atten= 49%, Lag= 8.8 min
Discarded = 0.08 cfs @ 12.23 hrs, Volume= 5,525 cf
Primary = 1.42 cfs @ 12.23 hrs, Volume= 5,208 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.55' @ 12.23 hrs Surf.Area= 3,088 sf Storage= 3,472 cf
Flood Elev= 60.93' Surf.Area= 3,088 sf Storage= 3,939 cf

Plug-Flow detention time= 151.5 min calculated for 10,733 cf (100% of inflow)
Center-of-Mass det. time= 151.3 min ( 898.1 - 746.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 58.60' | 2,174 cf | **41.50'W x 74.40'L x 2.33'H Field A**<br>7,204 cf Overall - 1,769 cf Embedded = 5,435 cf x 40.0% Voids |
| #2A | 59.10' | 1,769 cf | **ADS_StormTech SC-310 +Cap** x 120 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 12 Rows |
| | | 3,943 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 58.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 54.60' Phase-In= 0.01' |
| #2 | Primary | 59.50' | **8.0" Round Culvert** L= 32.0' Ke= 0.500<br>Inlet / Outlet Invert= 59.50' / 57.25' S= 0.0703 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.08 cfs @ 12.23 hrs HW=60.55' (Free Discharge)
**1=Exfiltration** ( Controls 0.08 cfs)

**Primary OutFlow** Max=1.42 cfs @ 12.23 hrs HW=60.55' (Free Discharge)
**2=Culvert** (Inlet Controls 1.42 cfs @ 4.07 fps)

## Summary for Pond IS2: infiltration 2

GW from TP5

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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Inflow Area = 32,723 sf, 98.03% Impervious, Inflow Depth = 6.78" for 25-year event
Inflow = 5.10 cfs @ 12.09 hrs, Volume= 18,493 cf
Outflow = 2.08 cfs @ 12.30 hrs, Volume= 18,493 cf, Atten= 59%, Lag= 12.9 min
Discarded = 0.15 cfs @ 12.30 hrs, Volume= 10,773 cf
Primary = 1.93 cfs @ 12.30 hrs, Volume= 7,719 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.61' @ 12.30 hrs Surf.Area= 6,032 sf Storage= 6,720 cf
Flood Elev= 60.03' Surf.Area= 6,032 sf Storage= 7,744 cf

Plug-Flow detention time= 180.3 min calculated for 18,467 cf (100% of inflow)
Center-of-Mass det. time= 180.5 min ( 927.5 - 747.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.70' | 4,214 cf | **51.50'W x 117.12'L x 2.33'H Field A**<br>14,074 cf Overall - 3,538 cf Embedded = 10,536 cf x 40.0% Voids |
| #2A | 58.20' | 3,538 cf | **ADS_StormTech SC-310 +Cap** x 240 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>240 Chambers in 15 Rows |
| | | 7,752 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.70' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 53.70' Phase-In= 0.01' |
| #2 | Primary | 58.65' | **10.0" Round Culvert** L= 19.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.65' / 58.00' S= 0.0342 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf |

**Discarded OutFlow** Max=0.15 cfs @ 12.30 hrs HW=59.61' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.15 cfs)

**Primary OutFlow** Max=1.93 cfs @ 12.30 hrs HW=59.61' (Free Discharge)
↑**2=Culvert** (Inlet Controls 1.93 cfs @ 3.53 fps)

## Summary for Pond IS3: infiltration 3

GW from TP2

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 6.86" for 25-year event
Inflow = 0.88 cfs @ 12.09 hrs, Volume= 3,234 cf
Outflow = 0.04 cfs @ 14.23 hrs, Volume= 3,234 cf, Atten= 95%, Lag= 128.3 min
Discarded = 0.04 cfs @ 14.23 hrs, Volume= 3,234 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 1R : continuity reach

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.97' @ 14.23 hrs Surf.Area= 1,972 sf Storage= 1,549 cf
Flood Elev= 61.60' Surf.Area= 1,972 sf Storage= 2,057 cf

Plug-Flow detention time= 314.5 min calculated for 3,229 cf (100% of inflow)
Center-of-Mass det. time= 314.5 min ( 1,057.2 - 742.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 59.60' | 1,257 cf | **20.75'W x 95.03'L x 2.00'H Field A**<br>3,944 cf Overall - 800 cf Embedded = 3,144 cf x 40.0% Voids |
| #2A | 60.10' | 800 cf | **ADS_StormTech SC-160LP +Cap** x 117 Inside #1<br>Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf<br>Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap<br>117 Chambers in 9 Rows |
| | | 2,057 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 61.60' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 59.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 55.60' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.04 cfs @ 14.23 hrs HW=60.97' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=59.60' (Free Discharge)

## Summary for Link SP1: Study Point

Inflow Area = 181,482 sf, 40.33% Impervious, Inflow Depth = 2.41" for 25-year event
Inflow = 8.44 cfs @ 12.21 hrs, Volume= 36,451 cf
Primary = 8.44 cfs @ 12.21 hrs, Volume= 36,451 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 8,852 sf, 0.00% Impervious, Inflow Depth = 2.77" for 25-year event
Inflow = 0.63 cfs @ 12.10 hrs, Volume= 2,046 cf
Primary = 0.63 cfs @ 12.10 hrs, Volume= 2,046 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 28,761 sf, 65.63% Impervious, Inflow Depth = 2.49" for 25-year event
Inflow = 2.56 cfs @ 12.14 hrs, Volume= 5,978 cf
Primary = 2.56 cfs @ 12.14 hrs, Volume= 5,978 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 5,412 sf, 0.00% Impervious, Inflow Depth = 2.77" for 25-year event
Inflow = 0.34 cfs @ 12.15 hrs, Volume= 1,251 cf
Primary = 0.34 cfs @ 12.15 hrs, Volume= 1,251 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P-1: Subcat P-1** Runoff Area=96,465 sf 0.06% Impervious Runoff Depth=3.49"
Flow Length=85' Tc=13.7 min CN=58 Runoff=6.90 cfs 28,027 cf

**Subcatchment P-10: Subcat P-10** Runoff Area=7,046 sf 100.00% Impervious Runoff Depth=8.27"
Tc=6.0 min CN=98 Runoff=1.32 cfs 4,856 cf

**Subcatchment P-11: Subcat P-11** Runoff Area=2,310 sf 85.16% Impervious Runoff Depth=7.67"
Tc=6.0 min CN=93 Runoff=0.42 cfs 1,476 cf

**Subcatchment P-12: Subcat P-12** Runoff Area=6,287 sf 75.97% Impervious Runoff Depth=7.19"
Tc=6.0 min CN=89 Runoff=1.11 cfs 3,766 cf

**Subcatchment P-13: Subcat P-13** Runoff Area=4,999 sf 98.84% Impervious Runoff Depth=8.27"
Tc=6.0 min CN=98 Runoff=0.94 cfs 3,445 cf

**Subcatchment P-14: Subcat P-14** Runoff Area=24,922 sf 65.24% Impervious Runoff Depth=6.71"
Tc=6.0 min CN=85 Runoff=4.22 cfs 13,928 cf

**Subcatchment P-15: Subcat P-15** Runoff Area=11,933 sf 98.06% Impervious Runoff Depth=8.15"
Tc=6.0 min CN=97 Runoff=2.23 cfs 8,104 cf

**Subcatchment P-16: Subcat P-16** Runoff Area=3,691 sf 53.10% Impervious Runoff Depth=6.22"
Tc=6.0 min CN=81 Runoff=0.59 cfs 1,915 cf

**Subcatchment P-2: Subcat P-2** Runoff Area=8,852 sf 0.00% Impervious Runoff Depth=3.84"
Tc=6.0 min CN=61 Runoff=0.89 cfs 2,831 cf

**Subcatchment P-3A: Subcat P-3A** Runoff Area=1,190 sf 0.00% Impervious Runoff Depth=3.84"
Tc=6.0 min CN=61 Runoff=0.12 cfs 381 cf

**Subcatchment P-3B: Subcat P-3B** Runoff Area=3,169 sf 7.20% Impervious Runoff Depth=4.19"
Tc=6.0 min CN=64 Runoff=0.35 cfs 1,107 cf

**Subcatchment P-4: Subcat E-4** Runoff Area=5,412 sf 0.00% Impervious Runoff Depth=3.84"
Flow Length=162' Tc=9.6 min CN=61 Runoff=0.48 cfs 1,731 cf

**Subcatchment P-5: Subcat P-5** Runoff Area=21,847 sf 97.06% Impervious Runoff Depth=8.15"
Tc=6.0 min CN=97 Runoff=4.08 cfs 14,838 cf

**Subcatchment P-6: Subcat P-6** Runoff Area=2,391 sf 88.45% Impervious Runoff Depth=7.79"
Tc=6.0 min CN=94 Runoff=0.44 cfs 1,552 cf

**Subcatchment P-7: Subcat P-7** Runoff Area=12,459 sf 66.41% Impervious Runoff Depth=6.83"
Tc=6.0 min CN=86 Runoff=2.14 cfs 7,088 cf

**Subcatchment P-8: Subcat P-8** Runoff Area=10,876 sf 99.99% Impervious Runoff Depth=8.27"
Tc=6.0 min CN=98 Runoff=2.04 cfs 7,495 cf

**Subcatchment P-9: Subcat P-9** Runoff Area=657 sf 100.00% Impervious Runoff Depth=8.27"
Tc=6.0 min CN=98 Runoff=0.12 cfs 453 cf

**Reach 1R: continuity reach** Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

**Pond B1: bioretention system 1** Peak Elev=60.28' Storage=1,332 cf Inflow=2.11 cfs 6,952 cf
Discarded=0.03 cfs 2,529 cf Primary=1.90 cfs 4,411 cf Outflow=1.93 cfs 6,940 cf

**Pond B2: bioretention system 2** Peak Elev=60.96' Storage=760 cf Inflow=1.12 cfs 3,712 cf
Discarded=0.02 cfs 1,326 cf Primary=0.93 cfs 2,386 cf Outflow=0.95 cfs 3,712 cf

**Pond B3: bioretention system 3** Peak Elev=60.97' Storage=6,723 cf Inflow=4.22 cfs 13,730 cf
Discarded=0.11 cfs 9,415 cf Primary=0.92 cfs 3,403 cf Outflow=1.03 cfs 12,818 cf

**Pond B4: bioretention system 4** Peak Elev=60.74' Storage=1,082 cf Inflow=0.59 cfs 1,871 cf
Discarded=0.03 cfs 1,871 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 1,871 cf

**Pond FB1: sediment forebay** Peak Elev=59.92' Storage=292 cf Inflow=2.14 cfs 7,088 cf
Outflow=2.11 cfs 6,952 cf

**Pond FB2: sediment forebay** Peak Elev=60.98' Storage=89 cf Inflow=1.11 cfs 3,766 cf
Outflow=1.12 cfs 3,712 cf

**Pond FB3: sediment forebay** Peak Elev=60.16' Storage=457 cf Inflow=4.22 cfs 13,928 cf
Outflow=4.22 cfs 13,730 cf

**Pond FB4: sediment forebay** Peak Elev=59.98' Storage=78 cf Inflow=0.59 cfs 1,915 cf
Outflow=0.59 cfs 1,871 cf

**Pond IS1: infiltration 1** Peak Elev=60.93' Storage=3,942 cf Inflow=3.55 cfs 12,960 cf
Discarded=0.08 cfs 5,893 cf Primary=1.76 cfs 7,067 cf Outflow=1.84 cfs 12,960 cf

**Pond IS2: infiltration 2** Peak Elev=60.03' Storage=7,743 cf Inflow=6.12 cfs 22,333 cf
Discarded=0.16 cfs 11,491 cf Primary=2.58 cfs 10,842 cf Outflow=2.74 cfs 22,333 cf

**Pond IS3: infiltration 3** Peak Elev=61.49' Storage=1,974 cf Inflow=1.06 cfs 3,898 cf
Discarded=0.05 cfs 3,898 cf Primary=0.00 cfs 0 cf Outflow=0.05 cfs 3,898 cf

**Link SP1: Study Point** Inflow=11.68 cfs 52,368 cf
Primary=11.68 cfs 52,368 cf

**Link SP2: Study Point** Inflow=0.89 cfs 2,831 cf
Primary=0.89 cfs 2,831 cf

**Link SP3: Study Point** Inflow=3.23 cfs 8,284 cf
Primary=3.23 cfs 8,284 cf

**Link SP4: Study Point** Inflow=0.48 cfs 1,731 cf
Primary=0.48 cfs 1,731 cf

**Total Runoff Area = 224,507 sf Runoff Volume = 102,992 cf Average Runoff Depth = 5.50"**
**58.99% Pervious = 132,439 sf 41.01% Impervious = 92,068 sf**

## Summary for Subcatchment P-1: Subcat P-1

Runoff = 6.90 cfs @ 12.20 hrs, Volume= 28,027 cf, Depth= 3.49"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 33,163 | 61 | >75% Grass cover, Good, HSG B |
| 478 | 74 | >75% Grass cover, Good, HSG C |
| 57,731 | 55 | Woods, Good, HSG B |
| 5,030 | 70 | Woods, Good, HSG C |
| 63 | 98 | Paved parking, HSG B |
| 96,465 | 58 | Weighted Average |
| 96,403 | | 99.94% Pervious Area |
| 63 | | 0.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 50 | 0.0200 | 0.07 | | **Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.28" |
| 1.5 | 35 | 0.0060 | 0.39 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 13.7 | 85 | Total | | | |

## Summary for Subcatchment P-10: Subcat P-10

Runoff = 1.32 cfs @ 12.09 hrs, Volume= 4,856 cf, Depth= 8.27"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 7,046 | 98 | Roofs, HSG B |
| 7,046 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-11: Subcat P-11

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 1,476 cf, Depth= 7.67"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 35 | 98 | Paved parking, HSG C |
| 343 | 61 | >75% Grass cover, Good, HSG B |
| 0 | 98 | Roofs, HSG B |
| 1,932 | 98 | Paved parking, HSG B |
| 2,310 | 93 | Weighted Average |
| 343 | | 14.84% Pervious Area |
| 1,967 | | 85.16% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-12: Subcat P-12

Runoff = 1.11 cfs @ 12.09 hrs, Volume= 3,766 cf, Depth= 7.19"
Routed to Pond FB2 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 4,776 | 98 | Paved parking, HSG B |
| 1,511 | 61 | >75% Grass cover, Good, HSG B |
| 6,287 | 89 | Weighted Average |
| 1,511 | | 24.03% Pervious Area |
| 4,776 | | 75.97% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-13: Subcat P-13

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 3,445 cf, Depth= 8.27"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 4,941 | 98 | Paved parking, HSG B |
| 58 | 61 | >75% Grass cover, Good, HSG B |
| 4,999 | 98 | Weighted Average |
| 58 | | 1.16% Pervious Area |
| 4,941 | | 98.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-14: Subcat P-14

Runoff = 4.22 cfs @ 12.09 hrs, Volume= 13,928 cf, Depth= 6.71"
Routed to Pond FB3 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 8,662 | 61 | >75% Grass cover, Good, HSG B |
| 16,259 | 98 | Paved parking, HSG B |
| 24,922 | 85 | Weighted Average |
| 8,662 | | 34.76% Pervious Area |
| 16,259 | | 65.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-15: Subcat P-15

Runoff = 2.23 cfs @ 12.09 hrs, Volume= 8,104 cf, Depth= 8.15"
Routed to Pond IS1 : infiltration 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 231 | 61 | >75% Grass cover, Good, HSG B |
| 11,702 | 98 | Paved parking, HSG B |
| 11,933 | 97 | Weighted Average |
| 231 | | 1.94% Pervious Area |
| 11,702 | | 98.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-16: Subcat P-16

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,915 cf, Depth= 6.22"
Routed to Pond FB4 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 1,960 | 98 | Paved parking, HSG B |
| 1,731 | 61 | >75% Grass cover, Good, HSG B |
| 3,691 | 81 | Weighted Average |
| 1,731 | | 46.90% Pervious Area |
| 1,960 | | 53.10% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-2: Subcat P-2

Runoff = 0.89 cfs @ 12.10 hrs, Volume= 2,831 cf, Depth= 3.84"
Routed to Link SP2 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 8,852 | 61 | >75% Grass cover, Good, HSG B |
| 8,852 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 min** |

## Summary for Subcatchment P-3A: Subcat P-3A

Runoff = 0.12 cfs @ 12.10 hrs, Volume= 381 cf, Depth= 3.84"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 1,190 | 61 | >75% Grass cover, Good, HSG B |
| 1,190 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-3B: Subcat P-3B

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 1,107 cf, Depth= 4.19"
Routed to Link SP3 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 2,941 | 61 | >75% Grass cover, Good, HSG B |
| 228 | 98 | Paved parking, HSG B |
| 3,169 | 64 | Weighted Average |
| 2,941 | | 92.80% Pervious Area |
| 228 | | 7.20% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-4: Subcat E-4

Runoff = 0.48 cfs @ 12.14 hrs, Volume= 1,731 cf, Depth= 3.84"
Routed to Link SP4 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 5,412 | 61 | >75% Grass cover, Good, HSG B |
| 5,412 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.1 | 50 | 0.0200 | 0.10 | | **Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.28" |
| 1.5 | 112 | 0.0310 | 1.23 | | **Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps |
| 9.6 | 162 | Total | | | |

## Summary for Subcatchment P-5: Subcat P-5

Runoff = 4.08 cfs @ 12.09 hrs, Volume= 14,838 cf, Depth= 8.15"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 643 | 61 | >75% Grass cover, Good, HSG B |
| 21,197 | 98 | Paved parking, HSG B |
| 7 | 98 | Roofs, HSG B |
| 21,847 | 97 | Weighted Average |
| 643 | | 2.94% Pervious Area |
| 21,204 | | 97.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-6: Subcat P-6

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 1,552 cf, Depth= 7.79"
Routed to Link SP1 : Study Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 276 | 61 | >75% Grass cover, Good, HSG B |
| 1 | 98 | Roofs, HSG B |
| 2,114 | 98 | Paved parking, HSG B |
| 2,391 | 94 | Weighted Average |
| 276 | | 11.55% Pervious Area |
| 2,115 | | 88.45% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-7: Subcat P-7

Runoff = 2.14 cfs @ 12.09 hrs, Volume= 7,088 cf, Depth= 6.83"
Routed to Pond FB1 : sediment forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 9 | 98 | Roofs, HSG B |
| 8,265 | 98 | Paved parking, HSG B |
| 4,185 | 61 | >75% Grass cover, Good, HSG B |
| 12,459 | 86 | Weighted Average |
| 4,185 | | 33.59% Pervious Area |
| 8,274 | | 66.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-8: Subcat P-8

Runoff = 2.04 cfs @ 12.09 hrs, Volume= 7,495 cf, Depth= 8.27"
Routed to Pond IS2 : infiltration 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 1 | 61 | >75% Grass cover, Good, HSG B |
| 10,865 | 98 | Roofs, HSG B |
| 10 | 98 | Paved parking, HSG B |
| 10,876 | 98 | Weighted Average |
| 1 | | 0.01% Pervious Area |
| 10,875 | | 99.99% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Subcatchment P-9: Subcat P-9

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 453 cf, Depth= 8.27"
Routed to Pond IS3 : infiltration 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=8.51"

| Area (sf) | CN | Description |
|---|---|---|
| 657 | 98 | Roofs, HSG B |
| 657 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry, TR-55 MIN** |

## Summary for Reach 1R: continuity reach

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 0.00" for 50-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link SP3 : Study Point

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Pond B1: bioretention system 1

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

[81] Warning: Exceeded Pond FB1 by 0.48' @ 17.95 hrs

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 6.70" for 50-year event
Inflow = 2.11 cfs @ 12.10 hrs, Volume= 6,952 cf
Outflow = 1.93 cfs @ 12.14 hrs, Volume= 6,940 cf, Atten= 8%, Lag= 2.4 min
Discarded = 0.03 cfs @ 12.14 hrs, Volume= 2,529 cf
Primary = 1.90 cfs @ 12.14 hrs, Volume= 4,411 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.28' @ 12.14 hrs Surf.Area= 318 sf Storage= 1,332 cf
Flood Elev= 61.00' Surf.Area= 318 sf Storage= 2,822 cf

Plug-Flow detention time= 153.4 min calculated for 6,930 cf (100% of inflow)
Center-of-Mass det. time= 153.0 min ( 949.1 - 796.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 58.50' | 2,632 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 56.50' | 191 cf | **media storage (Irregular)**Listed below (Recalc)<br>636 cf Overall x 30.0% Voids |
| | | 2,822 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 58.50 | 118 | 118.0 | 0 | 0 | 118 |
| 59.00 | 318 | 140.0 | 105 | 105 | 574 |
| 60.00 | 1,109 | 299.0 | 674 | 779 | 6,133 |
| 61.00 | 2,715 | 349.0 | 1,853 | 2,632 | 8,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 56.50 | 318 | 140.0 | 0 | 0 | 318 |
| 58.50 | 318 | 140.0 | 636 | 636 | 598 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 56.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.00' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.22' | **8.0" Round Culvert** L= 22.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.22' / 57.50' S= 0.0327 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.03 cfs @ 12.14 hrs HW=60.28' (Free Discharge)
└**1=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=1.88 cfs @ 12.14 hrs HW=60.28' (Free Discharge)
└**3=Culvert** (Passes 1.88 cfs of 2.21 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.88 cfs @ 1.72 fps)

## Summary for Pond B2: bioretention system 2

GW from TP4

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB2 by 0.04' @ 12.20 hrs

Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 7.08" for 50-year event
Inflow = 1.12 cfs @ 12.10 hrs, Volume= 3,712 cf
Outflow = 0.95 cfs @ 12.15 hrs, Volume= 3,712 cf, Atten= 15%, Lag= 3.3 min
Discarded = 0.02 cfs @ 12.15 hrs, Volume= 1,326 cf
Primary = 0.93 cfs @ 12.15 hrs, Volume= 2,386 cf
Routed to Link SP3 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.96' @ 12.15 hrs Surf.Area= 258 sf Storage= 760 cf
Flood Elev= 61.00' Surf.Area= 258 sf Storage= 800 cf

Plug-Flow detention time= 132.7 min calculated for 3,707 cf (100% of inflow)
Center-of-Mass det. time= 133.3 min ( 918.3 - 784.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 645 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 155 cf | **media storage (Irregular)**Listed below (Recalc)<br>516 cf Overall x 30.0% Voids |
| | | 800 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 98 | 88.0 | 0 | 0 | 98 |
| 60.00 | 258 | 114.0 | 86 | 86 | 519 |
| 61.00 | 930 | 204.0 | 559 | 645 | 2,802 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 258 | 114.0 | 0 | 0 | 258 |
| 59.50 | 258 | 114.0 | 516 | 516 | 486 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.20' Phase-In= 0.01' |
| #2 | Device 3 | 60.50' | **15.0" Vert. overflow orifice** C= 0.600<br>Limited to weir flow at low heads |
| #3 | Primary | 58.00' | **8.0" Round Culvert** L= 88.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 57.50' S= 0.0057 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.02 cfs @ 12.15 hrs HW=60.96' (Free Discharge)
└**1=Exfiltration** ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.93 cfs @ 12.15 hrs HW=60.96' (Free Discharge)
└**3=Culvert** (Passes 0.93 cfs of 1.87 cfs potential flow)
└**2=overflow orifice** (Orifice Controls 0.93 cfs @ 2.30 fps)

## Summary for Pond B3: bioretention system 3

GW from TP1

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB3 by 1.27' @ 12.70 hrs

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 6.61" for 50-year event
Inflow = 4.22 cfs @ 12.09 hrs, Volume= 13,730 cf
Outflow = 1.03 cfs @ 12.50 hrs, Volume= 12,818 cf, Atten= 76%, Lag= 24.8 min
Discarded = 0.11 cfs @ 12.50 hrs, Volume= 9,415 cf
Primary = 0.92 cfs @ 12.50 hrs, Volume= 3,403 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.97' @ 12.50 hrs Surf.Area= 1,639 sf Storage= 6,723 cf
Flood Elev= 61.00' Surf.Area= 1,639 sf Storage= 6,870 cf

Plug-Flow detention time= 425.0 min calculated for 12,818 cf (93% of inflow)
Center-of-Mass det. time= 389.5 min ( 1,186.6 - 797.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 5,886 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.00' | 983 cf | **media storage (Irregular)**Listed below (Recalc)<br>3,278 cf Overall x 30.0% Voids |
| | | 6,870 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 60.00 | 2,580 | 217.0 | 2,092 | 2,092 | 2,711 |
| 61.00 | 5,156 | 323.0 | 3,794 | 5,886 | 7,274 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.00 | 1,639 | 184.0 | 0 | 0 | 1,639 |
| 59.00 | 1,639 | 184.0 | 3,278 | 3,278 | 2,007 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 60.80' | **15.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |
| #2 | Primary | 58.40' | **8.0" Round Culvert** L= 77.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.40' / 57.00' S= 0.0182 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |
| #3 | Discarded | 57.00' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.11 cfs @ 12.50 hrs HW=60.97' (Free Discharge)
└**3=Exfiltration** ( Controls 0.11 cfs)

**Primary OutFlow** Max=0.91 cfs @ 12.50 hrs HW=60.97' (Free Discharge)
└**2=Culvert** (Passes 0.91 cfs of 2.14 cfs potential flow)
└**1=Orifice/Grate** (Weir Controls 0.91 cfs @ 1.35 fps)

## Summary for Pond B4: bioretention system 4

GW assumed based on surrounding data. confirmatory TP to be performed.

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

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[81] Warning: Exceeded Pond FB4 by 0.92' @ 14.95 hrs

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 6.08" for 50-year event
Inflow = 0.59 cfs @ 12.10 hrs, Volume= 1,871 cf
Outflow = 0.03 cfs @ 14.81 hrs, Volume= 1,871 cf, Atten= 95%, Lag= 162.5 min
Discarded = 0.03 cfs @ 14.81 hrs, Volume= 1,871 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.74' @ 14.81 hrs Surf.Area= 516 sf Storage= 1,082 cf
Flood Elev= 61.00' Surf.Area= 516 sf Storage= 1,358 cf

Plug-Flow detention time= 429.4 min calculated for 1,868 cf (100% of inflow)
Center-of-Mass det. time= 429.6 min ( 1,237.8 - 808.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 1,049 cf | **surface storage (Irregular)**Listed below (Recalc) -Impervious |
| #2 | 57.50' | 310 cf | **media storage (Irregular)**Listed below (Recalc)<br>1,032 cf Overall x 30.0% Voids |
| | | 1,358 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 391 | 79.0 | 0 | 0 | 391 |
| 60.00 | 516 | 88.0 | 226 | 226 | 518 |
| 61.00 | 1,174 | 135.0 | 823 | 1,049 | 1,359 |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 57.50 | 516 | 88.0 | 0 | 0 | 516 |
| 59.50 | 516 | 88.0 | 1,032 | 1,032 | 692 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.75' | **5.0' long x 4.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32 |
| #2 | Discarded | 57.50' | **0.720 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 55.50' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.03 cfs @ 14.81 hrs HW=60.74' (Free Discharge)
↑—**2=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.50' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond FB1: sediment forebay

Inflow Area = 12,459 sf, 66.41% Impervious, Inflow Depth = 6.83" for 50-year event
Inflow = 2.14 cfs @ 12.09 hrs, Volume= 7,088 cf
Outflow = 2.11 cfs @ 12.10 hrs, Volume= 6,952 cf, Atten= 1%, Lag= 0.9 min
Primary = 2.11 cfs @ 12.10 hrs, Volume= 6,952 cf
Routed to Pond B1 : bioretention system 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.92' @ 12.10 hrs Surf.Area= 426 sf Storage= 292 cf
Flood Elev= 61.00' Surf.Area= 448 sf Storage= 328 cf

Plug-Flow detention time= 22.2 min calculated for 6,952 cf (98% of inflow)
Center-of-Mass det. time= 10.3 min ( 796.1 - 785.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 328 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 222 | 64.0 | 0 | 0 | 222 |
| 60.00 | 448 | 84.0 | 328 | 328 | 469 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=2.09 cfs @ 12.10 hrs HW=59.91' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 2.09 cfs @ 1.68 fps)

## Summary for Pond FB2: sediment forebay

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 6,287 sf, 75.97% Impervious, Inflow Depth = 7.19" for 50-year event
Inflow = 1.11 cfs @ 12.09 hrs, Volume= 3,766 cf
Outflow = 1.12 cfs @ 12.10 hrs, Volume= 3,712 cf, Atten= 0%, Lag= 0.5 min
Primary = 1.12 cfs @ 12.10 hrs, Volume= 3,712 cf
Routed to Pond B2 : bioretention system 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.98' @ 12.09 hrs Surf.Area= 148 sf Storage= 89 cf
Flood Elev= 61.00' Surf.Area= 152 sf Storage= 93 cf

Plug-Flow detention time= 16.7 min calculated for 3,712 cf (99% of inflow)
Center-of-Mass det. time= 7.7 min ( 784.9 - 777.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 93 cf | **surface storage (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 1 | 1.0 | 0 | 0 | 1 |
| 60.00 | 34 | 25.0 | 7 | 7 | 51 |
| 61.00 | 152 | 51.0 | 86 | 93 | 213 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 60.70' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=1.10 cfs @ 12.10 hrs HW=60.97' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 1.10 cfs @ 1.34 fps)

## Summary for Pond FB3: sediment forebay

[93] Warning: Storage range exceeded by 0.16'

Inflow Area = 24,922 sf, 65.24% Impervious, Inflow Depth = 6.71" for 50-year event
Inflow = 4.22 cfs @ 12.09 hrs, Volume= 13,928 cf
Outflow = 4.22 cfs @ 12.09 hrs, Volume= 13,730 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.22 cfs @ 12.09 hrs, Volume= 13,730 cf
Routed to Pond B3 : bioretention system 3

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Peak Elev= 60.16' @ 12.09 hrs Surf.Area= 586 sf Storage= 457 cf
Flood Elev= 61.00' Surf.Area= 586 sf Storage= 457 cf

Plug-Flow detention time= 17.4 min calculated for 13,711 cf (98% of inflow)
Center-of-Mass det. time= 8.7 min ( 797.1 - 788.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.00' | 457 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.00 | 340 | 70.0 | 0 | 0 | 340 |
| 60.00 | 586 | 91.0 | 457 | 457 | 621 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.50' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |

**Primary OutFlow** Max=4.12 cfs @ 12.09 hrs HW=60.15' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4.12 cfs @ 2.11 fps)

## Summary for Pond FB4: sediment forebay

Inflow Area = 3,691 sf, 53.10% Impervious, Inflow Depth = 6.22" for 50-year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,915 cf
Outflow = 0.59 cfs @ 12.10 hrs, Volume= 1,871 cf, Atten= 0%, Lag= 0.7 min
Primary = 0.59 cfs @ 12.10 hrs, Volume= 1,871 cf
Routed to Pond B4 : bioretention system 4

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 59.98' @ 12.10 hrs Surf.Area= 202 sf Storage= 78 cf
Flood Elev= 60.00' Surf.Area= 205 sf Storage= 81 cf

Plug-Flow detention time= 23.5 min calculated for 1,868 cf (98% of inflow)
Center-of-Mass det. time= 9.9 min ( 808.2 - 798.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 59.50' | 81 cf | **surface storage (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 59.50 | 124 | 42.0 | 0 | 0 | 124 |
| 60.00 | 205 | 56.0 | 81 | 81 | 236 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 59.80' | **3.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 |

Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

**Primary OutFlow** Max=0.59 cfs @ 12.10 hrs HW=59.98' (Free Discharge)
**1=Broad-Crested Rectangular Weir** (Weir Controls 0.59 cfs @ 1.08 fps)

## Summary for Pond IS1: infiltration 1

GW elevation from TP8

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

Inflow Area = 18,979 sf, 98.78% Impervious, Inflow Depth = 8.19" for 50-year event
Inflow = 3.55 cfs @ 12.09 hrs, Volume= 12,960 cf
Outflow = 1.84 cfs @ 12.23 hrs, Volume= 12,960 cf, Atten= 48%, Lag= 8.4 min
Discarded = 0.08 cfs @ 12.23 hrs, Volume= 5,893 cf
Primary = 1.76 cfs @ 12.23 hrs, Volume= 7,067 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.93' @ 12.23 hrs Surf.Area= 3,088 sf Storage= 3,942 cf
Flood Elev= 60.93' Surf.Area= 3,088 sf Storage= 3,939 cf

Plug-Flow detention time= 139.9 min calculated for 12,942 cf (100% of inflow)
Center-of-Mass det. time= 140.2 min ( 884.2 - 744.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 58.60' | 2,174 cf | **41.50'W x 74.40'L x 2.33'H Field A**<br>7,204 cf Overall - 1,769 cf Embedded = 5,435 cf x 40.0% Voids |
| #2A | 59.10' | 1,769 cf | **ADS_StormTech SC-310 +Cap** x 120 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 12 Rows |
| | | 3,943 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 58.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 54.60' Phase-In= 0.01' |
| #2 | Primary | 59.50' | **8.0" Round Culvert** L= 32.0' Ke= 0.500<br>Inlet / Outlet Invert= 59.50' / 57.25' S= 0.0703 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Discarded OutFlow** Max=0.08 cfs @ 12.23 hrs HW=60.93' (Free Discharge)
**1=Exfiltration** ( Controls 0.08 cfs)

**Primary OutFlow** Max=1.76 cfs @ 12.23 hrs HW=60.93' (Free Discharge)
**2=Culvert** (Inlet Controls 1.76 cfs @ 5.03 fps)

## Summary for Pond IS2: infiltration 2

GW from TP5

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

---

Inflow Area = 32,723 sf, 98.03% Impervious, Inflow Depth = 8.19" for 50-year event
Inflow = 6.12 cfs @ 12.09 hrs, Volume= 22,333 cf
Outflow = 2.74 cfs @ 12.27 hrs, Volume= 22,333 cf, Atten= 55%, Lag= 10.9 min
Discarded = 0.16 cfs @ 12.27 hrs, Volume= 11,491 cf
Primary = 2.58 cfs @ 12.27 hrs, Volume= 10,842 cf
Routed to Link SP1 : Study Point

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 60.03' @ 12.27 hrs Surf.Area= 6,032 sf Storage= 7,743 cf
Flood Elev= 60.03' Surf.Area= 6,032 sf Storage= 7,744 cf

Plug-Flow detention time= 166.7 min calculated for 22,333 cf (100% of inflow)
Center-of-Mass det. time= 166.6 min ( 910.8 - 744.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.70' | 4,214 cf | **51.50'W x 117.12'L x 2.33'H Field A**<br>14,074 cf Overall - 3,538 cf Embedded = 10,536 cf x 40.0% Voids |
| #2A | 58.20' | 3,538 cf | **ADS_StormTech SC-310 +Cap** x 240 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>240 Chambers in 15 Rows |
| | | 7,752 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 57.70' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 53.70' Phase-In= 0.01' |
| #2 | Primary | 58.65' | **10.0" Round Culvert** L= 19.0' Ke= 0.500<br>Inlet / Outlet Invert= 58.65' / 58.00' S= 0.0342 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf |

**Discarded OutFlow** Max=0.16 cfs @ 12.27 hrs HW=60.02' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.16 cfs)

**Primary OutFlow** Max=2.57 cfs @ 12.27 hrs HW=60.02' (Free Discharge)
↑**2=Culvert** (Inlet Controls 2.57 cfs @ 4.71 fps)

## Summary for Pond IS3: infiltration 3

GW from TP2

NRCS Soil Report shows the site to be Urban Land soil type. No Ksat is provided. Assumed Ksat for adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes. 10.1993 micrometers per second = 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

Inflow Area = 5,656 sf, 98.97% Impervious, Inflow Depth = 8.27" for 50-year event
Inflow = 1.06 cfs @ 12.09 hrs, Volume= 3,898 cf
Outflow = 0.05 cfs @ 14.57 hrs, Volume= 3,898 cf, Atten= 95%, Lag= 149.1 min
Discarded = 0.05 cfs @ 14.57 hrs, Volume= 3,898 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 1R : continuity reach

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 61.49' @ 14.57 hrs Surf.Area= 1,972 sf Storage= 1,974 cf
Flood Elev= 61.60' Surf.Area= 1,972 sf Storage= 2,057 cf

Plug-Flow detention time= 382.6 min calculated for 3,893 cf (100% of inflow)
Center-of-Mass det. time= 382.7 min ( 1,123.2 - 740.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 59.60' | 1,257 cf | **20.75'W x 95.03'L x 2.00'H Field A**<br>3,944 cf Overall - 800 cf Embedded = 3,144 cf x 40.0% Voids |
| #2A | 60.10' | 800 cf | **ADS_StormTech SC-160LP +Cap** x 117 Inside #1<br>Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf<br>Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap<br>117 Chambers in 9 Rows |
| | | 2,057 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 61.60' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 59.60' | **0.720 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 55.60' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 14.57 hrs HW=61.49' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=59.60' (Free Discharge)

## Summary for Link SP1: Study Point

Inflow Area = 181,482 sf, 40.33% Impervious, Inflow Depth = 3.46" for 50-year event
Inflow = 11.68 cfs @ 12.20 hrs, Volume= 52,368 cf
Primary = 11.68 cfs @ 12.20 hrs, Volume= 52,368 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP2: Study Point

Inflow Area = 8,852 sf, 0.00% Impervious, Inflow Depth = 3.84" for 50-year event
Inflow = 0.89 cfs @ 12.10 hrs, Volume= 2,831 cf
Primary = 0.89 cfs @ 12.10 hrs, Volume= 2,831 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP3: Study Point

Inflow Area = 28,761 sf, 65.63% Impervious, Inflow Depth = 3.46" for 50-year event
Inflow = 3.23 cfs @ 12.14 hrs, Volume= 8,284 cf
Primary = 3.23 cfs @ 12.14 hrs, Volume= 8,284 cf, Atten= 0%, Lag= 0.0 min

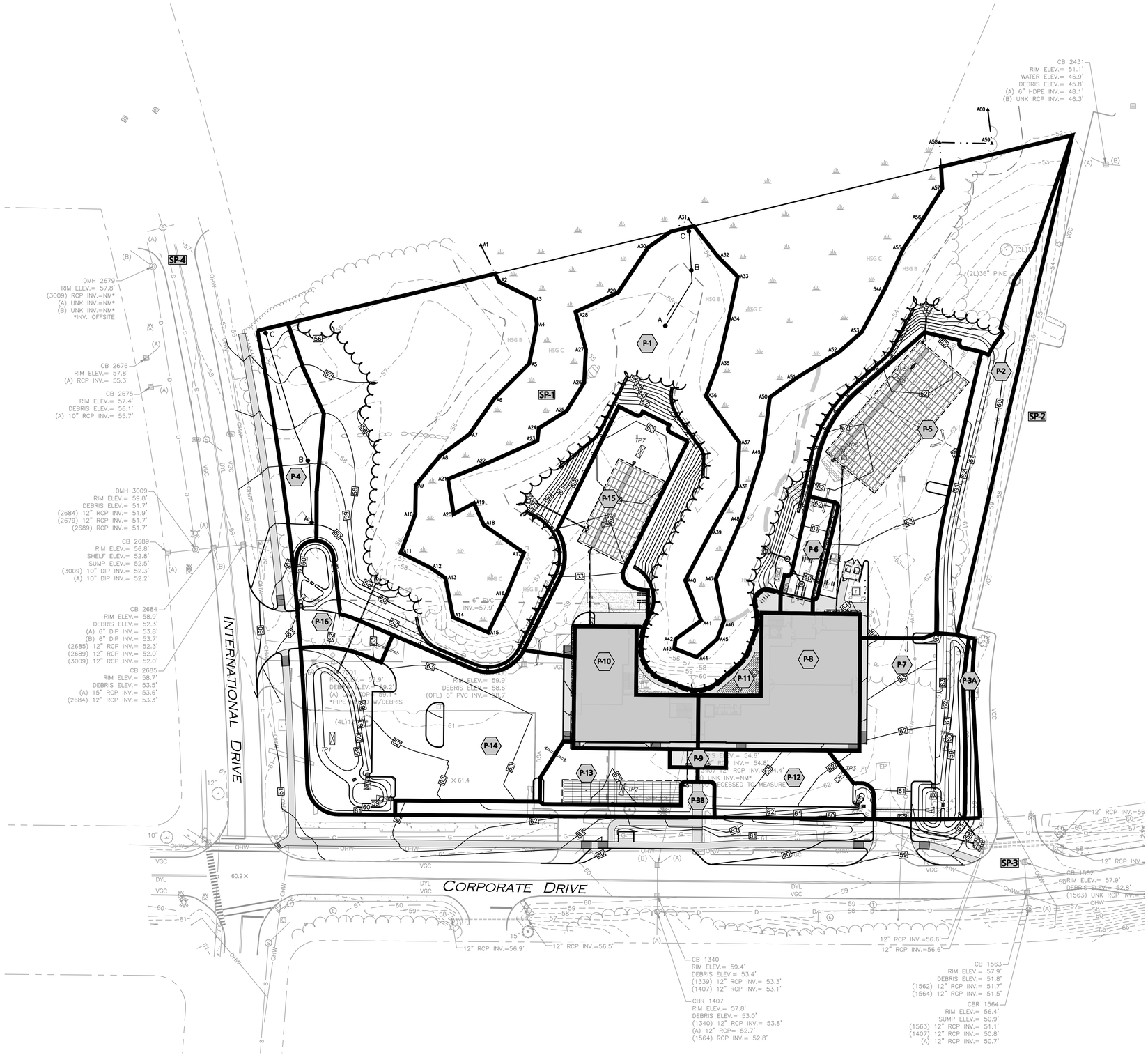
Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Summary for Link SP4: Study Point

Inflow Area = 5,412 sf, 0.00% Impervious, Inflow Depth = 3.84" for 50-year event
Inflow = 0.48 cfs @ 12.14 hrs, Volume= 1,731 cf
Primary = 0.48 cfs @ 12.14 hrs, Volume= 1,731 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

## Proposed Watershed Plan




## LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT LABEL (P-1)
- Tc FLOW PATH (A — B)
- SCS SOILS BOUNDARY
- FLOW DIRECTION

## PLAN NOTES:

1. THE EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED TO ALLEN & MAJOR ASSOCIATES, INC. (A&M) BY THE APPLICANT AND ARE TAKEN FROM A DRAWING ENTITLED "EXISTING CONDITIONS PLAN FOR ATDG, LLC", PREPARED BY DOUCET SURVEY LLC, DATED APRIL 5, 2023.
2. THE INFORMATION SHOWN ON THIS PLAN IS THE SOLE PROPERTY OF ALLEN & MAJOR ASSOCIATES, INC. IT'S INTENDED USE IS TO PROVIDE INFORMATION. ANY ALTERATION, MISUSE, OR RECALCULATION OF INFORMATION OR DATA WITHOUT THE EXPRESSED, WRITTEN CONSENT OF ALLEN & MAJOR ASSOCIATES, INC. IS STRICTLY PROHIBITED.

GRAPHIC SCALE

40 0 20 40 80 160

( IN FEET )
1 inch = 40 ft.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 3 | 09-18-23 | REVISED PER TAC COMMENTS |
| 2 | 08-28-23 | ISSUED FOR AOT PERMIT APPLICATION |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 40' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |


PREPARED BY:
ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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DRAWING TITLE:
PROPOSED WATERSHED PLAN

SHEET No.
PWS-1


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# SECTION 7.0 -
## APPENDIX

## AoT Application & AoT Permit

# ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division/ Alteration of Terrain Bureau/ Land Resources Management
Check the Status of your Application: www.des.nh.gov/onestop

**RSA/ Rule:** RSA 485-A:17, Env-Wq 1500

| | | | |
|---|---|---|---|
| Administrative Use Only | Administrative Use Only | Administrative Use Only | File Number:<br>Check No.<br>Amount:<br>Initials: |

| | | | |
|---|---|---|---|
| **1. APPLICANT INFORMATION (INTENDED PERMIT HOLDER)** | | | |
| Applicant Name: ATDG, LLC | Contact Name: Dr. Alex Slocum | | |
| Email: ahslocum@gmail.com | Daytime Telephone: (603) 777-6506 | | |
| Mailing Address: 1 Merrill Crossing | | | |
| Town/City: Bow | State: NH | Zip Code: 03304 | |
| **2. APPLICANT'S AGENT INFORMATION** If none, check here: ☐ | | | |
| Business Name: Apex Design Build | Contact Name: Raquelle Kemnitz, Project Coordinator | | |
| Email: raquellek@apexdesignbuild.net | Daytime Telephone: (708) 610-5000 | | |
| Address: 9550 W. Higgins Road, Ste 170 | | | |
| Town/City: Rosemont | State: IL | Zip Code: 60018 | |
| **3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT)** | | | |
| Applicant Name: Pease Development Authority | Contact Name: Paul Brean | | |
| Email: p. brean@peasedev.org | Daytime Telephone: (603) 766-9230 | | |
| Mailing Address: 55 International Drive | | | |
| Town/City: Portsmouth | State: NH | Zip Code: 03801 | |
| **4. PROPERTY OWNER'S AGENT INFORMATION** If none, check here: ☒ | | | |
| Business Name: | Contact Name: | | |
| Email: | Daytime Telephone: | | |
| Address: | | | |
| Town/City: | State: | Zip Code: | |
| **5. CONSULTANT INFORMATION** If none, check here: ☐ | | | |
| Engineering Firm: Allen & Major Associates, Inc. | Contact Name: Brian D. Jones, PE | | |
| Email: bjones@allenmajor.com | Daytime Telephone: (603) 627-5500 | | |
| Address: 400 Harvey Road, Suite D | | | |
| Town/City: Manchester | State: NH | Zip Code: 03103 | |

**6. PROJECT TYPE**

☐ Excavation Only ☐ Residential ☒ Commercial ☐ Golf Course ☐ School ☐ Municipal
☐ Agricultural ☐ Land Conversion ☐ Other:

**7. PROJECT LOCATION INFORMATION**

Project Name: ASC / Medical Office

Street/Road Address: 360 Corporate Drive

| Town/City: Portsmouth | | County: Rockingham | |
|---|---|---|---|
| Tax Map: 315 | Block: | Lot Number: 5 | Unit: |
| Location Coordinates: 43.073484, -70.80109 | ☒ Latitude/Longitude | ☐ UTM | ☐ State Plane |

Post-development, will the proposed project withdraw from or directly discharge to any of the following? If yes, identify the purpose.

| | | | |
|---|---|---|---|
| 1. Stream or Wetland<br>Purpose: Treated, stormwater discharge | ☒ Yes<br>☐ No | ☐ Withdrawal | ☒ Discharge |
| 2. Man-made pond created by impounding a stream or wetland<br>Purpose: | ☐ Yes<br>☒ No | ☐ Withdrawal | ☐ Discharge |
| 3. Unlined pond dug into the water table<br>Purpose: | ☐ Yes<br>☒ No | ☐ Withdrawal | ☐ Discharge |

Post-development, will the proposed project discharge to:

- A surface water impaired for phosphorus and/or nitrogen? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A Class A surface water or Outstanding Resource Water? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A lake or pond not covered previously? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond**

Is the project a High Load area? ☐ Yes ☒ No
If yes, specify the type of high load land use or activity: _____

Is the project within a Water Supply Intake Protection Area (WSIPA)? ☐ Yes ☒ No
Is the project within a Groundwater Protection Area (GPA)? ☒ Yes ☐ No
Will the well setbacks identified in Env-Wq 1508.02 be met? ☒ Yes ☐ No

Note: Guidance document titled "*Using NHDES's OneStop WebGIS to Locate Protection Areas*" is available online. For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.

Is any part of the property within the 100-year floodplain? ☐ Yes ☒ No
If yes: Cut volume: _____ cubic feet within the 100-year floodplain
Fill volume: _____ cubic feet within the 100-year floodplain

☐ Project **IS** within **¼ mile of a designated river** Name of River:
☒ Project is **NOT** within ¼ mile of a designated river

☒ Project **IS** within **a Coastal/Great Bay Region community - include info required by Env-Wq 1503.08(l) if applicable**
☐ Project is **NOT** within a Coastal/Great Bay Region community

**8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")**

The project proposes to construct a 3-story surgical center with associated parking. The proposed building has a footprint of 16,700± square feet with a gross floor area of 52,400± square feet. The proposed sitework incorporates various walls to protect the existing wetland resources on site and utilize the developable area.

**9. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT**

N/A

## 10. ADDITIONAL REQUIRED INFORMATION

A. Date a copy of the application was sent to the municipality as required by Env-Wq 1503.05(e)[1]: 08/29/2023.
**(Attach proof of delivery)**

B. Date a copy of the application was sent to the local river advisory committee if required by Env-Wq 1503.05(e)[2]: __/__/____.
**(Attach proof of delivery)**

C. Type of plan required: ☐ Land Conversion ☒ Detailed Development ☐ Excavation, Grading & Reclamation ☐ Steep Slope

D. Additional plans required: ☒ Stormwater Drainage & Hydrologic Soil Groups ☐ Source Control ☐ Chloride Management

E. Total area of disturbance: 181,000 square feet

F. Additional impervious cover as a result of the project: 72,916 square feet (use the "-" symbol to indicate a net reduction in impervious coverage).
Total final impervious cover: 90,058 square feet

G. Total undisturbed cover: 116,074 square feet

H. Number of lots proposed: 0

I. Total length of roadway: 0 linear feet

J. Name(s) of receiving water(s): Wetland

K. Identify all other NHDES permits required for the project, and for each indicate whether an application has been filed and is pending, or if the required approval has been issued provide the permit number, registration date, or approval letter number, as applicable.

| Type of Approval | Application Filed? | Status | |
|---|---|---|---|
| | | Pending | If Issued: |
| 1. Water Supply Approval | ☐ Yes ☐ No ☒ N/A | ☐ | Permit number: |
| 2. Wetlands Permit | ☐ Yes ☐ No ☒ N/A | ☐ | Permit number: |
| 3. Shoreland Permit | ☐ Yes ☐ No ☒ N/A | ☐ | Permit number: |
| 4. UIC Registration | ☐ Yes ☐ No ☒ N/A | ☐ | Registration date: |
| 5. Large/Small Community Well Approval | ☐ Yes ☐ No ☒ N/A | ☐ | Approval letter date: |
| 6. Large Groundwater Withdrawal Permit | ☐ Yes ☐ No ☒ N/A | ☐ | Permit number: |
| 7. Other: | ☐ Yes ☐ No | ☐ | Permit number: |

L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern: N/A

M. Using NHDES's Web GIS OneStop program (www2.des.state.nh.us/gis/onestop/), with the Surface Water Impairment layer turned on, list the impairments identified for each receiving water. If no pollutants are listed, enter "N/A."
N/A

N. Did the applicant/applicant's agent have a pre-application meeting with AOT staff? ☐ Yes ☒ No
If yes, name of staff member: N/A

O. Will blasting of bedrock be required? ☐ Yes ☒ No If yes, estimated quantity of blast rock: _____ cubic yards
If yes, standard blasting BMP notes must be placed on the plans, available at:
http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf

**NOTE:** If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact AOT staff for additional detail.

[1] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed.

[2] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within ¼ mile of a designated river.

**11. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)**

**LOOSE:**

- ☒ Signed application form: des.nh.gov/organization/divisions/water/aot/index.htm (with attached proof(s) of delivery)
- ☒ Check for the application fee: des.nh.gov/organization/divisions/water/aot/fees.htm
- ☒ Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☒ If Applicant is not the property owner, proof that the applicant will have a legal right to undertake the project on the property if a permit is issued to the applicant.

**BIND IN A REPORT IN THE FOLLOWING ORDER:**

- ☒ Copy of the signed application form & application checklist (des.nh.gov/organization/divisions/water/aot/index.htm)
- ☒ Copy of the check
- ☒ Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☒ Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points
- ☒ Web GIS printout with the "Surface Water Impairments" layer turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ Web GIS printouts with the AOT screening layers turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ NHB letter using DataCheck Tool – www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
- ☒ The Web Soil Survey Map with project's watershed outlined – websoilsurvey.nrcs.usda.gov
- ☒ Aerial photograph (1" = 2,000' scale with the site boundaries outlined)
- ☒ Photographs representative of the site
- ☒ Groundwater Recharge Volume calculations (one worksheet for each permit application): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☒ BMP worksheets (one worksheet for each treatment system): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☒ Drainage analysis, stamped by a professional engineer (see Application Checklist for details)
- ☒ Riprap apron or other energy dissipation or stability calculations
- ☒ Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the Site Specific Soil Mapping standards, *Site-Specific Soil Mapping Standards for NH & VT, SSSNNE Special Publication No. 3.*
- ☒ Infiltration Feasibility Report (example online) [Env-Wq 1503.08(f)(3)]
- ☒ Registration and Notification Form for Storm Water Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches): (http://des.nh.gov/organization/divisions/water/dwgb/dwspp/gw_discharge)
- ☒ Inspection and maintenance manual with, if applicable, long term maintenance agreements [Env-Wq 1503.08(g)]
- ☒ Source control plan

**PLANS:**

- ☒ One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)
- ☒ Pre & post-development color coded soil plans on 11" x 17" (see Application Checklist for details)
- ☒ Pre & post-development drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)

**100-YEAR FLOODPLAIN REPORT:**

- ☐ All information required in Env-Wq 1503.09, submitted as a separate report.

**ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE**

- ☐ See Checklist for Details

☐ **REVIEW APPLICATION FOR COMPLETENESS & CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.**

**12. REQUIRED SIGNATURES**

_____ By initialing here, I acknowledge that I am required by Env-Wq 1503.20(e) to submit a copy of all approved documents to the department in PDF format on a CD within one week after permit approval.

By signing below, I certify that:

- The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief;
- I understand that the submission of false, incomplete, or misleading information constitutes grounds for the department to deny the application, revoke any permit that is granted based on the information, and/or refer the matter to the board of professional engineers established by RSA 310-A:3 if I am a professional engineer; and
- I understand that I am subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641.

☐ **APPLICANT** ☒ **APPLICANT'S AGENT:**

Signature: _____ Date: 08/22/2023

Name (print or type): Raquelle Kemnitz Title: Project Coordinator

☒ PROPERTY OWNER ☐ PROPERTY OWNER'S AGENT:

Signature: _____ Date: 8/25/2023

Name (print or type): Paul Brean, C.M. Title: PDA Executive Director

# ATTACHMENT A:
# ALTERATION OF TERRAIN PERMIT APPLICATION CHECKLIST

Check the box to indicate the item has been provided or provide an explanation why the item does not apply.

**DESIGN PLANS**

☒ Plans printed on 34 - 36" by 22 - 24" white paper

☒ PE stamp

☒ Wetland delineation

☒ Temporary erosion control measures

☒ Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and non-residential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the NH Stormwater Management Manual.

☒ Pre-existing 2-foot contours

☒ Proposed 2-foot contours

☐ Drainage easements protecting the drainage/treatment structures

☒ Compliance with the Wetlands Bureau, RSA 482- A http://des.nh.gov/organization/divisions/water/wetlands/index.htm. Note that artificial detention in wetlands is not allowed.

☐ Compliance with the Comprehensive Shoreland Protection Act, RSA 483-B. http://des.nh.gov/organization/divisions/water/wetlands/cspa

☐ Benches. Benching is needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope.

☒ Check to see if any proposed ponds need state Dam permits.
http://des.nh.gov/organization/divisions/water/dam/documents/damdef.pdf

**DETAILS**

☐ Typical roadway x-section

☐ Detention basin with inverts noted on the outlet structure

☐ Stone berm level spreader

☒ Outlet protection – riprap aprons

☒ A general installation detail for an erosion control blanket

☒ Silt fences or mulch berm

☒ Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement.

☐ Hay bale barriers

☒ Stone check dams

☒ Gravel construction exit

☒ Temporary sediment trap

☒ The treatment BMP's proposed

☒ Any innovative BMP's proposed

**CONSTRUCTION SEQUENCE/EROSION CONTROL**

☒ Note that the project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and Chapter Agr 3800 relative to invasive species.

☒ Note that perimeter controls shall be installed prior to earth moving operations.

☒ Note that temporary water diversion (swales, basins, etc) must be used as necessary until areas are stabilized.

☒ Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site).

☒ Note that all ditches and swales shall be stabilized prior to directing runoff to them.

☒ Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.

☒ Note that all cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade

☒ Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall.

☒ Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information.

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.

☒ Note the definition of the word "stable"

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved.
- A minimum of 85 percent vegetated growth has been established.
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed.
- Or, erosion control blankets have been properly installed.

☒ Note the limit of time an area may be exposed
Example note: All areas shall be stabilized within 45 days of initial disturbance.

☒ Provide temporary and permanent seeding specifications. (Reed canary grass is listed in the Green Book; however, this is a problematic species according to the Wetlands Bureau and therefore should not be specified)

☒ Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
- All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
- After October 15, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.

☐ Note at the end of the construction sequence that "Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable." – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

**DRAINAGE ANALYSES**

Please double-side 8 ½" × 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

☒ PE stamp

☒ Rainfall amount obtained from the Northeast Regional Climate Center- http://precip.eas.cornell.edu/. Include extreme precipitation table as obtained from the above referenced website.

☒ Drainage analyses, in the following order:

- Pre-development analysis: Drainage diagram.
- Pre-development analysis: Area Listing and Soil Listing.
- Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year.
- Pre-development analysis: Full summary of the 10-year storm.
- Post-development analysis: Drainage diagram.
- Post-development analysis: Area Listing and Soil Listing.
- Post-development analysis: Node listing for the 2-year, 10-year and 50-year.
- Post-development analysis: Full summary of the 10-year storm.

☒ Review the Area Listing and Soil Listing reports

- Hydrologic soil groups (HSG) match the HSGs on the soil maps provided.
- There is the same or less HSG A soil area after development (check for each HSG).
- There is the same or less "woods" cover in the post-development.
- Undeveloped land was assumed to be in "good" condition.
- The amount of impervious cover in the analyses is correct.

Note: A good check is to subtract the total impervious area used in the pre analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses/units proposed. Do these numbers make sense?

☒ Check the storage input used to model the ponds.

☒ Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped.

☒ Check the outlet structure proposed and make sure it matches that modeled.

☒ Check to see if the total areas in the pre and post analyses are same.

☒ Confirm the correct NRCS storm type was modeled (Coos, Carroll & Grafton counties are Type II, all others Type III).

**PRE- AND POST-DEVELOPMENT DRAINAGE AREA PLANS**

☒ Plans printed on 34 - 36" by 22 - 24" on white paper.

☒ Submit these plans separate from the soil plans.

☒ A north arrow.

☒ A scale.

☒ Labeled subcatchments, reaches and ponds.

☒ Tc lines.

☒ A clear delineation of the subcatchment boundaries.

☐ Roadway station numbers.

☐ Culverts and other conveyance structures.

**PRE AND POST-DEVELOPMENT COLOR-CODED SOIL PLANS**

☐ 11" × 17"sheets suitable, as long as it is readable.

☒ Submit these plans separate from the drainage area plans.

☒ A north arrow.

☒ A scale.

☒ Name of the soil scientist who performed the survey and date the soil survey took place.

☒ 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features.

☒ Delineation of the soil boundaries and wetland boundaries.

☒ Delineation of the subcatchment boundaries.

☒ Soil series symbols (e.g., 26).

☒ A key or legend which identifies each soil series symbol and its associated soil series name (e.g., 26 = Windsor).

☒ The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, & Impervious = gray).

**Please note that excavation projects (e.g., gravel pits) have similar requirements to that above, however the following are common exceptions/additions:**

☐ Drainage report is not needed if site does not have off-site flow.

☐ 5 foot contours allowed rather than 2 foot.

☐ No PE stamp needed on the plans.

☐ Add a note to the plans that the applicant must submit to the Department of Environmental Services a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.

☐ Add reclamation notes.

See NRCS publication titled: *Vegetating New Hampshire Sand and Gravel Pits* for a good resource, it is posted online at: http://des.nh.gov/organization/divisions/water/aot/categories/publications.

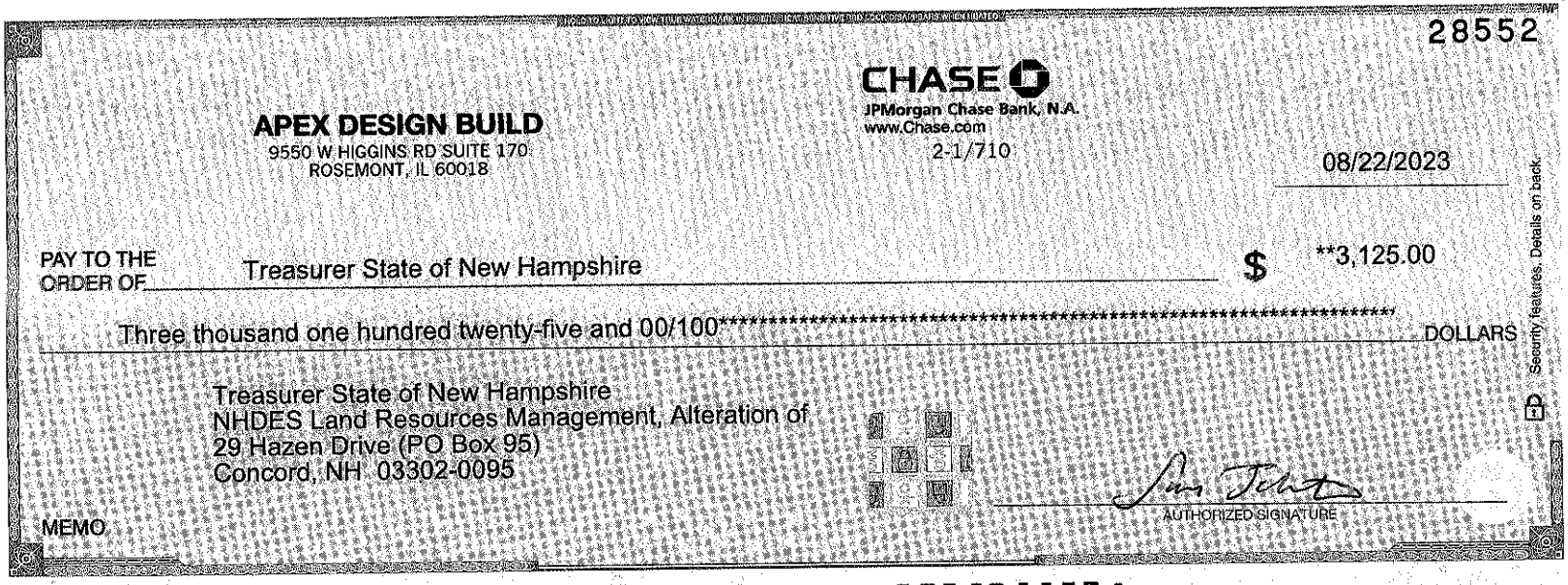
**ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE**

☐ If project will discharge stormwater to a surface water impaired for phosphorus and/or nitrogen, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a Class A surface water or Outstanding Resource Water, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a lake or pond not covered previously, include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond.

☐ If project is within a Coastal/Great Bay Region community, include info required by Env-Wq 1503.08(l) if applicable.



28552

CHASE
JPMorgan Chase Bank, N.A.
www.Chase.com
2-1/710

**APEX DESIGN BUILD**
9550 W HIGGINS RD SUITE 170
ROSEMONT, IL 60018

08/22/2023

PAY TO THE ORDER OF Treasurer State of New Hampshire $ **3,125.00

Three thousand one hundred twenty-five and 00/100********** DOLLARS

Treasurer State of New Hampshire
NHDES Land Resources Management, Alteration of
29 Hazen Drive (PO Box 95)
Concord, NH 03302-0095

MEMO

AUTHORIZED SIGNATURE

Security features. Details on back.

⑈028552⑈ ⑆071000013⑆ 898202259⑈

**APEX DESIGN BUILD** 28552

**08/22/2023** **Treasurer State of New Hampshire**

| Date | Type | Reference | Original Amount | Balance Due | Payment |
|---|---|---|---|---|---|
| 08/15/2023 | Bill | NHDES Alteration of T | 3,125.00 | 3,125.00 | 3,125.00 |
| | | Check Amount | | | 3,125.00 |

**Chase - Checking** 3,125.00

## Surface Water Impairment Map

# Surface Waters with Impairments Map

Legend

Surface Waters with Impairn with Quarter Mile Buffer

Map Scale

1: 6,494

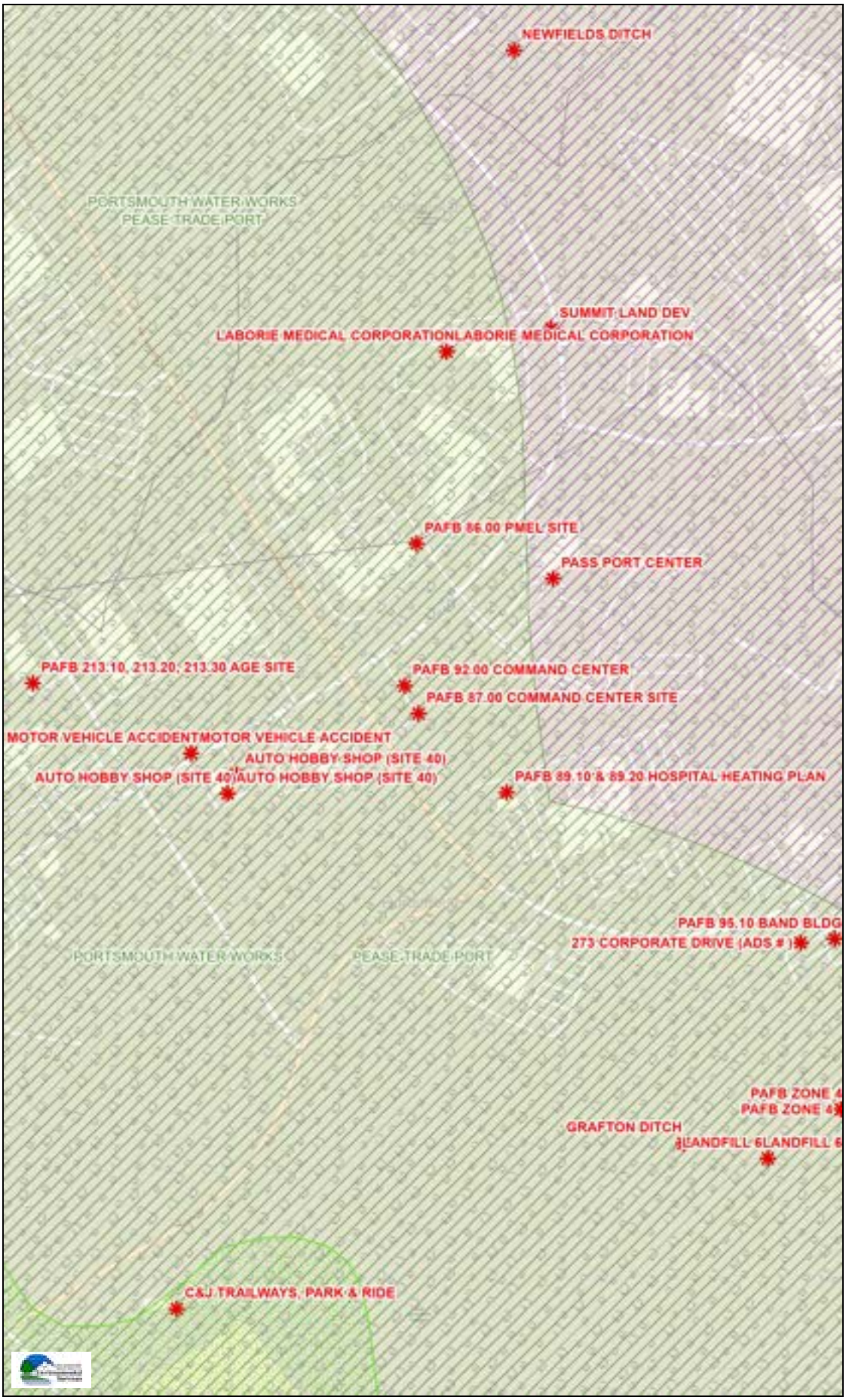
© NH DES, http://des.nh.gov

Map Generated: 7/6/2023

Notes

## AoT Screening Layers Map

# AoT Screening Layers




## Legend

- Remediation Sites
- Coastal and Great Bay Regi Communities
- Designated Rivers Quarterm Buffer
- Public Water Supply Wells
- Groundwater Classification / GA1
- Groundwater Classification / GA2
- Water Supply Intake Protect Areas
- Wellhead Protection Areas
- Class A Lakes with a Quarte Buffer
- Class A - All Features
- All Lakes, with a Quarter Mil Buffer
- Outstanding Resource Wate Watersheds
- Watersheds with Chloride Impairments

Map Scale

1: 6,494

© NH DES, http://des.nh.gov

Map Generated: 7/6/2023

Notes

## Natural Heritage Data Check

# New Hampshire Natural Heritage Bureau
# NHB DataCheck Results Letter

**To:** steven mayer
250 Commercial Street
Manchester, NH 03101

**From:** NH Natural Heritage Bureau

**Date:** 6/29/2023 (This letter is valid through 6/29/2024)

**Re:** Review by NH Natural Heritage Bureau of request dated 6/29/2023

**Permit Types:** Alteration of Terrain Permit
Sewer Connection Permit
Stormwater Pollution Prevention
Portsmouth

**NHB ID:** NHB23-1980

**Applicant:** steven mayer

**Location:** Portsmouth
Tax Map: 315, Tax Lot: 5
Address: 360 Corporate Drive

**Proj. Description:** The project includes the construction of a 3 story medical use building with a footprint of approximately 15,754 square feet. The project will construct approximately 125 parking spaces, required utilities, lighting, and stormwater infrastructure.

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord NH 03301

**MAP OF PROJECT BOUNDARIES FOR: NHB23-1980**

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord NH 03301

## NRCS Web Soil Survey

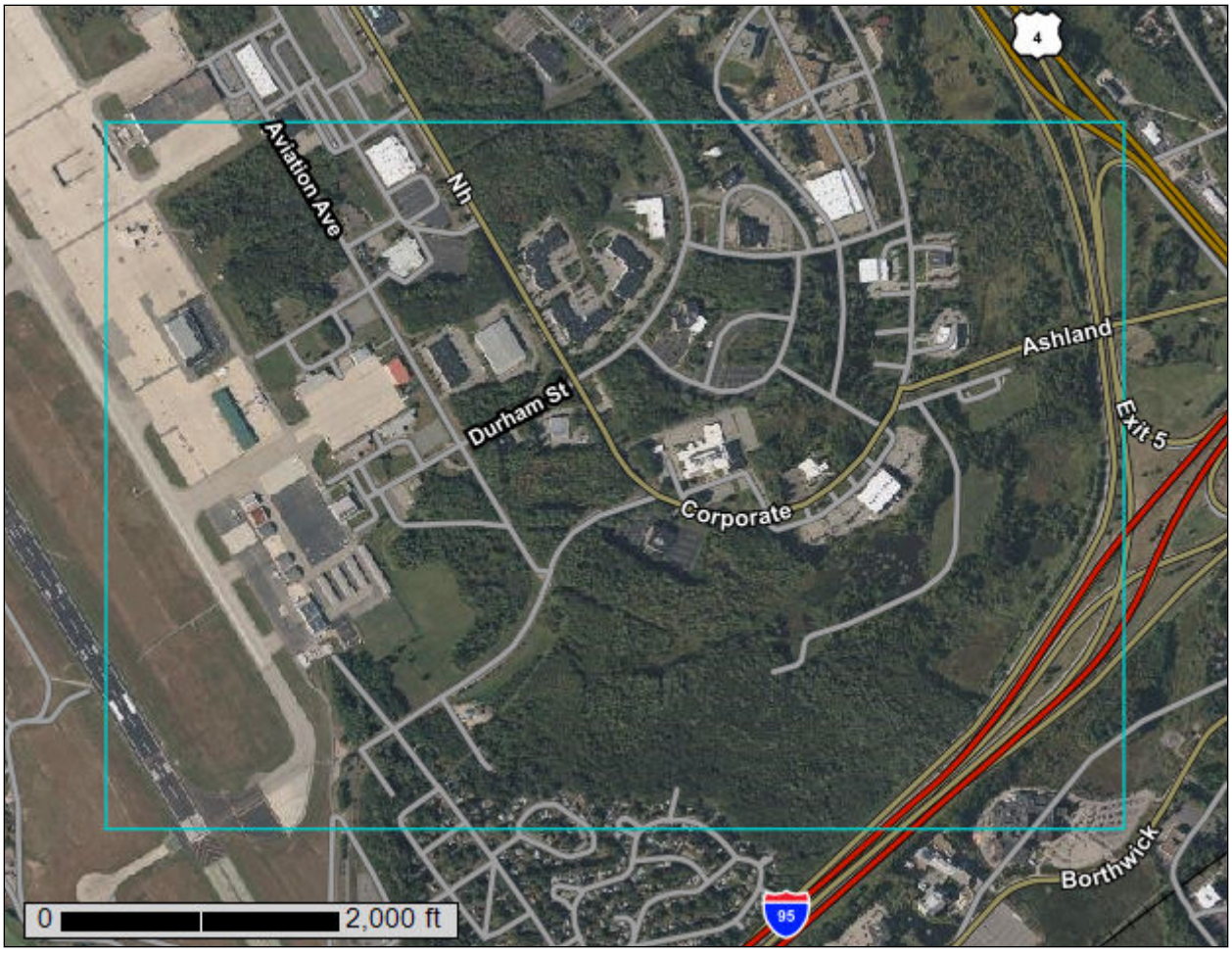
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Rockingham County, New Hampshire




July 3, 2023

# Custom Soil Resource Report
## Soil Map

Map Scale: 1:13,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 25, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 38A | Eldridge fine sandy loam, 0 to 3 percent slopes | 15.2 | 1.8% |
| 134 | Maybid silt loam | 27.2 | 3.2% |
| 140B | Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky | 24.6 | 2.9% |
| 140C | Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky | 2.5 | 0.3% |
| 299 | Udorthents, smoothed | 129.9 | 15.3% |
| 314A | Pipestone sand, 0 to 5 percent slopes | 36.8 | 4.3% |
| 495 | Natchaug mucky peat, 0 to 2 percent slopes | 9.1 | 1.1% |
| 538A | Squamscott fine sandy loam, 0 to 5 percent slopes | 161.0 | 18.9% |
| 599 | Urban land-Hoosic complex, 3 to 15 percent slopes | 26.6 | 3.1% |
| 657B | Ridgebury fine sandy loam, 3 to 8 percent slopes, very stony | 12.6 | 1.5% |
| 699 | Urban land | 224.0 | 26.3% |
| 799 | Urban land-Canton complex, 3 to 15 percent slopes | 182.2 | 21.4% |
| **Totals for Area of Interest** | | **851.8** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

# Soil Information for All Uses

## Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

## Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

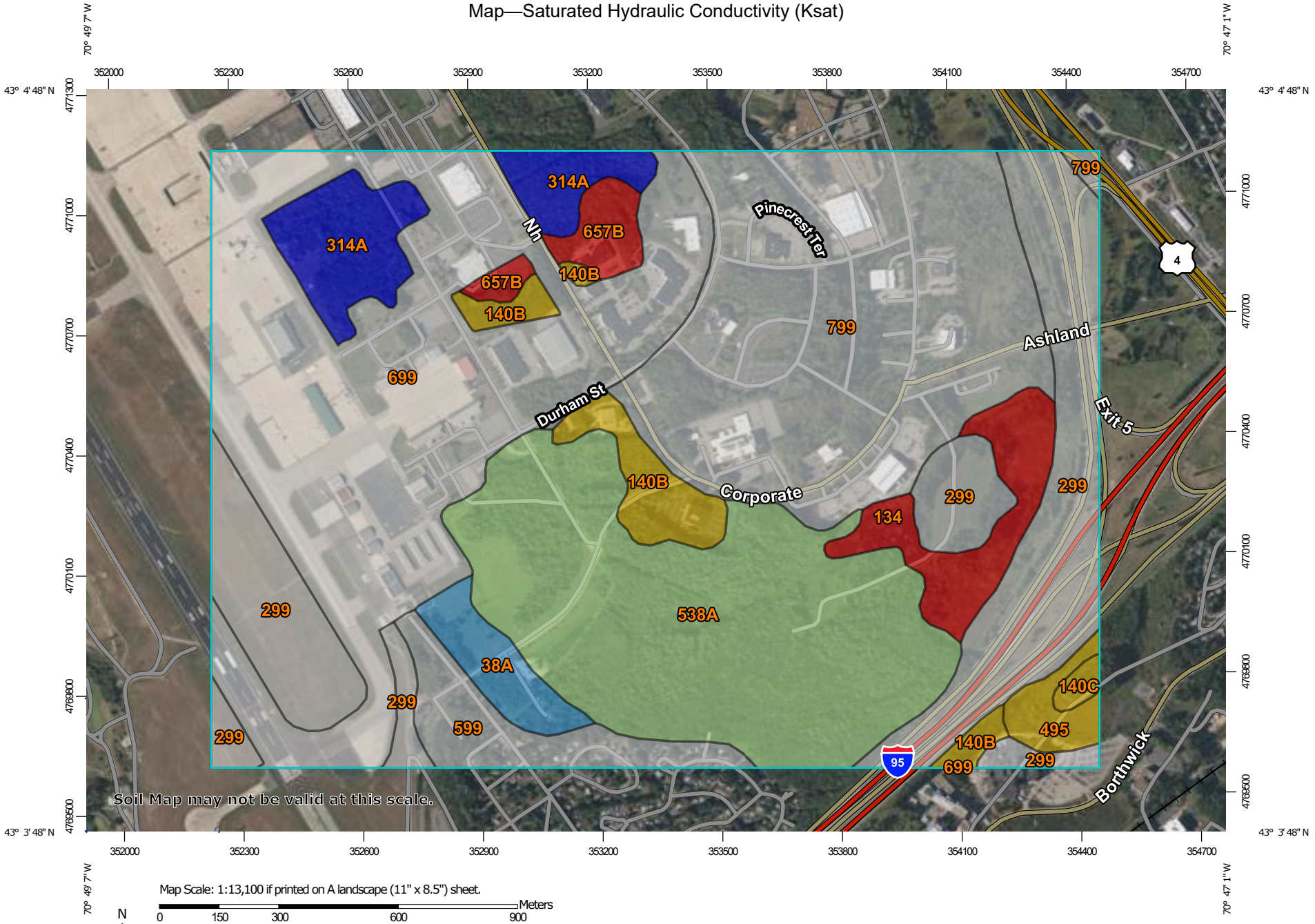
### Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

## Map—Saturated Hydraulic Conductivity (Ksat)




Map Scale: 1:13,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

- <= 4.5628
- > 4.5628 and <= 10.1993
- > 10.1993 and <= 28.6840
- > 28.6840 and <= 35.3528
- > 35.3528 and <= 91.7222
- Not rated or not available

**Soil Rating Lines**

- <= 4.5628
- > 4.5628 and <= 10.1993
- > 10.1993 and <= 28.6840
- > 28.6840 and <= 35.3528
- > 35.3528 and <= 91.7222
- Not rated or not available

**Soil Rating Points**

- <= 4.5628
- > 4.5628 and <= 10.1993
- > 10.1993 and <= 28.6840
- > 28.6840 and <= 35.3528
- > 35.3528 and <= 91.7222
- Not rated or not available

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 25, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Table—Saturated Hydraulic Conductivity (Ksat)

| Map unit symbol | Map unit name | Rating (micrometers per second) | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| 38A | Eldridge fine sandy loam, 0 to 3 percent slopes | 35.3528 | 15.2 | 1.8% |
| 134 | Maybid silt loam | 1.0099 | 27.2 | 3.2% |
| 140B | Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky | 10.1993 | 24.6 | 2.9% |
| 140C | Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky | 10.1993 | 2.5 | 0.3% |
| 299 | Udorthents, smoothed | | 129.9 | 15.3% |
| 314A | Pipestone sand, 0 to 5 percent slopes | 91.7222 | 36.8 | 4.3% |
| 495 | Natchaug mucky peat, 0 to 2 percent slopes | 7.3000 | 9.1 | 1.1% |
| 538A | Squamscott fine sandy loam, 0 to 5 percent slopes | 28.6840 | 161.0 | 18.9% |
| 599 | Urban land-Hoosic complex, 3 to 15 percent slopes | | 26.6 | 3.1% |
| 657B | Ridgebury fine sandy loam, 3 to 8 percent slopes, very stony | 4.5628 | 12.6 | 1.5% |
| 699 | Urban land | | 224.0 | 26.3% |
| 799 | Urban land-Canton complex, 3 to 15 percent slopes | | 182.2 | 21.4% |
| **Totals for Area of Interest** | | | **851.8** | **100.0%** |

## Rating Options—Saturated Hydraulic Conductivity (Ksat)

*Units of Measure:* micrometers per second

*Aggregation Method:* Dominant Component

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Fastest

*Interpret Nulls as Zero:* No

*Layer Options (Horizon Aggregation Method):* Depth Range (Weighted Average)

*Top Depth:* 0

*Bottom Depth:* 100

*Units of Measure:* Inches

# Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

## Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

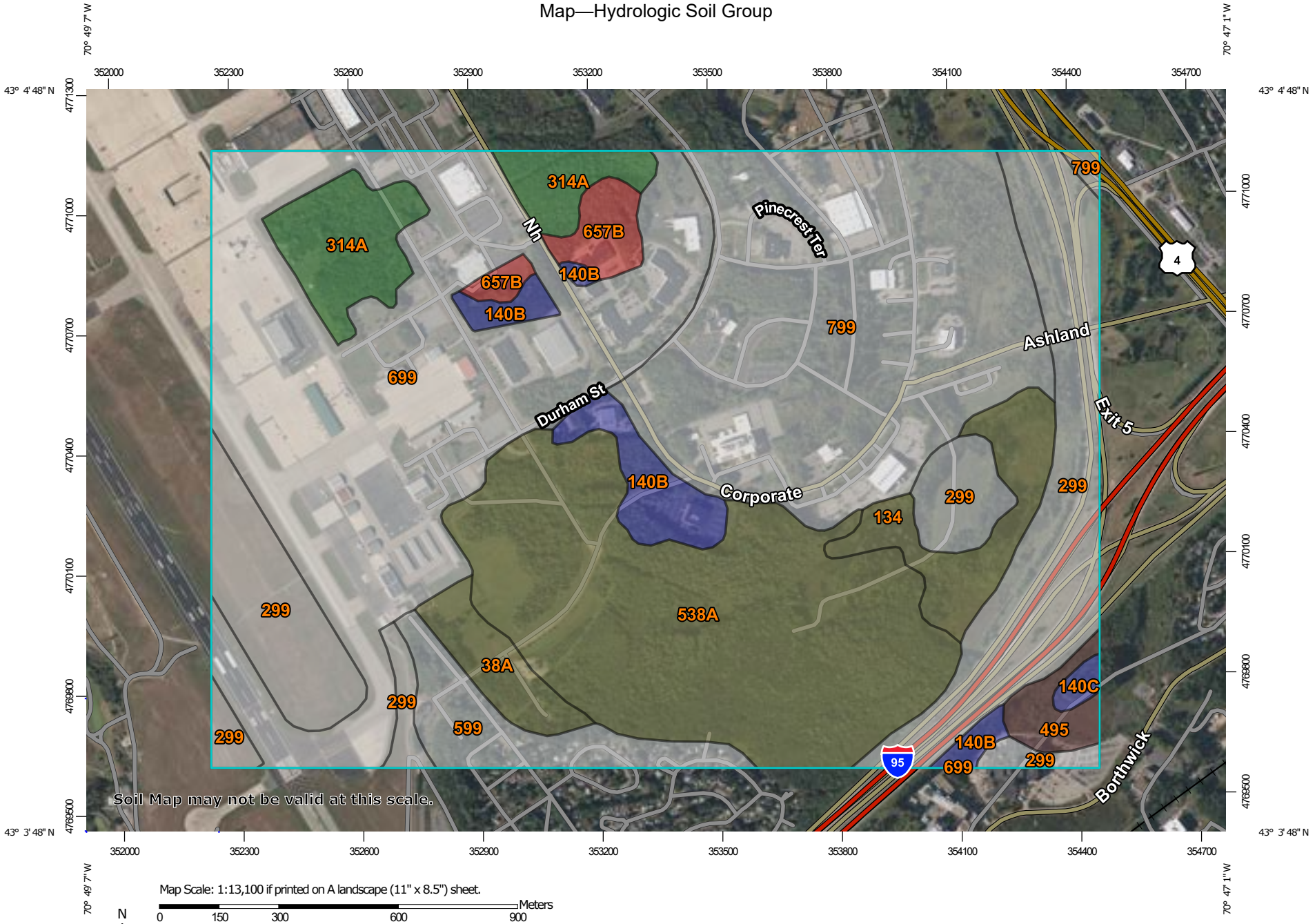
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

# Custom Soil Resource Report
## Map—Hydrologic Soil Group




Map Scale: 1:13,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Lines**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Points**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 25, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Table—Hydrologic Soil Group

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| 38A | Eldridge fine sandy loam, 0 to 3 percent slopes | C/D | 15.2 | 1.8% |
| 134 | Maybid silt loam | C/D | 27.2 | 3.2% |
| 140B | Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky | B | 24.6 | 2.9% |
| 140C | Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky | B | 2.5 | 0.3% |
| 299 | Udorthents, smoothed | | 129.9 | 15.3% |
| 314A | Pipestone sand, 0 to 5 percent slopes | A/D | 36.8 | 4.3% |
| 495 | Natchaug mucky peat, 0 to 2 percent slopes | B/D | 9.1 | 1.1% |
| 538A | Squamscott fine sandy loam, 0 to 5 percent slopes | C/D | 161.0 | 18.9% |
| 599 | Urban land-Hoosic complex, 3 to 15 percent slopes | | 26.6 | 3.1% |
| 657B | Ridgebury fine sandy loam, 3 to 8 percent slopes, very stony | D | 12.6 | 1.5% |
| 699 | Urban land | | 224.0 | 26.3% |
| 799 | Urban land-Canton complex, 3 to 15 percent slopes | | 182.2 | 21.4% |
| **Totals for Area of Interest** | | | **851.8** | **100.0%** |

## Rating Options—Hydrologic Soil Group

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher

## Site Photographs

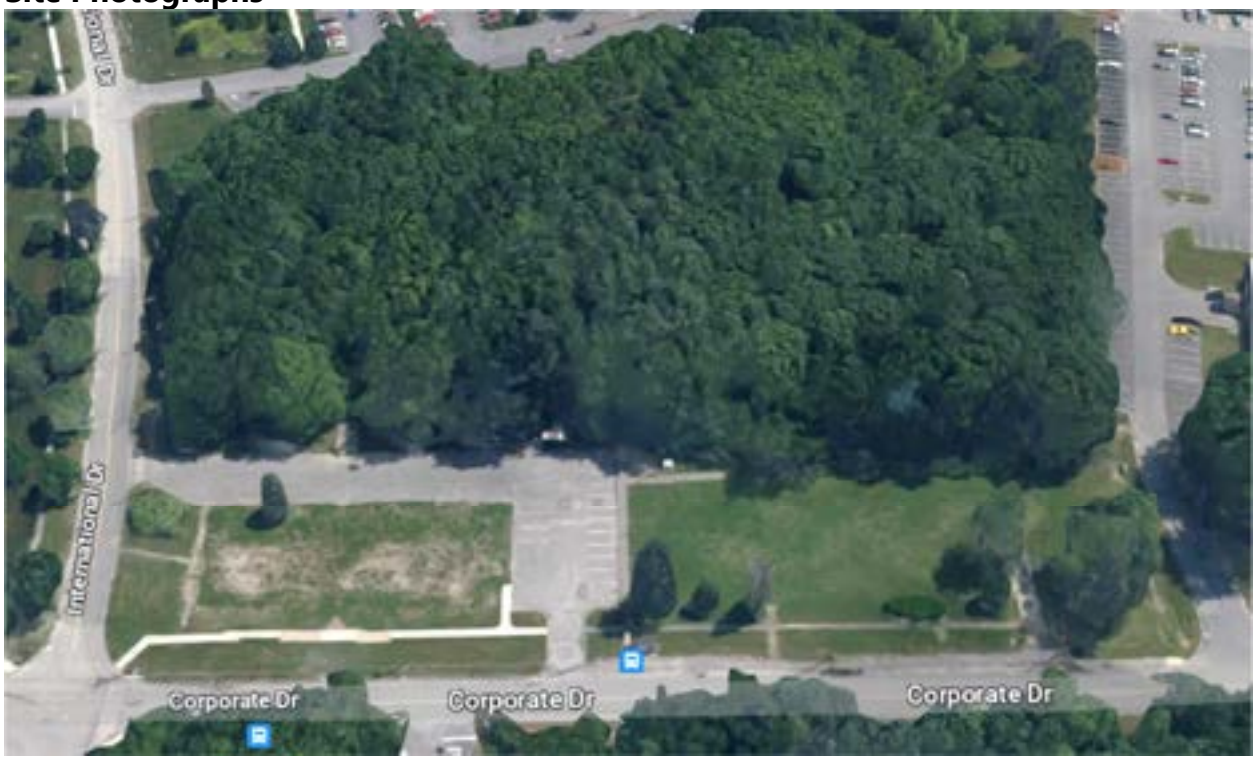



*Image 1 - Aerial Image*

*Image 2 - View from Corporate & International Intersection*

*Image 3 - View from 320 Corporate Drive*

## NHDES Groundwater Recharge Volume Calculations

# GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION
# (Env-Wq 1507.04)

| | | | |
|---|---|---|---|
| | ac | Area of HSG A soil that was replaced by impervious cover | 0.40" |
| 1.72 | ac | Area of HSG B soil that was replaced by impervious cover | 0.25" |
| 0.00 | ac | Area of HSG C soil that was replaced by impervious cover | 0.10" |
| | ac | Area of HSG D soil or impervious cover that was replaced by impervious cover | 0.0" |
| 0.25 | inches | Rd = Weighted groundwater recharge depth | |
| 0.4299 | ac-in | GRV = AI * Rd | |
| 1,561 | cf | GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”) | |

**Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):**

Provided:

Bioretention System 1 = 969 cf

Bioretention System 2 = 436 cf

Bioretention System 3 = 5,898 cf

Bioretention System 4 = 1,089 cf

Infiltration System 1 = 1,582 cf

Infiltration System 2 = 3,340 cf

Infiltration System 3 = 2,057 cf

Total Provided = 15,371 cf > 1,561 cf required

see stage storage spreadsheets in following appendix section

## NHDES BMP Worksheets

# BIORETENTION SYSTEM WITH INTERNAL STORAGE RESERVOIR (UNH Stormwater Center Specification)

**Type/Node Name:** **Bioretention System 1**

Enter the node name in the drainage analysis if applicable.

| | | | |
|---|---|---|---|
| 0.29 | ac | A = Area draining to the practice | |
| 0.19 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.66 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.65 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.19 | ac-in | WQV= 1" x Rv x A | |
| 672 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 67 | cf | 10% x WQV (check calc for sediment forebay) | |
| 168 | cf | 25% x WQV (check calc for water stored in saturated zone) | |
| Sediment Forebay | | Method of Pretreatment | |
| 136 | cf | If pretrt is sed forebay: $V_{SED}$ (sediment forebay volume) | **≥ 10%WQV** |
| 969 | cf | Volume below lowest orifice[1] | **≥ 100%WQV** |
| 191 | cf | Water stored in voids of saturated zone | **≥ 26%WQV** |
| 0.02 | cfs | $2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2] | |
| 59.65 | ft | $E_{WQV}$ = Elevation of WQV (attach stage-storage table) | |
| 0.03 | cfs | $Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table) | **< $2Q_{WQV}$** |
| 12.45 | hours | $T_{ED}$ = Drawdown time of extended detention = $2WQV/Q_{WQV}$ | **≥ 24-hrs** |
| 24.00 | in | Depth of Filter Media | **≥ 18"** |
| 3.00 | :1 | Pond side slopes | **≥ 3:1** |
| N/A | | What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")? | |
| 60.28 | ft | Peak elevation of the 50-year storm event ($E_{50}$) | |
| 61.00 | ft | Berm elevation of the pond | |
| YES | | $E_{50}$ ≤ the berm elevation? | **← yes** |

1. Volume stored above the wetland soil and below the high flow by-pass.

**Designer's Notes:**

## Stage-Area-Storage for Pond FB1: sediment forebay

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 59.00 | 222 | 0 |
| 59.02 | 226 | 4 |
| 59.04 | 230 | 9 |
| 59.06 | 233 | 14 |
| 59.08 | 237 | 18 |
| 59.10 | 241 | 23 |
| 59.12 | 245 | 28 |
| 59.14 | 249 | 33 |
| 59.16 | 253 | 38 |
| 59.18 | 257 | 43 |
| 59.20 | 261 | 48 |
| 59.22 | 265 | 53 |
| 59.24 | 269 | 59 |
| 59.26 | 273 | 64 |
| 59.28 | 277 | 70 |
| 59.30 | 282 | 75 |
| 59.32 | 286 | 81 |
| 59.34 | 290 | 87 |
| 59.36 | 294 | 93 |
| 59.38 | 299 | 99 |
| 59.40 | 303 | 105 |
| 59.42 | 307 | 111 |
| 59.44 | 312 | 117 |
| 59.46 | 316 | 123 |
| 59.48 | 321 | 130 |
| 59.50 | 325 | 136 |
| 59.52 | 330 | 143 |
| 59.54 | 334 | 149 |
| 59.56 | 339 | 156 |
| 59.58 | 344 | 163 |
| 59.60 | 348 | 170 |
| 59.62 | 353 | 177 |
| 59.64 | 358 | 184 |
| 59.66 | 362 | 191 |
| 59.68 | 367 | 198 |
| 59.70 | 372 | 206 |
| 59.72 | 377 | 213 |
| 59.74 | 382 | 221 |
| 59.76 | 387 | 228 |
| 59.78 | 392 | 236 |
| 59.80 | 397 | 244 |
| 59.82 | 402 | 252 |
| 59.84 | 407 | 260 |
| 59.86 | 412 | 268 |
| 59.88 | 417 | 277 |
| 59.90 | 422 | 285 |
| 59.92 | 427 | 293 |
| 59.94 | 432 | 302 |
| 59.96 | 437 | 311 |
| 59.98 | 443 | 320 |
| 60.00 | **448** | **328** |
| 60.02 | 448 | 328 |
| 60.04 | 448 | 328 |
| 60.06 | 448 | 328 |
| 60.08 | 448 | 328 |
| 60.10 | 448 | 328 |
| 60.12 | 448 | 328 |
| 60.14 | 448 | 328 |
| 60.16 | 448 | 328 |
| 60.18 | 448 | 328 |
| 60.20 | 448 | 328 |
| 60.22 | 448 | 328 |
| 60.24 | 448 | 328 |
| 60.26 | 448 | 328 |
| 60.28 | 448 | 328 |
| 60.30 | 448 | 328 |
| 60.32 | 448 | 328 |
| 60.34 | 448 | 328 |
| 60.36 | 448 | 328 |
| 60.38 | 448 | 328 |
| 60.40 | 448 | 328 |
| 60.42 | 448 | 328 |
| 60.44 | 448 | 328 |
| 60.46 | 448 | 328 |
| 60.48 | 448 | 328 |
| 60.50 | 448 | 328 |
| 60.52 | 448 | 328 |
| 60.54 | 448 | 328 |
| 60.56 | 448 | 328 |
| 60.58 | 448 | 328 |
| 60.60 | 448 | 328 |
| 60.62 | 448 | 328 |
| 60.64 | 448 | 328 |
| 60.66 | 448 | 328 |
| 60.68 | 448 | 328 |
| 60.70 | 448 | 328 |
| 60.72 | 448 | 328 |
| 60.74 | 448 | 328 |
| 60.76 | 448 | 328 |
| 60.78 | 448 | 328 |
| 60.80 | 448 | 328 |
| 60.82 | 448 | 328 |
| 60.84 | 448 | 328 |
| 60.86 | 448 | 328 |
| 60.88 | 448 | 328 |
| 60.90 | 448 | 328 |
| 60.92 | 448 | 328 |
| 60.94 | 448 | 328 |
| 60.96 | 448 | 328 |
| 60.98 | 448 | 328 |
| 61.00 | 448 | 328 |

## Stage-Area-Storage for Pond B1: bioretention system 1

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 56.50 | 318 | 0 |
| 56.55 | 325 | 5 |
| 56.60 | 332 | 10 |
| 56.65 | 339 | 14 |
| 56.70 | 346 | 19 |
| 56.75 | 353 | 24 |
| 56.80 | 360 | 29 |
| 56.85 | 367 | 33 |
| 56.90 | 374 | 38 |
| 56.95 | 381 | 43 |
| 57.00 | 388 | 48 |
| 57.05 | 395 | 52 |
| 57.10 | 402 | 57 |
| 57.15 | 409 | 62 |
| 57.20 | 416 | 67 |
| 57.25 | 423 | 72 |
| 57.30 | 430 | 76 |
| 57.35 | 437 | 81 |
| 57.40 | 444 | 86 |
| 57.45 | 451 | 91 |
| 57.50 | 458 | 95 |
| 57.55 | 465 | 100 |
| 57.60 | 472 | 105 |
| 57.65 | 479 | 110 |
| 57.70 | 486 | 114 |
| 57.75 | 493 | 119 |
| 57.80 | 500 | 124 |
| 57.85 | 507 | 129 |
| 57.90 | 514 | 134 |
| 57.95 | 521 | 138 |
| 58.00 | 528 | 143 |
| 58.05 | 535 | 148 |
| 58.10 | 542 | 153 |
| 58.15 | 549 | 157 |
| 58.20 | 556 | 162 |
| 58.25 | 563 | 167 |
| 58.30 | 570 | 172 |
| 58.35 | 577 | 176 |
| 58.40 | 584 | 181 |
| 58.45 | 591 | 186 |
| 58.50 | **598** | 191 |
| 58.55 | 598 | 197 |
| 58.60 | 598 | 204 |
| 58.65 | 598 | 212 |
| 58.70 | 598 | 221 |
| 58.75 | 598 | 231 |
| 58.80 | 598 | 242 |
| 58.85 | 598 | 253 |
| 58.90 | 598 | 266 |
| 58.95 | 598 | 280 |
| 59.00 | 598 | 296 |
| 59.05 | 598 | 312 |
| 59.10 | 598 | 330 |
| 59.15 | 598 | 350 |
| 59.20 | 598 | 371 |
| 59.25 | 598 | 394 |
| 59.30 | 598 | 418 |
| 59.35 | 598 | 444 |
| 59.40 | 598 | 472 |
| 59.45 | 598 | 502 |
| 59.50 | 598 | 534 |
| 59.55 | 598 | 567 |
| 59.60 | 598 | 603 |
| 59.65 | 598 | 641 |
| 59.70 | 598 | 681 |
| 59.75 | 598 | 723 |
| 59.80 | 598 | 768 |
| 59.85 | 598 | 814 |
| 59.90 | 598 | 864 |
| 59.95 | 598 | 915 |
| 60.00 | 598 | 969 |
| 60.05 | 598 | 1,026 |
| 60.10 | 598 | 1,087 |
| 60.15 | 598 | 1,150 |
| 60.20 | 598 | 1,217 |
| 60.25 | 598 | 1,288 |
| 60.30 | 598 | 1,362 |
| 60.35 | 598 | 1,439 |
| 60.40 | 598 | 1,521 |
| 60.45 | 598 | 1,606 |
| 60.50 | 598 | 1,695 |
| 60.55 | 598 | 1,788 |
| 60.60 | 598 | 1,886 |
| 60.65 | 598 | 1,987 |
| 60.70 | 598 | 2,093 |
| 60.75 | 598 | 2,203 |
| 60.80 | 598 | 2,318 |
| 60.85 | 598 | 2,437 |
| 60.90 | 598 | 2,561 |
| 60.95 | 598 | 2,689 |
| 61.00 | 598 | **2,822** |

## Stage-Discharge for Pond B1: bioretention system 1

| Elevation (feet) | Discharge (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|
| 56.50 | 0.00 | 0.00 | 0.00 |
| 56.55 | 0.01 | 0.01 | 0.00 |
| 56.60 | 0.01 | 0.01 | 0.00 |
| 56.65 | 0.01 | 0.01 | 0.00 |
| 56.70 | 0.01 | 0.01 | 0.00 |
| 56.75 | 0.01 | 0.01 | 0.00 |
| 56.80 | 0.01 | 0.01 | 0.00 |
| 56.85 | 0.01 | 0.01 | 0.00 |
| 56.90 | 0.01 | 0.01 | 0.00 |
| 56.95 | 0.01 | 0.01 | 0.00 |
| 57.00 | 0.01 | 0.01 | 0.00 |
| 57.05 | 0.01 | 0.01 | 0.00 |
| 57.10 | 0.01 | 0.01 | 0.00 |
| 57.15 | 0.01 | 0.01 | 0.00 |
| 57.20 | 0.01 | 0.01 | 0.00 |
| 57.25 | 0.01 | 0.01 | 0.00 |
| 57.30 | 0.01 | 0.01 | 0.00 |
| 57.35 | 0.01 | 0.01 | 0.00 |
| 57.40 | 0.01 | 0.01 | 0.00 |
| 57.45 | 0.01 | 0.01 | 0.00 |
| 57.50 | 0.01 | 0.01 | 0.00 |
| 57.55 | 0.01 | 0.01 | 0.00 |
| 57.60 | 0.01 | 0.01 | 0.00 |
| 57.65 | 0.01 | 0.01 | 0.00 |
| 57.70 | 0.01 | 0.01 | 0.00 |
| 57.75 | 0.01 | 0.01 | 0.00 |
| 57.80 | 0.01 | 0.01 | 0.00 |
| 57.85 | 0.02 | 0.02 | 0.00 |
| 57.90 | 0.02 | 0.02 | 0.00 |
| 57.95 | 0.02 | 0.02 | 0.00 |
| 58.00 | 0.02 | 0.02 | 0.00 |
| 58.05 | 0.02 | 0.02 | 0.00 |
| 58.10 | 0.02 | 0.02 | 0.00 |
| 58.15 | 0.02 | 0.02 | 0.00 |
| 58.20 | 0.02 | 0.02 | 0.00 |
| 58.25 | 0.02 | 0.02 | 0.00 |
| 58.30 | 0.02 | 0.02 | 0.00 |
| 58.35 | 0.02 | 0.02 | 0.00 |
| 58.40 | 0.02 | 0.02 | 0.00 |
| 58.45 | 0.02 | 0.02 | 0.00 |
| 58.50 | 0.02 | 0.02 | 0.00 |
| 58.55 | 0.02 | 0.02 | 0.00 |
| 58.60 | 0.02 | 0.02 | 0.00 |
| 58.65 | 0.02 | 0.02 | 0.00 |
| 58.70 | 0.02 | 0.02 | 0.00 |
| 58.75 | 0.02 | 0.02 | 0.00 |
| 58.80 | 0.02 | 0.02 | 0.00 |
| 58.85 | 0.02 | 0.02 | 0.00 |
| 58.90 | 0.02 | 0.02 | 0.00 |
| 58.95 | 0.02 | 0.02 | 0.00 |
| 59.00 | 0.02 | 0.02 | 0.00 |
| 59.05 | 0.02 | 0.02 | 0.00 |
| 59.10 | 0.02 | 0.02 | 0.00 |
| 59.15 | 0.02 | 0.02 | 0.00 |
| 59.20 | 0.02 | 0.02 | 0.00 |
| 59.25 | 0.03 | 0.03 | 0.00 |
| 59.30 | 0.03 | 0.03 | 0.00 |
| 59.35 | 0.03 | 0.03 | 0.00 |
| 59.40 | 0.03 | 0.03 | 0.00 |
| 59.45 | 0.03 | 0.03 | 0.00 |
| 59.50 | 0.03 | 0.03 | 0.00 |
| 59.55 | 0.03 | 0.03 | 0.00 |
| 59.60 | 0.03 | 0.03 | 0.00 |
| 59.65 | 0.03 | 0.03 | 0.00 |
| 59.70 | 0.03 | 0.03 | 0.00 |
| 59.75 | 0.03 | 0.03 | 0.00 |
| 59.80 | 0.03 | 0.03 | 0.00 |
| 59.85 | 0.03 | 0.03 | 0.00 |
| 59.90 | 0.03 | 0.03 | 0.00 |
| 59.95 | 0.03 | 0.03 | 0.00 |
| 60.00 | 0.03 | 0.03 | 0.00 |
| 60.05 | 0.17 | 0.03 | 0.14 |
| 60.10 | 0.44 | 0.03 | 0.41 |
| 60.15 | 0.78 | 0.03 | 0.75 |
| 60.20 | 1.18 | 0.03 | 1.15 |
| 60.25 | 1.64 | 0.03 | 1.61 |
| 60.30 | 2.14 | 0.03 | 2.11 |
| 60.35 | 2.29 | 0.03 | 2.25 |
| 60.40 | 2.32 | 0.03 | 2.28 |
| 60.45 | 2.35 | 0.03 | 2.31 |
| 60.50 | 2.38 | 0.03 | 2.35 |
| 60.55 | 2.41 | 0.03 | 2.37 |
| 60.60 | 2.44 | 0.03 | 2.40 |
| 60.65 | 2.47 | 0.03 | 2.43 |
| 60.70 | 2.50 | 0.03 | 2.46 |
| 60.75 | 2.53 | 0.03 | 2.49 |
| 60.80 | 2.55 | 0.03 | 2.52 |
| 60.85 | 2.58 | 0.04 | 2.55 |
| 60.90 | 2.61 | 0.04 | 2.57 |
| 60.95 | 2.64 | 0.04 | 2.60 |
| 61.00 | **2.67** | **0.04** | **2.63** |

# BIORETENTION SYSTEM WITH INTERNAL STORAGE RESERVOIR
# (UNH Stormwater Center Specification)

**Type/Node Name:** **Bioretention System 2**

Enter the node name in the drainage analysis if applicable.

| | | | |
|---|---|---|---|
| 0.14 | ac | A = Area draining to the practice | |
| 0.11 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.76 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.73 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.11 | ac-in | WQV= 1" x Rv x A | |
| 384 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 38 | cf | 10% x WQV (check calc for sediment forebay) | |
| 96 | cf | 25% x WQV (check calc for water stored in saturated zone) | |
| Sediment Forebay | | Method of Pretreatment | |
| 54 | cf | If pretrt is sed forebay: $V_{SED}$ (sediment forebay volume) | **≥ 10%WQV** |
| 436 | cf | Volume below lowest orifice[1] | **≥ 100%WQV** |
| 155 | cf | Water stored in voids of saturated zone | **≥ 26%WQV** |
| 0.01 | cfs | $2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2] | |
| 60.40 | ft | $E_{WQV}$ = Elevation of WQV (attach stage-storage table) | |
| 0.02 | cfs | $Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table) | **< $2Q_{WQV}$** |
| 10.68 | hours | $T_{ED}$ = Drawdown time of extended detention = $2WQV/Q_{WQV}$ | **≥ 24-hrs** |
| 24.00 | in | Depth of Filter Media | **≥ 18"** |
| 3.00 | :1 | Pond side slopes | **≥ 3:1** |
| N/A | | What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")? | |
| 60.96 | ft | Peak elevation of the 50-year storm event ($E_{50}$) | |
| 61.00 | ft | Berm elevation of the pond | |
| YES | | $E_{50}$ ≤ the berm elevation? | **← yes** |

1. Volume stored above the wetland soil and below the high flow by-pass.

**Designer's Notes:**

## Stage-Area-Storage for Pond FB2: sediment forebay

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 59.50 | 1 | 0 |
| 59.52 | 1 | 0 |
| 59.54 | 2 | 0 |
| 59.56 | 2 | 0 |
| 59.58 | 3 | 0 |
| 59.60 | 4 | 0 |
| 59.62 | 5 | 0 |
| 59.64 | 6 | 0 |
| 59.66 | 6 | 1 |
| 59.68 | 8 | 1 |
| 59.70 | 9 | 1 |
| 59.72 | 10 | 1 |
| 59.74 | 11 | 1 |
| 59.76 | 12 | 1 |
| 59.78 | 14 | 2 |
| 59.80 | 15 | 2 |
| 59.82 | 17 | 2 |
| 59.84 | 18 | 3 |
| 59.86 | 20 | 3 |
| 59.88 | 22 | 3 |
| 59.90 | 24 | 4 |
| 59.92 | 26 | 4 |
| 59.94 | 28 | 5 |
| 59.96 | 30 | 6 |
| 59.98 | 32 | 6 |
| 60.00 | 34 | 7 |
| 60.02 | 36 | 8 |
| 60.04 | 37 | 8 |
| 60.06 | 39 | 9 |
| 60.08 | 40 | 10 |
| 60.10 | 42 | 11 |
| 60.12 | 44 | 11 |
| 60.14 | 45 | 12 |
| 60.16 | 47 | 13 |
| 60.18 | 49 | 14 |
| 60.20 | 51 | 15 |
| 60.22 | 53 | 16 |
| 60.24 | 55 | 17 |
| 60.26 | 57 | 18 |
| 60.28 | 59 | 20 |
| 60.30 | 61 | 21 |
| 60.32 | 63 | 22 |
| 60.34 | 65 | 23 |
| 60.36 | 67 | 25 |
| 60.38 | 69 | 26 |
| 60.40 | 71 | 27 |
| 60.42 | 73 | 29 |
| 60.44 | 76 | 30 |
| 60.46 | 78 | 32 |
| 60.48 | 80 | 33 |
| 60.50 | 82 | 35 |
| 60.52 | 85 | 37 |
| 60.54 | 87 | 38 |
| 60.56 | 90 | 40 |
| 60.58 | 92 | 42 |
| 60.60 | 95 | 44 |
| 60.62 | 97 | 46 |
| 60.64 | 100 | 48 |
| 60.66 | 102 | 50 |
| 60.68 | 105 | 52 |
| 60.70 | 108 | 54 |
| 60.72 | 110 | 56 |
| 60.74 | 113 | 58 |
| 60.76 | 116 | 61 |
| 60.78 | 119 | 63 |
| 60.80 | 122 | 65 |
| 60.82 | 125 | 68 |
| 60.84 | 127 | 70 |
| 60.86 | 130 | 73 |
| 60.88 | 133 | 76 |
| 60.90 | 136 | 78 |
| 60.92 | 139 | 81 |
| 60.94 | 143 | 84 |
| 60.96 | 146 | 87 |
| 60.98 | 149 | 90 |
| 61.00 | **152** | **93** |

## Stage-Area-Storage for Pond B2: bioretention system 2

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 57.50 | 258 | 0 |
| 57.55 | 264 | 4 |
| 57.60 | 269 | 8 |
| 57.65 | 275 | 12 |
| 57.70 | 281 | 15 |
| 57.75 | 287 | 19 |
| 57.80 | 292 | 23 |
| 57.85 | 298 | 27 |
| 57.90 | 304 | 31 |
| 57.95 | 309 | 35 |
| 58.00 | 315 | 39 |
| 58.05 | 321 | 43 |
| 58.10 | 326 | 46 |
| 58.15 | 332 | 50 |
| 58.20 | 338 | 54 |
| 58.25 | 344 | 58 |
| 58.30 | 349 | 62 |
| 58.35 | 355 | 66 |
| 58.40 | 361 | 70 |
| 58.45 | 366 | 74 |
| 58.50 | 372 | 77 |
| 58.55 | 378 | 81 |
| 58.60 | 383 | 85 |
| 58.65 | 389 | 89 |
| 58.70 | 395 | 93 |
| 58.75 | 401 | 97 |
| 58.80 | 406 | 101 |
| 58.85 | 412 | 104 |
| 58.90 | 418 | 108 |
| 58.95 | 423 | 112 |
| 59.00 | 429 | 116 |
| 59.05 | 435 | 120 |
| 59.10 | 440 | 124 |
| 59.15 | 446 | 128 |
| 59.20 | 452 | 132 |
| 59.25 | 458 | 135 |
| 59.30 | 463 | 139 |
| 59.35 | 469 | 143 |
| 59.40 | 475 | 147 |
| 59.45 | 480 | 151 |
| 59.50 | **486** | 155 |
| 59.55 | 486 | 160 |
| 59.60 | 486 | 166 |
| 59.65 | 486 | 172 |
| 59.70 | 486 | 180 |
| 59.75 | 486 | 188 |
| 59.80 | 486 | 197 |
| 59.85 | 486 | 206 |
| 59.90 | 486 | 217 |
| 59.95 | 486 | 228 |
| 60.00 | 486 | 241 |
| 60.05 | 486 | 254 |
| 60.10 | 486 | 269 |
| 60.15 | 486 | 285 |
| 60.20 | 486 | 302 |
| 60.25 | 486 | 321 |
| 60.30 | 486 | 341 |
| 60.35 | 486 | 362 |
| 60.40 | 486 | 385 |
| 60.45 | 486 | 410 |
| 60.50 | 486 | 436 |
| 60.55 | 486 | 464 |
| 60.60 | 486 | 494 |
| 60.65 | 486 | 525 |
| 60.70 | 486 | 559 |
| 60.75 | 486 | 594 |
| 60.80 | 486 | 631 |
| 60.85 | 486 | 670 |
| 60.90 | 486 | 711 |
| 60.95 | 486 | 755 |
| 61.00 | 486 | **800** |
| 61.05 | 486 | 800 |
| 61.10 | 486 | 800 |
| 61.15 | 486 | 800 |
| 61.20 | 486 | 800 |
| 61.25 | 486 | 800 |
| 61.30 | 486 | 800 |
| 61.35 | 486 | 800 |
| 61.40 | 486 | 800 |
| 61.45 | 486 | 800 |
| 61.50 | 486 | 800 |
| 61.55 | 486 | 800 |
| 61.60 | 486 | 800 |
| 61.65 | 486 | 800 |
| 61.70 | 486 | 800 |
| 61.75 | 486 | 800 |

## Stage-Discharge for Pond B2: bioretention system 2

| Elevation (feet) | Discharge (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|
| 57.50 | 0.00 | 0.00 | 0.00 |
| 57.55 | 0.00 | 0.00 | 0.00 |
| 57.60 | 0.00 | 0.00 | 0.00 |
| 57.65 | 0.00 | 0.00 | 0.00 |
| 57.70 | 0.01 | 0.01 | 0.00 |
| 57.75 | 0.01 | 0.01 | 0.00 |
| 57.80 | 0.01 | 0.01 | 0.00 |
| 57.85 | 0.01 | 0.01 | 0.00 |
| 57.90 | 0.01 | 0.01 | 0.00 |
| 57.95 | 0.01 | 0.01 | 0.00 |
| 58.00 | 0.01 | 0.01 | 0.00 |
| 58.05 | 0.01 | 0.01 | 0.00 |
| 58.10 | 0.01 | 0.01 | 0.00 |
| 58.15 | 0.01 | 0.01 | 0.00 |
| 58.20 | 0.01 | 0.01 | 0.00 |
| 58.25 | 0.01 | 0.01 | 0.00 |
| 58.30 | 0.01 | 0.01 | 0.00 |
| 58.35 | 0.01 | 0.01 | 0.00 |
| 58.40 | 0.01 | 0.01 | 0.00 |
| 58.45 | 0.01 | 0.01 | 0.00 |
| 58.50 | 0.01 | 0.01 | 0.00 |
| 58.55 | 0.01 | 0.01 | 0.00 |
| 58.60 | 0.01 | 0.01 | 0.00 |
| 58.65 | 0.01 | 0.01 | 0.00 |
| 58.70 | 0.01 | 0.01 | 0.00 |
| 58.75 | 0.01 | 0.01 | 0.00 |
| 58.80 | 0.01 | 0.01 | 0.00 |
| 58.85 | 0.01 | 0.01 | 0.00 |
| 58.90 | 0.01 | 0.01 | 0.00 |
| 58.95 | 0.01 | 0.01 | 0.00 |
| 59.00 | 0.01 | 0.01 | 0.00 |
| 59.05 | 0.01 | 0.01 | 0.00 |
| 59.10 | 0.01 | 0.01 | 0.00 |
| 59.15 | 0.01 | 0.01 | 0.00 |
| 59.20 | 0.01 | 0.01 | 0.00 |
| 59.25 | 0.01 | 0.01 | 0.00 |
| 59.30 | 0.01 | 0.01 | 0.00 |
| 59.35 | 0.01 | 0.01 | 0.00 |
| 59.40 | 0.01 | 0.01 | 0.00 |
| 59.45 | 0.01 | 0.01 | 0.00 |
| 59.50 | 0.01 | 0.01 | 0.00 |
| 59.55 | 0.01 | 0.01 | 0.00 |
| 59.60 | 0.01 | 0.01 | 0.00 |
| 59.65 | 0.01 | 0.01 | 0.00 |
| 59.70 | 0.01 | 0.01 | 0.00 |
| 59.75 | 0.01 | 0.01 | 0.00 |
| 59.80 | 0.01 | 0.01 | 0.00 |
| 59.85 | 0.01 | 0.01 | 0.00 |
| 59.90 | 0.01 | 0.01 | 0.00 |
| 59.95 | 0.01 | 0.01 | 0.00 |
| 60.00 | 0.01 | 0.01 | 0.00 |
| 60.05 | 0.01 | 0.01 | 0.00 |
| 60.10 | 0.01 | 0.01 | 0.00 |
| 60.15 | 0.02 | 0.02 | 0.00 |
| 60.20 | 0.02 | 0.02 | 0.00 |
| 60.25 | 0.02 | 0.02 | 0.00 |
| 60.30 | 0.02 | 0.02 | 0.00 |
| 60.35 | 0.02 | 0.02 | 0.00 |
| 60.40 | 0.02 | 0.02 | 0.00 |
| 60.45 | 0.02 | 0.02 | 0.00 |
| 60.50 | 0.02 | 0.02 | 0.00 |
| 60.55 | 0.03 | 0.02 | 0.01 |
| 60.60 | 0.07 | 0.02 | 0.05 |
| 60.65 | 0.13 | 0.02 | 0.11 |
| 60.70 | 0.21 | 0.02 | 0.19 |
| 60.75 | 0.31 | 0.02 | 0.30 |
| 60.80 | 0.44 | 0.02 | 0.42 |
| 60.85 | 0.58 | 0.02 | 0.57 |
| 60.90 | 0.75 | 0.02 | 0.73 |
| 60.95 | 0.93 | 0.02 | 0.91 |
| 61.00 | 1.12 | 0.02 | 1.10 |
| 61.05 | 1.33 | 0.02 | 1.31 |
| 61.10 | 1.55 | 0.02 | 1.54 |
| 61.15 | 1.79 | 0.02 | 1.77 |
| 61.20 | 1.89 | 0.02 | 1.87 |
| 61.25 | 1.91 | 0.02 | 1.89 |
| 61.30 | 1.92 | 0.02 | 1.90 |
| 61.35 | 1.94 | 0.02 | 1.92 |
| 61.40 | 1.95 | 0.02 | 1.93 |
| 61.45 | 1.97 | 0.02 | 1.95 |
| 61.50 | 1.98 | 0.02 | 1.96 |
| 61.55 | 2.00 | 0.02 | 1.98 |
| 61.60 | 2.01 | 0.02 | 1.99 |
| 61.65 | 2.03 | 0.02 | 2.01 |
| 61.70 | 2.04 | 0.02 | 2.02 |
| 61.75 | **2.06** | **0.02** | **2.04** |

# BIORETENTION SYSTEM WITH INTERNAL STORAGE RESERVOIR
# (UNH Stormwater Center Specification)

**Type/Node Name:** **Bioretention System 3**

Enter the node name in the drainage analysis if applicable.

| | | | |
|---|---|---|---|
| 0.57 | ac | A = Area draining to the practice | |
| 0.37 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.65 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.64 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.36 | ac-in | WQV= 1" x Rv x A | |
| 1,324 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 132 | cf | 10% x WQV (check calc for sediment forebay) | |
| 331 | cf | 25% x WQV (check calc for water stored in saturated zone) | |
| Sediment Forebay | | Method of Pretreatment | |
| 198 | cf | If pretrt is sed forebay: $V_{SED}$ (sediment forebay volume) | **≥ 10%WQV** |
| 5,898 | cf | Volume below lowest orifice[1] | **≥ 100%WQV** |
| 983 | cf | Water stored in voids of saturated zone | **≥ 26%WQV** |
| 0.03 | cfs | $2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2] | |
| 59.20 | ft | $E_{WQV}$ = Elevation of WQV (attach stage-storage table) | |
| 0.08 | cfs | $Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table) | **< $2Q_{WQV}$** |
| 9.19 | hours | $T_{ED}$ = Drawdown time of extended detention = $2WQV/Q_{WQV}$ | **≥ 24-hrs** |
| 24.00 | in | Depth of Filter Media | **≥ 18"** |
| 3.00 | :1 | Pond side slopes | **≥ 3:1** |
| N/A | | What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")? | |
| 60.97 | ft | Peak elevation of the 50-year storm event ($E_{50}$) | |
| 61.00 | ft | Berm elevation of the pond | |
| YES | | $E_{50}$ ≤ the berm elevation? | **← yes** |

1. Volume stored above the wetland soil and below the high flow by-pass.

**Designer's Notes:**

## Stage-Area-Storage for Pond FB3: sediment forebay

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 59.00 | 340 | 0 |
| 59.02 | 344 | 7 |
| 59.04 | 349 | 14 |
| 59.06 | 353 | 21 |
| 59.08 | 357 | 28 |
| 59.10 | 362 | 35 |
| 59.12 | 366 | 42 |
| 59.14 | 370 | 50 |
| 59.16 | 375 | 57 |
| 59.18 | 379 | 65 |
| 59.20 | 384 | 72 |
| 59.22 | 388 | 80 |
| 59.24 | 393 | 88 |
| 59.26 | 398 | 96 |
| 59.28 | 402 | 104 |
| 59.30 | 407 | 112 |
| 59.32 | 411 | 120 |
| 59.34 | 416 | 128 |
| 59.36 | 421 | 137 |
| 59.38 | 426 | 145 |
| 59.40 | 430 | 154 |
| 59.42 | 435 | 162 |
| 59.44 | 440 | 171 |
| 59.46 | 445 | 180 |
| 59.48 | 450 | 189 |
| 59.50 | 455 | 198 |
| 59.52 | 460 | 207 |
| 59.54 | 465 | 216 |
| 59.56 | 470 | 226 |
| 59.58 | 475 | 235 |
| 59.60 | 480 | 245 |
| 59.62 | 485 | 254 |
| 59.64 | 490 | 264 |
| 59.66 | 495 | 274 |
| 59.68 | 500 | 284 |
| 59.70 | 505 | 294 |
| 59.72 | 510 | 304 |
| 59.74 | 516 | 314 |
| 59.76 | 521 | 325 |
| 59.78 | 526 | 335 |
| 59.80 | 531 | 346 |
| 59.82 | 537 | 356 |
| 59.84 | 542 | 367 |
| 59.86 | 548 | 378 |
| 59.88 | 553 | 389 |
| 59.90 | 558 | 400 |
| 59.92 | 564 | 411 |
| 59.94 | 569 | 423 |
| 59.96 | 575 | 434 |
| 59.98 | 580 | 446 |
| 60.00 | **586** | **457** |
| 60.02 | 586 | 457 |
| 60.04 | 586 | 457 |
| 60.06 | 586 | 457 |
| 60.08 | 586 | 457 |
| 60.10 | 586 | 457 |
| 60.12 | 586 | 457 |
| 60.14 | 586 | 457 |
| 60.16 | 586 | 457 |
| 60.18 | 586 | 457 |
| 60.20 | 586 | 457 |
| 60.22 | 586 | 457 |
| 60.24 | 586 | 457 |
| 60.26 | 586 | 457 |
| 60.28 | 586 | 457 |
| 60.30 | 586 | 457 |
| 60.32 | 586 | 457 |
| 60.34 | 586 | 457 |
| 60.36 | 586 | 457 |
| 60.38 | 586 | 457 |
| 60.40 | 586 | 457 |
| 60.42 | 586 | 457 |
| 60.44 | 586 | 457 |
| 60.46 | 586 | 457 |
| 60.48 | 586 | 457 |
| 60.50 | 586 | 457 |
| 60.52 | 586 | 457 |
| 60.54 | 586 | 457 |
| 60.56 | 586 | 457 |
| 60.58 | 586 | 457 |
| 60.60 | 586 | 457 |
| 60.62 | 586 | 457 |
| 60.64 | 586 | 457 |
| 60.66 | 586 | 457 |
| 60.68 | 586 | 457 |
| 60.70 | 586 | 457 |
| 60.72 | 586 | 457 |
| 60.74 | 586 | 457 |
| 60.76 | 586 | 457 |
| 60.78 | 586 | 457 |
| 60.80 | 586 | 457 |
| 60.82 | 586 | 457 |
| 60.84 | 586 | 457 |
| 60.86 | 586 | 457 |
| 60.88 | 586 | 457 |
| 60.90 | 586 | 457 |
| 60.92 | 586 | 457 |
| 60.94 | 586 | 457 |
| 60.96 | 586 | 457 |
| 60.98 | 586 | 457 |
| 61.00 | 586 | 457 |

## Stage-Area-Storage for Pond B3: bioretention system 3

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 57.00 | 1,639 | 0 |
| 57.05 | 1,648 | 25 |
| 57.10 | 1,657 | 49 |
| 57.15 | 1,667 | 74 |
| 57.20 | 1,676 | 98 |
| 57.25 | 1,685 | 123 |
| 57.30 | 1,694 | 148 |
| 57.35 | 1,703 | 172 |
| 57.40 | 1,713 | 197 |
| 57.45 | 1,722 | 221 |
| 57.50 | 1,731 | 246 |
| 57.55 | 1,740 | 270 |
| 57.60 | 1,749 | 295 |
| 57.65 | 1,759 | 320 |
| 57.70 | 1,768 | 344 |
| 57.75 | 1,777 | 369 |
| 57.80 | 1,786 | 393 |
| 57.85 | 1,795 | 418 |
| 57.90 | 1,805 | 443 |
| 57.95 | 1,814 | 467 |
| 58.00 | 1,823 | 492 |
| 58.05 | 1,832 | 516 |
| 58.10 | 1,841 | 541 |
| 58.15 | 1,851 | 565 |
| 58.20 | 1,860 | 590 |
| 58.25 | 1,869 | 615 |
| 58.30 | 1,878 | 639 |
| 58.35 | 1,887 | 664 |
| 58.40 | 1,897 | 688 |
| 58.45 | 1,906 | 713 |
| 58.50 | 1,915 | 738 |
| 58.55 | 1,924 | 762 |
| 58.60 | 1,933 | 787 |
| 58.65 | 1,943 | 811 |
| 58.70 | 1,952 | 836 |
| 58.75 | 1,961 | 860 |
| 58.80 | 1,970 | 885 |
| 58.85 | 1,979 | 910 |
| 58.90 | 1,989 | 934 |
| 58.95 | 1,998 | 959 |
| 59.00 | **2,007** | 983 |
| 59.05 | 2,007 | 1,066 |
| 59.10 | 2,007 | 1,152 |
| 59.15 | 2,007 | 1,239 |
| 59.20 | 2,007 | 1,328 |
| 59.25 | 2,007 | 1,420 |
| 59.30 | 2,007 | 1,514 |
| 59.35 | 2,007 | 1,610 |
| 59.40 | 2,007 | 1,708 |
| 59.45 | 2,007 | 1,809 |
| 59.50 | 2,007 | 1,912 |
| 59.55 | 2,007 | 2,017 |
| 59.60 | 2,007 | 2,125 |
| 59.65 | 2,007 | 2,235 |
| 59.70 | 2,007 | 2,347 |
| 59.75 | 2,007 | 2,462 |
| 59.80 | 2,007 | 2,580 |
| 59.85 | 2,007 | 2,700 |
| 59.90 | 2,007 | 2,822 |
| 59.95 | 2,007 | 2,947 |
| 60.00 | 2,007 | 3,075 |
| 60.05 | 2,007 | 3,207 |
| 60.10 | 2,007 | 3,344 |
| 60.15 | 2,007 | 3,487 |
| 60.20 | 2,007 | 3,635 |
| 60.25 | 2,007 | 3,789 |
| 60.30 | 2,007 | 3,949 |
| 60.35 | 2,007 | 4,115 |
| 60.40 | 2,007 | 4,287 |
| 60.45 | 2,007 | 4,466 |
| 60.50 | 2,007 | 4,650 |
| 60.55 | 2,007 | 4,842 |
| 60.60 | 2,007 | 5,039 |
| 60.65 | 2,007 | 5,244 |
| 60.70 | 2,007 | 5,455 |
| 60.75 | 2,007 | 5,673 |
| 60.80 | 2,007 | 5,898 |
| 60.85 | 2,007 | 6,130 |
| 60.90 | 2,007 | 6,369 |
| 60.95 | 2,007 | 6,616 |
| 61.00 | 2,007 | **6,870** |

## Stage-Discharge for Pond B3: bioretention system 3

| Elevation (feet) | Discharge (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|
| 57.00 | 0.00 | 0.00 | 0.00 |
| 57.05 | 0.03 | 0.03 | 0.00 |
| 57.10 | 0.03 | 0.03 | 0.00 |
| 57.15 | 0.03 | 0.03 | 0.00 |
| 57.20 | 0.03 | 0.03 | 0.00 |
| 57.25 | 0.03 | 0.03 | 0.00 |
| 57.30 | 0.03 | 0.03 | 0.00 |
| 57.35 | 0.03 | 0.03 | 0.00 |
| 57.40 | 0.04 | 0.04 | 0.00 |
| 57.45 | 0.04 | 0.04 | 0.00 |
| 57.50 | 0.04 | 0.04 | 0.00 |
| 57.55 | 0.04 | 0.04 | 0.00 |
| 57.60 | 0.04 | 0.04 | 0.00 |
| 57.65 | 0.04 | 0.04 | 0.00 |
| 57.70 | 0.04 | 0.04 | 0.00 |
| 57.75 | 0.04 | 0.04 | 0.00 |
| 57.80 | 0.04 | 0.04 | 0.00 |
| 57.85 | 0.05 | 0.05 | 0.00 |
| 57.90 | 0.05 | 0.05 | 0.00 |
| 57.95 | 0.05 | 0.05 | 0.00 |
| 58.00 | 0.05 | 0.05 | 0.00 |
| 58.05 | 0.05 | 0.05 | 0.00 |
| 58.10 | 0.05 | 0.05 | 0.00 |
| 58.15 | 0.05 | 0.05 | 0.00 |
| 58.20 | 0.05 | 0.05 | 0.00 |
| 58.25 | 0.06 | 0.06 | 0.00 |
| 58.30 | 0.06 | 0.06 | 0.00 |
| 58.35 | 0.06 | 0.06 | 0.00 |
| 58.40 | 0.06 | 0.06 | 0.00 |
| 58.45 | 0.06 | 0.06 | 0.00 |
| 58.50 | 0.06 | 0.06 | 0.00 |
| 58.55 | 0.06 | 0.06 | 0.00 |
| 58.60 | 0.06 | 0.06 | 0.00 |
| 58.65 | 0.06 | 0.06 | 0.00 |
| 58.70 | 0.07 | 0.07 | 0.00 |
| 58.75 | 0.07 | 0.07 | 0.00 |
| 58.80 | 0.07 | 0.07 | 0.00 |
| 58.85 | 0.07 | 0.07 | 0.00 |
| 58.90 | 0.07 | 0.07 | 0.00 |
| 58.95 | 0.07 | 0.07 | 0.00 |
| 59.00 | 0.07 | 0.07 | 0.00 |
| 59.05 | 0.07 | 0.07 | 0.00 |
| 59.10 | 0.07 | 0.07 | 0.00 |
| 59.15 | 0.08 | 0.08 | 0.00 |
| 59.20 | 0.08 | 0.08 | 0.00 |
| 59.25 | 0.08 | 0.08 | 0.00 |
| 59.30 | 0.08 | 0.08 | 0.00 |
| 59.35 | 0.08 | 0.08 | 0.00 |
| 59.40 | 0.08 | 0.08 | 0.00 |
| 59.45 | 0.08 | 0.08 | 0.00 |
| 59.50 | 0.08 | 0.08 | 0.00 |
| 59.55 | 0.08 | 0.08 | 0.00 |
| 59.60 | 0.09 | 0.09 | 0.00 |
| 59.65 | 0.09 | 0.09 | 0.00 |
| 59.70 | 0.09 | 0.09 | 0.00 |
| 59.75 | 0.09 | 0.09 | 0.00 |
| 59.80 | 0.09 | 0.09 | 0.00 |
| 59.85 | 0.09 | 0.09 | 0.00 |
| 59.90 | 0.09 | 0.09 | 0.00 |
| 59.95 | 0.09 | 0.09 | 0.00 |
| 60.00 | 0.09 | 0.09 | 0.00 |
| 60.05 | 0.09 | 0.09 | 0.00 |
| 60.10 | 0.10 | 0.10 | 0.00 |
| 60.15 | 0.10 | 0.10 | 0.00 |
| 60.20 | 0.10 | 0.10 | 0.00 |
| 60.25 | 0.10 | 0.10 | 0.00 |
| 60.30 | 0.10 | 0.10 | 0.00 |
| 60.35 | 0.10 | 0.10 | 0.00 |
| 60.40 | 0.10 | 0.10 | 0.00 |
| 60.45 | 0.10 | 0.10 | 0.00 |
| 60.50 | 0.10 | 0.10 | 0.00 |
| 60.55 | 0.11 | 0.11 | 0.00 |
| 60.60 | 0.11 | 0.11 | 0.00 |
| 60.65 | 0.11 | 0.11 | 0.00 |
| 60.70 | 0.11 | 0.11 | 0.00 |
| 60.75 | 0.11 | 0.11 | 0.00 |
| 60.80 | 0.11 | 0.11 | 0.00 |
| 60.85 | 0.25 | 0.11 | 0.14 |
| 60.90 | 0.52 | 0.11 | 0.41 |
| 60.95 | 0.86 | 0.11 | 0.75 |
| 61.00 | **1.26** | **0.11** | **1.15** |

# BIORETENTION SYSTEM WITH INTERNAL STORAGE RESERVOIR
# (UNH Stormwater Center Specification)

**Type/Node Name:** **Bioretention System 4**

Enter the node name in the drainage analysis if applicable.

| | | | |
|---|---|---|---|
| 0.08 | ac | A = Area draining to the practice | |
| 0.04 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.53 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.53 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.04 | ac-in | WQV= 1" x Rv x A | |
| 162 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 16 | cf | 10% x WQV (check calc for sediment forebay) | |
| 41 | cf | 25% x WQV (check calc for water stored in saturated zone) | |
| Sediment Forebay | | Method of Pretreatment | |
| 44 | cf | If pretrt is sed forebay: $V_{SED}$ (sediment forebay volume) | **≥ 10%WQV** |
| 1,089 | cf | Volume below lowest orifice[1] | **≥ 100%WQV** |
| 310 | cf | Water stored in voids of saturated zone | **≥ 26%WQV** |
| 0.00 | cfs | $2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec)[2] | |
| 58.55 | ft | $E_{WQV}$ = Elevation of WQV (attach stage-storage table) | |
| 0.01 | cfs | $Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table) | **< $2Q_{WQV}$** |
| 9.02 | hours | $T_{ED}$ = Drawdown time of extended detention = $2WQV/Q_{WQV}$ | **≥ 24-hrs** |
| 24.00 | in | Depth of Filter Media | **≥ 18"** |
| 3.00 | :1 | Pond side slopes | **≥ 3:1** |
| N/A | | What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")? | |
| 60.74 | ft | Peak elevation of the 50-year storm event ($E_{50}$) | |
| 61.00 | ft | Berm elevation of the pond | |
| YES | | $E_{50}$ ≤ the berm elevation? | **← yes** |

1. Volume stored above the wetland soil and below the high flow by-pass.

**Designer's Notes:**

## Stage-Area-Storage for Pond FB4: sediment forebay

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 59.50 | 124 | 0 |
| 59.51 | 125 | 1 |
| 59.52 | 127 | 3 |
| 59.53 | 128 | 4 |
| 59.54 | 130 | 5 |
| 59.55 | 131 | 6 |
| 59.56 | 133 | 8 |
| 59.57 | 134 | 9 |
| 59.58 | 136 | 10 |
| 59.59 | 137 | 12 |
| 59.60 | 139 | 13 |
| 59.61 | 140 | 15 |
| 59.62 | 142 | 16 |
| 59.63 | 143 | 17 |
| 59.64 | 145 | 19 |
| 59.65 | 146 | 20 |
| 59.66 | 148 | 22 |
| 59.67 | 149 | 23 |
| 59.68 | 151 | 25 |
| 59.69 | 152 | 26 |
| 59.70 | 154 | 28 |
| 59.71 | 156 | 29 |
| 59.72 | 157 | 31 |
| 59.73 | 159 | 32 |
| 59.74 | 160 | 34 |
| 59.75 | 162 | 36 |
| 59.76 | 164 | 37 |
| 59.77 | 165 | 39 |
| 59.78 | 167 | 41 |
| 59.79 | 169 | 42 |
| 59.80 | 170 | 44 |
| 59.81 | 172 | 46 |
| 59.82 | 174 | 47 |
| 59.83 | 175 | 49 |
| 59.84 | 177 | 51 |
| 59.85 | 179 | 53 |
| 59.86 | 180 | 54 |
| 59.87 | 182 | 56 |
| 59.88 | 184 | 58 |
| 59.89 | 185 | 60 |
| 59.90 | 187 | 62 |
| 59.91 | 189 | 64 |
| 59.92 | 191 | 66 |
| 59.93 | 192 | 67 |
| 59.94 | 194 | 69 |
| 59.95 | 196 | 71 |
| 59.96 | 198 | 73 |
| 59.97 | 200 | 75 |
| 59.98 | 201 | 77 |
| 59.99 | 203 | 79 |
| 60.00 | **205** | **81** |

## Stage-Area-Storage for Pond B4: bioretention system 4

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) |
|---|---|---|---|---|---|
| 57.50 | 516 | 0 | 58.03 | 563 | 82 |
| 57.51 | 517 | 2 | 58.04 | 564 | 84 |
| 57.52 | 518 | 3 | 58.05 | 564 | 85 |
| 57.53 | 519 | 5 | 58.06 | 565 | 87 |
| 57.54 | 520 | 6 | 58.07 | 566 | 88 |
| 57.55 | 520 | 8 | 58.08 | 567 | 90 |
| 57.56 | 521 | 9 | 58.09 | 568 | 91 |
| 57.57 | 522 | 11 | 58.10 | 569 | 93 |
| 57.58 | 523 | 12 | 58.11 | 570 | 94 |
| 57.59 | 524 | 14 | 58.12 | 571 | 96 |
| 57.60 | 525 | 15 | 58.13 | 571 | 98 |
| 57.61 | 526 | 17 | 58.14 | 572 | 99 |
| 57.62 | 527 | 19 | 58.15 | 573 | 101 |
| 57.63 | 527 | 20 | 58.16 | 574 | 102 |
| 57.64 | 528 | 22 | 58.17 | 575 | 104 |
| 57.65 | 529 | 23 | 58.18 | 576 | 105 |
| 57.66 | 530 | 25 | 58.19 | 577 | 107 |
| 57.67 | 531 | 26 | 58.20 | 578 | 108 |
| 57.68 | 532 | 28 | 58.21 | 578 | 110 |
| 57.69 | 533 | 29 | 58.22 | 579 | 111 |
| 57.70 | 534 | 31 | 58.23 | 580 | 113 |
| 57.71 | 534 | 33 | 58.24 | 581 | 115 |
| 57.72 | 535 | 34 | 58.25 | 582 | 116 |
| 57.73 | 536 | 36 | 58.26 | 583 | 118 |
| 57.74 | 537 | 37 | 58.27 | 584 | 119 |
| 57.75 | 538 | 39 | 58.28 | 585 | 121 |
| 57.76 | 539 | 40 | 58.29 | 586 | 122 |
| 57.77 | 540 | 42 | 58.30 | 586 | 124 |
| 57.78 | 541 | 43 | 58.31 | 587 | 125 |
| 57.79 | 542 | 45 | 58.32 | 588 | 127 |
| 57.80 | 542 | 46 | 58.33 | 589 | 128 |
| 57.81 | 543 | 48 | 58.34 | 590 | 130 |
| 57.82 | 544 | 50 | 58.35 | 591 | 132 |
| 57.83 | 545 | 51 | 58.36 | 592 | 133 |
| 57.84 | 546 | 53 | 58.37 | 593 | 135 |
| 57.85 | 547 | 54 | 58.38 | 593 | 136 |
| 57.86 | 548 | 56 | 58.39 | 594 | 138 |
| 57.87 | 549 | 57 | 58.40 | 595 | 139 |
| 57.88 | 549 | 59 | 58.41 | 596 | 141 |
| 57.89 | 550 | 60 | 58.42 | 597 | 142 |
| 57.90 | 551 | 62 | 58.43 | 598 | 144 |
| 57.91 | 552 | 63 | 58.44 | 599 | 146 |
| 57.92 | 553 | 65 | 58.45 | 600 | 147 |
| 57.93 | 554 | 67 | 58.46 | 600 | 149 |
| 57.94 | 555 | 68 | 58.47 | 601 | 150 |
| 57.95 | 556 | 70 | 58.48 | 602 | 152 |
| 57.96 | 556 | 71 | 58.49 | 603 | 153 |
| 57.97 | 557 | 73 | 58.50 | 604 | 155 |
| 57.98 | 558 | 74 | 58.51 | 605 | 156 |
| 57.99 | 559 | 76 | 58.52 | 606 | 158 |
| 58.00 | 560 | 77 | 58.53 | 607 | 159 |
| 58.01 | 561 | 79 | 58.54 | 608 | 161 |
| 58.02 | 562 | 80 | 58.55 | 608 | 163 |

## Stage-Area-Storage for Pond B4: bioretention system 4 (continued)

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) |
|---|---|---|---|---|---|
| 58.56 | 609 | 164 | 59.09 | 656 | 246 |
| 58.57 | 610 | 166 | 59.10 | 657 | 248 |
| 58.58 | 611 | 167 | 59.11 | 658 | 249 |
| 58.59 | 612 | 169 | 59.12 | 659 | 251 |
| 58.60 | 613 | 170 | 59.13 | 659 | 252 |
| 58.61 | 614 | 172 | 59.14 | 660 | 254 |
| 58.62 | 615 | 173 | 59.15 | 661 | 255 |
| 58.63 | 615 | 175 | 59.16 | 662 | 257 |
| 58.64 | 616 | 176 | 59.17 | 663 | 259 |
| 58.65 | 617 | 178 | 59.18 | 664 | 260 |
| 58.66 | 618 | 180 | 59.19 | 665 | 262 |
| 58.67 | 619 | 181 | 59.20 | 666 | 263 |
| 58.68 | 620 | 183 | 59.21 | 666 | 265 |
| 58.69 | 621 | 184 | 59.22 | 667 | 266 |
| 58.70 | 622 | 186 | 59.23 | 668 | 268 |
| 58.71 | 622 | 187 | 59.24 | 669 | 269 |
| 58.72 | 623 | 189 | 59.25 | 670 | 271 |
| 58.73 | 624 | 190 | 59.26 | 671 | 272 |
| 58.74 | 625 | 192 | 59.27 | 672 | 274 |
| 58.75 | 626 | 194 | 59.28 | 673 | 276 |
| 58.76 | 627 | 195 | 59.29 | 674 | 277 |
| 58.77 | 628 | 197 | 59.30 | 674 | 279 |
| 58.78 | 629 | 198 | 59.31 | 675 | 280 |
| 58.79 | 630 | 200 | 59.32 | 676 | 282 |
| 58.80 | 630 | 201 | 59.33 | 677 | 283 |
| 58.81 | 631 | 203 | 59.34 | 678 | 285 |
| 58.82 | 632 | 204 | 59.35 | 679 | 286 |
| 58.83 | 633 | 206 | 59.36 | 680 | 288 |
| 58.84 | 634 | 207 | 59.37 | 681 | 289 |
| 58.85 | 635 | 209 | 59.38 | 681 | 291 |
| 58.86 | 636 | 211 | 59.39 | 682 | 293 |
| 58.87 | 637 | 212 | 59.40 | 683 | 294 |
| 58.88 | 637 | 214 | 59.41 | 684 | 296 |
| 58.89 | 638 | 215 | 59.42 | 685 | 297 |
| 58.90 | 639 | 217 | 59.43 | 686 | 299 |
| 58.91 | 640 | 218 | 59.44 | 687 | 300 |
| 58.92 | 641 | 220 | 59.45 | 688 | 302 |
| 58.93 | 642 | 221 | 59.46 | 688 | 303 |
| 58.94 | 643 | 223 | 59.47 | 689 | 305 |
| 58.95 | 644 | 224 | 59.48 | 690 | 307 |
| 58.96 | 644 | 226 | 59.49 | 691 | 308 |
| 58.97 | 645 | 228 | 59.50 | **692** | 310 |
| 58.98 | 646 | 229 | 59.51 | 692 | 314 |
| 58.99 | 647 | 231 | 59.52 | 692 | 317 |
| 59.00 | 648 | 232 | 59.53 | 692 | 321 |
| 59.01 | 649 | 234 | 59.54 | 692 | 325 |
| 59.02 | 650 | 235 | 59.55 | 692 | 329 |
| 59.03 | 651 | 237 | 59.56 | 692 | 333 |
| 59.04 | 652 | 238 | 59.57 | 692 | 338 |
| 59.05 | 652 | 240 | 59.58 | 692 | 342 |
| 59.06 | 653 | 241 | 59.59 | 692 | 346 |
| 59.07 | 654 | 243 | 59.60 | 692 | 350 |
| 59.08 | 655 | 245 | 59.61 | 692 | 354 |

## Stage-Area-Storage for Pond B4: bioretention system 4 (continued)

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) |
|---|---|---|---|---|---|
| 59.62 | 692 | 358 | 60.15 | 692 | 619 |
| 59.63 | 692 | 362 | 60.16 | 692 | 625 |
| 59.64 | 692 | 367 | 60.17 | 692 | 631 |
| 59.65 | 692 | 371 | 60.18 | 692 | 637 |
| 59.66 | 692 | 375 | 60.19 | 692 | 643 |
| 59.67 | 692 | 379 | 60.20 | 692 | 650 |
| 59.68 | 692 | 384 | 60.21 | 692 | 656 |
| 59.69 | 692 | 388 | 60.22 | 692 | 662 |
| 59.70 | 692 | 393 | 60.23 | 692 | 669 |
| 59.71 | 692 | 397 | 60.24 | 692 | 675 |
| 59.72 | 692 | 401 | 60.25 | 692 | 682 |
| 59.73 | 692 | 406 | 60.26 | 692 | 688 |
| 59.74 | 692 | 410 | 60.27 | 692 | 695 |
| 59.75 | 692 | 415 | 60.28 | 692 | 702 |
| 59.76 | 692 | 419 | 60.29 | 692 | 708 |
| 59.77 | 692 | 424 | 60.30 | 692 | 715 |
| 59.78 | 692 | 428 | 60.31 | 692 | 722 |
| 59.79 | 692 | 433 | 60.32 | 692 | 729 |
| 59.80 | 692 | 438 | 60.33 | 692 | 736 |
| 59.81 | 692 | 442 | 60.34 | 692 | 743 |
| 59.82 | 692 | 447 | 60.35 | 692 | 750 |
| 59.83 | 692 | 452 | 60.36 | 692 | 757 |
| 59.84 | 692 | 456 | 60.37 | 692 | 765 |
| 59.85 | 692 | 461 | 60.38 | 692 | 772 |
| 59.86 | 692 | 466 | 60.39 | 692 | 779 |
| 59.87 | 692 | 471 | 60.40 | 692 | 787 |
| 59.88 | 692 | 476 | 60.41 | 692 | 794 |
| 59.89 | 692 | 480 | 60.42 | 692 | 802 |
| 59.90 | 692 | 485 | 60.43 | 692 | 810 |
| 59.91 | 692 | 490 | 60.44 | 692 | 817 |
| 59.92 | 692 | 495 | 60.45 | 692 | 825 |
| 59.93 | 692 | 500 | 60.46 | 692 | 833 |
| 59.94 | 692 | 505 | 60.47 | 692 | 841 |
| 59.95 | 692 | 510 | 60.48 | 692 | 849 |
| 59.96 | 692 | 515 | 60.49 | 692 | 857 |
| 59.97 | 692 | 520 | 60.50 | 692 | 865 |
| 59.98 | 692 | 525 | 60.51 | 692 | 873 |
| 59.99 | 692 | 530 | 60.52 | 692 | 881 |
| 60.00 | 692 | 536 | 60.53 | 692 | 889 |
| 60.01 | 692 | 541 | 60.54 | 692 | 898 |
| 60.02 | 692 | 546 | 60.55 | 692 | 906 |
| 60.03 | 692 | 551 | 60.56 | 692 | 915 |
| 60.04 | 692 | 557 | 60.57 | 692 | 923 |
| 60.05 | 692 | 562 | 60.58 | 692 | 932 |
| 60.06 | 692 | 568 | 60.59 | 692 | 941 |
| 60.07 | 692 | 573 | 60.60 | 692 | 949 |
| 60.08 | 692 | 579 | 60.61 | 692 | 958 |
| 60.09 | 692 | 584 | 60.62 | 692 | 967 |
| 60.10 | 692 | 590 | 60.63 | 692 | 976 |
| 60.11 | 692 | 596 | 60.64 | 692 | 985 |
| 60.12 | 692 | 601 | 60.65 | 692 | 994 |
| 60.13 | 692 | 607 | 60.66 | 692 | 1,003 |
| 60.14 | 692 | 613 | 60.67 | 692 | 1,012 |

## Stage-Area-Storage for Pond B4: bioretention system 4 (continued)

| Elevation (feet) | Wetted (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 60.68 | 692 | 1,022 |
| 60.69 | 692 | 1,031 |
| 60.70 | 692 | 1,041 |
| 60.71 | 692 | 1,050 |
| 60.72 | 692 | 1,060 |
| 60.73 | 692 | 1,069 |
| 60.74 | 692 | 1,079 |
| 60.75 | 692 | 1,089 |
| 60.76 | 692 | 1,099 |
| 60.77 | 692 | 1,109 |
| 60.78 | 692 | 1,119 |
| 60.79 | 692 | 1,129 |
| 60.80 | 692 | 1,139 |
| 60.81 | 692 | 1,149 |
| 60.82 | 692 | 1,160 |
| 60.83 | 692 | 1,170 |
| 60.84 | 692 | 1,181 |
| 60.85 | 692 | 1,191 |
| 60.86 | 692 | 1,202 |
| 60.87 | 692 | 1,212 |
| 60.88 | 692 | 1,223 |
| 60.89 | 692 | 1,234 |
| 60.90 | 692 | 1,245 |
| 60.91 | 692 | 1,256 |
| 60.92 | 692 | 1,267 |
| 60.93 | 692 | 1,278 |
| 60.94 | 692 | 1,289 |
| 60.95 | 692 | 1,301 |
| 60.96 | 692 | 1,312 |
| 60.97 | 692 | 1,324 |
| 60.98 | 692 | 1,335 |
| 60.99 | 692 | 1,347 |
| 61.00 | 692 | **1,358** |

## Stage-Discharge for Pond B4: bioretention system 4

| Elevation (feet) | Discharge (cfs) | Discarded (cfs) | Primary (cfs) | Elevation (feet) | Discharge (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|---|
| 57.50 | 0.00 | 0.00 | 0.00 | 58.03 | 0.01 | 0.01 | 0.00 |
| 57.51 | 0.00 | 0.00 | 0.00 | 58.04 | 0.01 | 0.01 | 0.00 |
| 57.52 | 0.00 | 0.00 | 0.00 | 58.05 | 0.01 | 0.01 | 0.00 |
| 57.53 | 0.00 | 0.00 | 0.00 | 58.06 | 0.01 | 0.01 | 0.00 |
| 57.54 | 0.00 | 0.00 | 0.00 | 58.07 | 0.01 | 0.01 | 0.00 |
| 57.55 | 0.00 | 0.00 | 0.00 | 58.08 | 0.01 | 0.01 | 0.00 |
| 57.56 | 0.01 | 0.01 | 0.00 | 58.09 | 0.01 | 0.01 | 0.00 |
| 57.57 | 0.01 | 0.01 | 0.00 | 58.10 | 0.01 | 0.01 | 0.00 |
| 57.58 | 0.01 | 0.01 | 0.00 | 58.11 | 0.01 | 0.01 | 0.00 |
| 57.59 | 0.01 | 0.01 | 0.00 | 58.12 | 0.01 | 0.01 | 0.00 |
| 57.60 | 0.01 | 0.01 | 0.00 | 58.13 | 0.01 | 0.01 | 0.00 |
| 57.61 | 0.01 | 0.01 | 0.00 | 58.14 | 0.01 | 0.01 | 0.00 |
| 57.62 | 0.01 | 0.01 | 0.00 | 58.15 | 0.01 | 0.01 | 0.00 |
| 57.63 | 0.01 | 0.01 | 0.00 | 58.16 | 0.01 | 0.01 | 0.00 |
| 57.64 | 0.01 | 0.01 | 0.00 | 58.17 | 0.01 | 0.01 | 0.00 |
| 57.65 | 0.01 | 0.01 | 0.00 | 58.18 | 0.01 | 0.01 | 0.00 |
| 57.66 | 0.01 | 0.01 | 0.00 | 58.19 | 0.01 | 0.01 | 0.00 |
| 57.67 | 0.01 | 0.01 | 0.00 | 58.20 | 0.01 | 0.01 | 0.00 |
| 57.68 | 0.01 | 0.01 | 0.00 | 58.21 | 0.01 | 0.01 | 0.00 |
| 57.69 | 0.01 | 0.01 | 0.00 | 58.22 | 0.01 | 0.01 | 0.00 |
| 57.70 | 0.01 | 0.01 | 0.00 | 58.23 | 0.01 | 0.01 | 0.00 |
| 57.71 | 0.01 | 0.01 | 0.00 | 58.24 | 0.01 | 0.01 | 0.00 |
| 57.72 | 0.01 | 0.01 | 0.00 | 58.25 | 0.01 | 0.01 | 0.00 |
| 57.73 | 0.01 | 0.01 | 0.00 | 58.26 | 0.01 | 0.01 | 0.00 |
| 57.74 | 0.01 | 0.01 | 0.00 | 58.27 | 0.01 | 0.01 | 0.00 |
| 57.75 | 0.01 | 0.01 | 0.00 | 58.28 | 0.01 | 0.01 | 0.00 |
| 57.76 | 0.01 | 0.01 | 0.00 | 58.29 | 0.01 | 0.01 | 0.00 |
| 57.77 | 0.01 | 0.01 | 0.00 | 58.30 | 0.01 | 0.01 | 0.00 |
| 57.78 | 0.01 | 0.01 | 0.00 | 58.31 | 0.01 | 0.01 | 0.00 |
| 57.79 | 0.01 | 0.01 | 0.00 | 58.32 | 0.01 | 0.01 | 0.00 |
| 57.80 | 0.01 | 0.01 | 0.00 | 58.33 | 0.01 | 0.01 | 0.00 |
| 57.81 | 0.01 | 0.01 | 0.00 | 58.34 | 0.01 | 0.01 | 0.00 |
| 57.82 | 0.01 | 0.01 | 0.00 | 58.35 | 0.01 | 0.01 | 0.00 |
| 57.83 | 0.01 | 0.01 | 0.00 | 58.36 | 0.01 | 0.01 | 0.00 |
| 57.84 | 0.01 | 0.01 | 0.00 | 58.37 | 0.01 | 0.01 | 0.00 |
| 57.85 | 0.01 | 0.01 | 0.00 | 58.38 | 0.01 | 0.01 | 0.00 |
| 57.86 | 0.01 | 0.01 | 0.00 | 58.39 | 0.01 | 0.01 | 0.00 |
| 57.87 | 0.01 | 0.01 | 0.00 | 58.40 | 0.01 | 0.01 | 0.00 |
| 57.88 | 0.01 | 0.01 | 0.00 | 58.41 | 0.01 | 0.01 | 0.00 |
| 57.89 | 0.01 | 0.01 | 0.00 | 58.42 | 0.01 | 0.01 | 0.00 |
| 57.90 | 0.01 | 0.01 | 0.00 | 58.43 | 0.01 | 0.01 | 0.00 |
| 57.91 | 0.01 | 0.01 | 0.00 | 58.44 | 0.01 | 0.01 | 0.00 |
| 57.92 | 0.01 | 0.01 | 0.00 | 58.45 | 0.01 | 0.01 | 0.00 |
| 57.93 | 0.01 | 0.01 | 0.00 | 58.46 | 0.01 | 0.01 | 0.00 |
| 57.94 | 0.01 | 0.01 | 0.00 | 58.47 | 0.01 | 0.01 | 0.00 |
| 57.95 | 0.01 | 0.01 | 0.00 | 58.48 | 0.01 | 0.01 | 0.00 |
| 57.96 | 0.01 | 0.01 | 0.00 | 58.49 | 0.01 | 0.01 | 0.00 |
| 57.97 | 0.01 | 0.01 | 0.00 | 58.50 | 0.01 | 0.01 | 0.00 |
| 57.98 | 0.01 | 0.01 | 0.00 | 58.51 | 0.01 | 0.01 | 0.00 |
| 57.99 | 0.01 | 0.01 | 0.00 | 58.52 | 0.01 | 0.01 | 0.00 |
| 58.00 | 0.01 | 0.01 | 0.00 | 58.53 | 0.01 | 0.01 | 0.00 |
| 58.01 | 0.01 | 0.01 | 0.00 | 58.54 | 0.01 | 0.01 | 0.00 |
| 58.02 | 0.01 | 0.01 | 0.00 | 58.55 | 0.01 | 0.01 | 0.00 |

# INFILTRATION PRACTICE CRITERIA
# (Env-Wq 1508.06)

**Type/Node Name:** **Infiltration System 1**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

| | | | |
|---|---|---|---|
| ***yes*** | | Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed? | **← yes** |
| 0.44 | ac | A = Area draining to the practice | |
| 0.43 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.99 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.94 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.41 | ac-in | WQV= 1" x Rv x A | |
| 1,485 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 371 | cf | 25% x WQV (check calc for sediment forebay volume) | |
| Isolator Row | | Method of pretreatment? (not required for clean or roof runoff) | |
| * | cf | $V_{SED}$ = Sediment forebay volume, if used for pretreatment | **≥ 25%WQV** |
| 1,582 | cf | V = Volume[1] (attach a stage-storage table) | **≥ WQV** |
| 3,088 | sf | $A_{SA}$ = Surface area of the bottom of the pond | |
| 0.72 | iph | $Ksat_{DESIGN}$ = Design infiltration rate[2] | |
| 8.0 | hours | $T_{DRAIN}$ = Drain time = V / ($A_{SA}$ * $I_{DESIGN}$) | **≤ 72-hrs** |
| 58.60 | feet | $E_{BTM}$ = Elevation of the bottom of the basin | |
| 54.60 | feet | $E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit) | |
| 51.60 | feet | $E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit) | |
| 4.00 | feet | $D_{SHWT}$ = Separation from SHWT | **≥ *** [3] |
| 7.0 | feet | $D_{ROCK}$ = Separation from bedrock | **≥ *** [3] |
| N/A | ft | $D_{amend}$ = Depth of amended soil, if applicable due high infiltation rate | **≥ 24"** |
| N/A | ft | $D_T$ = Depth of trench, if trench proposed | **4 - 10 ft** |
| yes | Yes/No | If a trench or underground system is proposed, has observation well been provided? | **←yes** |
| N/A | | If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4] | **← yes** |
| N/A | Yes/No | If a basin is proposed, Is the perimeter curvilinear, and basin floor flat? | **← yes** |
| N/A | :1 | If a basin is proposed, pond side slopes. | **≥3:1** |
| 60.15 | ft | Peak elevation of the 10-year storm event (infiltration can be used in analysis) | |
| 60.93 | ft | Peak elevation of the 50-year storm event (infiltration can be used in analysis) | |
| 60.93 | ft | Elevation of the top of the practice (if a basin, this is the elevation of the berm) | |
| YES | | 10 peak elevation ≤ Elevation of the top of the trench?[5] | **← yes** |
| YES | | If a basin is proposed, 50-year peak elevation ≤ Elevation of berm? | **← yes** |

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

**Designer's Notes:** *All pavement runoff is pretreated by the isolator row

## Stage-Area-Storage for Pond IS1: infiltration 1

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 58.60 | **3,088** | 0 |
| 58.65 | 3,088 | 62 |
| 58.70 | 3,088 | 124 |
| 58.75 | 3,088 | 185 |
| 58.80 | 3,088 | 247 |
| 58.85 | 3,088 | 309 |
| 58.90 | 3,088 | 371 |
| 58.95 | 3,088 | 432 |
| 59.00 | 3,088 | 494 |
| 59.05 | 3,088 | 556 |
| 59.10 | 3,088 | 618 |
| 59.15 | 3,088 | 741 |
| 59.20 | 3,088 | 864 |
| 59.25 | 3,088 | 986 |
| 59.30 | 3,088 | 1,108 |
| 59.35 | 3,088 | 1,228 |
| 59.40 | 3,088 | 1,347 |
| 59.45 | 3,088 | 1,465 |
| 59.50 | 3,088 | 1,582 |
| 59.55 | 3,088 | 1,697 |
| 59.60 | 3,088 | 1,811 |
| 59.65 | 3,088 | 1,923 |
| 59.70 | 3,088 | 2,034 |
| 59.75 | 3,088 | 2,143 |
| 59.80 | 3,088 | 2,250 |
| 59.85 | 3,088 | 2,355 |
| 59.90 | 3,088 | 2,457 |
| 59.95 | 3,088 | 2,557 |
| 60.00 | 3,088 | 2,654 |
| 60.05 | 3,088 | 2,749 |
| 60.10 | 3,088 | 2,839 |
| 60.15 | 3,088 | 2,925 |
| 60.20 | 3,088 | 3,005 |
| 60.25 | 3,088 | 3,080 |
| 60.30 | 3,088 | 3,151 |
| 60.35 | 3,088 | 3,219 |
| 60.40 | 3,088 | 3,284 |
| 60.45 | 3,088 | 3,346 |
| 60.50 | 3,088 | 3,408 |
| 60.55 | 3,088 | 3,470 |
| 60.60 | 3,088 | 3,532 |
| 60.65 | 3,088 | 3,593 |
| 60.70 | 3,088 | 3,655 |
| 60.75 | 3,088 | 3,717 |
| 60.80 | 3,088 | 3,779 |
| 60.85 | 3,088 | 3,840 |
| 60.90 | 3,088 | **3,902** |

# INFILTRATION PRACTICE CRITERIA
# (Env-Wq 1508.06)

**Type/Node Name:** **Infiltration System 2**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

| | | | |
|---|---|---|---|
| ***yes*** | | Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed? | **← yes** |
| 0.75 | ac | A = Area draining to the practice | |
| 0.74 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.98 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.93 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.70 | ac-in | WQV= 1" x Rv x A | |
| 2,542 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 636 | cf | 25% x WQV (check calc for sediment forebay volume) | |
| Isolator Row | | Method of pretreatment? (not required for clean or roof runoff) | |
| * | cf | $V_{SED}$ = Sediment forebay volume, if used for pretreatment | **≥ 25%WQV** |
| 3,340 | cf | V = Volume[1] (attach a stage-storage table) | **≥ WQV** |
| 6,032 | sf | $A_{SA}$ = Surface area of the bottom of the pond | |
| 0.72 | iph | $Ksat_{DESIGN}$ = Design infiltration rate[2] | |
| 7.0 | hours | $T_{DRAIN}$ = Drain time = V / ($A_{SA}$ * $I_{DESIGN}$) | **≤ 72-hrs** |
| 57.70 | feet | $E_{BTM}$ = Elevation of the bottom of the basin | |
| 53.70 | feet | $E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit) | |
| 49.73 | feet | $E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit) | |
| 4.00 | feet | $D_{SHWT}$ = Separation from SHWT | **≥ *** [3] |
| 8.0 | feet | $D_{ROCK}$ = Separation from bedrock | **≥ *** [3] |
| N/A | ft | $D_{amend}$ = Depth of amended soil, if applicable due high infiltation rate | **≥ 24"** |
| N/A | ft | $D_T$ = Depth of trench, if trench proposed | **4 - 10 ft** |
| yes | Yes/No | If a trench or underground system is proposed, has observation well been provided? | **←yes** |
| N/A | | If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4] | **← yes** |
| N/A | Yes/No | If a basin is proposed, Is the perimeter curvilinear, and basin floor flat? | **← yes** |
| N/A | :1 | If a basin is proposed, pond side slopes. | **≥3:1** |
| 59.22 | ft | Peak elevation of the 10-year storm event (infiltration can be used in analysis) | |
| 60.01 | ft | Peak elevation of the 50-year storm event (infiltration can be used in analysis) | |
| 60.03 | ft | Elevation of the top of the practice (if a basin, this is the elevation of the berm) | |
| YES | | 10 peak elevation ≤ Elevation of the top of the trench?[5] | **← yes** |
| YES | | If a basin is proposed, 50-year peak elevation ≤ Elevation of berm? | **← yes** |

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

**Designer's Notes:** *All pavement runoff is pretreated by the isolator row

## Stage-Area-Storage for Pond IS2: infiltration 2

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 57.70 | **6,032** | 0 |
| 57.75 | 6,032 | 121 |
| 57.80 | 6,032 | 241 |
| 57.85 | 6,032 | 362 |
| 57.90 | 6,032 | 483 |
| 57.95 | 6,032 | 603 |
| 58.00 | 6,032 | 724 |
| 58.05 | 6,032 | 844 |
| 58.10 | 6,032 | 965 |
| 58.15 | 6,032 | 1,086 |
| 58.20 | 6,032 | 1,206 |
| 58.25 | 6,032 | 1,450 |
| 58.30 | 6,032 | 1,693 |
| 58.35 | 6,032 | 1,935 |
| 58.40 | 6,032 | 2,175 |
| 58.45 | 6,032 | 2,413 |
| 58.50 | 6,032 | 2,649 |
| 58.55 | 6,032 | 2,882 |
| 58.60 | 6,032 | 3,112 |
| 58.65 | 6,032 | 3,340 |
| 58.70 | 6,032 | 3,565 |
| 58.75 | 6,032 | 3,786 |
| 58.80 | 6,032 | 4,005 |
| 58.85 | 6,032 | 4,220 |
| 58.90 | 6,032 | 4,431 |
| 58.95 | 6,032 | 4,638 |
| 59.00 | 6,032 | 4,840 |
| 59.05 | 6,032 | 5,037 |
| 59.10 | 6,032 | 5,228 |
| 59.15 | 6,032 | 5,414 |
| 59.20 | 6,032 | 5,592 |
| 59.25 | 6,032 | 5,761 |
| 59.30 | 6,032 | 5,919 |
| 59.35 | 6,032 | 6,066 |
| 59.40 | 6,032 | 6,204 |
| 59.45 | 6,032 | 6,337 |
| 59.50 | 6,032 | 6,464 |
| 59.55 | 6,032 | 6,586 |
| 59.60 | 6,032 | 6,707 |
| 59.65 | 6,032 | 6,828 |
| 59.70 | 6,032 | 6,948 |
| 59.75 | 6,032 | 7,069 |
| 59.80 | 6,032 | 7,189 |
| 59.85 | 6,032 | 7,310 |
| 59.90 | 6,032 | 7,431 |
| 59.95 | 6,032 | 7,551 |
| 60.00 | 6,032 | **7,672** |

# INFILTRATION PRACTICE CRITERIA
# (Env-Wq 1508.06)

**Type/Node Name:** **Infiltration System 3**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

| | | | |
|---|---|---|---|
| ***yes*** | | Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed? | **← yes** |
| 0.13 | ac | A = Area draining to the practice | |
| 0.13 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.99 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.94 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.12 | ac-in | WQV= 1" x Rv x A | |
| 443 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 111 | cf | 25% x WQV (check calc for sediment forebay volume) | |
| Isolator Row | | Method of pretreatment? (not required for clean or roof runoff) | |
| * | cf | $V_{SED}$ = Sediment forebay volume, if used for pretreatment | **≥ 25%WQV** |
| 2,057 | cf | V = Volume[1] (attach a stage-storage table) | **≥ WQV** |
| 1,972 | sf | $A_{SA}$ = Surface area of the bottom of the pond | |
| 0.72 | iph | $Ksat_{DESIGN}$ = Design infiltration rate[2] | |
| 3.7 | hours | $T_{DRAIN}$ = Drain time = V / ($A_{SA}$ * $I_{DESIGN}$) | **≤ 72-hrs** |
| 59.60 | feet | $E_{BTM}$ = Elevation of the bottom of the basin | |
| 55.60 | feet | $E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit) | |
| 53.40 | feet | $E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit) | |
| 4.00 | feet | $D_{SHWT}$ = Separation from SHWT | **≥ *** [3] |
| 6.2 | feet | $D_{ROCK}$ = Separation from bedrock | **≥ *** [3] |
| N/A | ft | $D_{amend}$ = Depth of amended soil, if applicable due high infiltation rate | **≥ 24"** |
| N/A | ft | $D_T$ = Depth of trench, if trench proposed | **4 - 10 ft** |
| yes | Yes/No | If a trench or underground system is proposed, has observation well been provided? | **←yes** |
| N/A | | If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4] | **← yes** |
| N/A | Yes/No | If a basin is proposed, Is the perimeter curvilinear, and basin floor flat? | **← yes** |
| N/A | :1 | If a basin is proposed, pond side slopes. | **≥3:1** |
| 60.59 | ft | Peak elevation of the 10-year storm event (infiltration can be used in analysis) | |
| 61.49 | ft | Peak elevation of the 50-year storm event (infiltration can be used in analysis) | |
| 61.60 | ft | Elevation of the top of the practice (if a basin, this is the elevation of the berm) | |
| YES | | 10 peak elevation ≤ Elevation of the top of the trench?[5] | **← yes** |
| YES | | If a basin is proposed, 50-year peak elevation ≤ Elevation of berm? | **← yes** |

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

**Designer's Notes:** *All pavement runoff is pretreated by the isolator row

## Stage-Area-Storage for Pond IS3: infiltration 3

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 59.60 | **1,972** | 0 |
| 59.62 | 1,972 | 16 |
| 59.64 | 1,972 | 32 |
| 59.66 | 1,972 | 47 |
| 59.68 | 1,972 | 63 |
| 59.70 | 1,972 | 79 |
| 59.72 | 1,972 | 95 |
| 59.74 | 1,972 | 110 |
| 59.76 | 1,972 | 126 |
| 59.78 | 1,972 | 142 |
| 59.80 | 1,972 | 158 |
| 59.82 | 1,972 | 174 |
| 59.84 | 1,972 | 189 |
| 59.86 | 1,972 | 205 |
| 59.88 | 1,972 | 221 |
| 59.90 | 1,972 | 237 |
| 59.92 | 1,972 | 252 |
| 59.94 | 1,972 | 268 |
| 59.96 | 1,972 | 284 |
| 59.98 | 1,972 | 300 |
| 60.00 | 1,972 | 315 |
| 60.02 | 1,972 | 331 |
| 60.04 | 1,972 | 347 |
| 60.06 | 1,972 | 363 |
| 60.08 | 1,972 | 379 |
| 60.10 | 1,972 | 394 |
| 60.12 | 1,972 | 425 |
| 60.14 | 1,972 | 456 |
| 60.16 | 1,972 | 486 |
| 60.18 | 1,972 | 517 |
| 60.20 | 1,972 | 548 |
| 60.22 | 1,972 | 578 |
| 60.24 | 1,972 | 608 |
| 60.26 | 1,972 | 638 |
| 60.28 | 1,972 | 668 |
| 60.30 | 1,972 | 698 |
| 60.32 | 1,972 | 728 |
| 60.34 | 1,972 | 757 |
| 60.36 | 1,972 | 786 |
| 60.38 | 1,972 | 816 |
| 60.40 | 1,972 | 845 |
| 60.42 | 1,972 | 873 |
| 60.44 | 1,972 | 902 |
| 60.46 | 1,972 | 930 |
| 60.48 | 1,972 | 959 |
| 60.50 | 1,972 | 987 |
| 60.52 | 1,972 | 1,015 |
| 60.54 | 1,972 | 1,042 |
| 60.56 | 1,972 | 1,069 |
| 60.58 | 1,972 | 1,097 |
| 60.60 | 1,972 | 1,123 |
| 60.62 | 1,972 | 1,150 |
| 60.64 | 1,972 | 1,176 |
| 60.66 | 1,972 | 1,202 |
| 60.68 | 1,972 | 1,228 |
| 60.70 | 1,972 | 1,254 |
| 60.72 | 1,972 | 1,279 |
| 60.74 | 1,972 | 1,303 |
| 60.76 | 1,972 | 1,328 |
| 60.78 | 1,972 | 1,352 |
| 60.80 | 1,972 | 1,375 |
| 60.82 | 1,972 | 1,398 |
| 60.84 | 1,972 | 1,421 |
| 60.86 | 1,972 | 1,443 |
| 60.88 | 1,972 | 1,464 |
| 60.90 | 1,972 | 1,485 |
| 60.92 | 1,972 | 1,505 |
| 60.94 | 1,972 | 1,524 |
| 60.96 | 1,972 | 1,543 |
| 60.98 | 1,972 | 1,561 |
| 61.00 | 1,972 | 1,579 |
| 61.02 | 1,972 | 1,597 |
| 61.04 | 1,972 | 1,614 |
| 61.06 | 1,972 | 1,630 |
| 61.08 | 1,972 | 1,647 |
| 61.10 | 1,972 | 1,663 |
| 61.12 | 1,972 | 1,679 |
| 61.14 | 1,972 | 1,695 |
| 61.16 | 1,972 | 1,710 |
| 61.18 | 1,972 | 1,726 |
| 61.20 | 1,972 | 1,742 |
| 61.22 | 1,972 | 1,758 |
| 61.24 | 1,972 | 1,773 |
| 61.26 | 1,972 | 1,789 |
| 61.28 | 1,972 | 1,805 |
| 61.30 | 1,972 | 1,821 |
| 61.32 | 1,972 | 1,837 |
| 61.34 | 1,972 | 1,852 |
| 61.36 | 1,972 | 1,868 |
| 61.38 | 1,972 | 1,884 |
| 61.40 | 1,972 | 1,900 |
| 61.42 | 1,972 | 1,915 |
| 61.44 | 1,972 | 1,931 |
| 61.46 | 1,972 | 1,947 |
| 61.48 | 1,972 | 1,963 |
| 61.50 | 1,972 | 1,979 |
| 61.52 | 1,972 | 1,994 |
| 61.54 | 1,972 | 2,010 |
| 61.56 | 1,972 | 2,026 |
| 61.58 | 1,972 | 2,042 |
| 61.60 | 1,972 | **2,057** |

# GENERAL CALCULATIONS - WQV and WQF
# (optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

## Water Quality Volume (WQV)

| | | |
|---|---|---|
| 0.05 | ac | A = Area draining to the practice |
| 0.05 | ac | $A_I$ = Impervious area draining to the practice |
| 0.88 | decimal | I = Percent impervious area draining to the practice, in decimal form |
| 0.85 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) |
| 0.05 | ac-in | WQV= 1" x Rv x A |
| 169 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") |

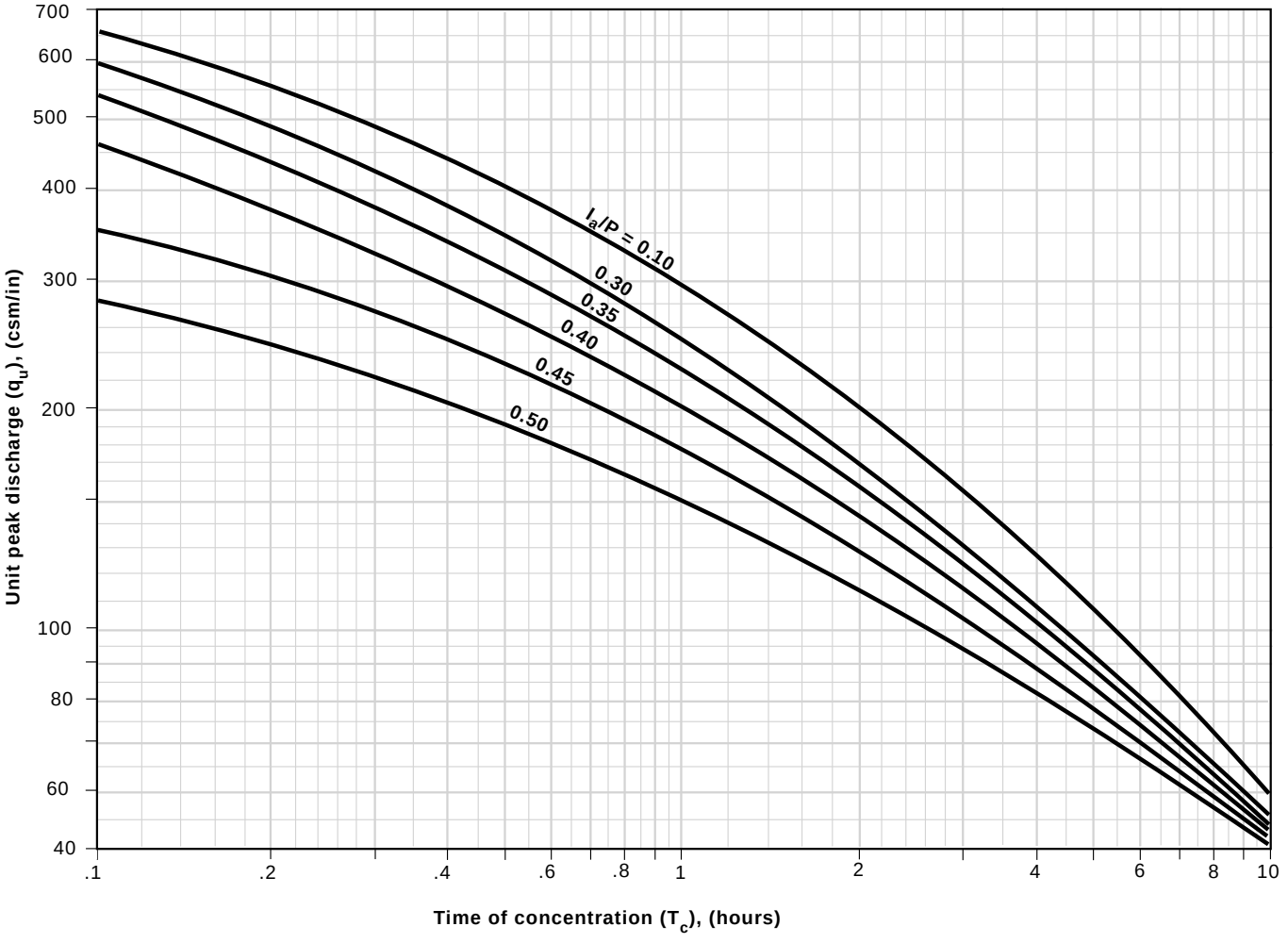
## Water Quality Flow (WQF)

| | | |
|---|---|---|
| 1 | inches | P = Amount of rainfall. For WQF in NH, P = 1". |
| 0.85 | inches | Q = Water quality depth. Q = WQV/A |
| 99 | unitless | CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[$Q^2$ + 1.25*Q*P] $^{0.5}$) |
| 0.1 | inches | S = Potential maximum retention. S = (1000/CN) - 10 |
| 0.029 | inches | Ia = Initial abstraction. Ia = 0.2S |
| 6.0 | minutes | $T_c$ = Time of Concentration |
| 700.0 | cfs/$mi^2$/in | $q_u$ is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III. |
| 0.051 | cfs | WQF = $q_u$ x WQV. Conversion: to convert "cfs/$mi^2$/in * ac-in" to "cfs" multiply by 1$mi^2$/640ac. |

Designer's Notes: Calculations for WQ-01

The Jellyfish JF4 with 15" cartridges has a treatment capacity of 0.05 cfs

**Exhibit 4-III** Unit peal discharge ($q_u$) for NRCS (SCS) type III rainfall distribution



## Rip-Rap Apron / Energy Dissipation / Stability Calculations

Outlet # FES-01 (from HydroCAD IS1)

Q10 = 0.95 cfs $T_w$ = 0.33 feet

$D_o$ = 8 inches

## ***Design Criteria***

### *Apron Dimensions*

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe of width of the channel.

W= **2** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel:

La=1.8*Q/ Do^3/2+ 7Do

La= **7.81** feet

Where:

La is the length of the apron
Q is the discharge from the pipe or channel
$D_o$ is the diameter of pipe of width of channel

3.) When the depth of the tailwater at the outlet of the pipe or channel is equal to or greater than one-half the diameter of the pipe or the width of the channel. Then the following formula applies:

La=3.0*Qo/ Do^1.5 +7$D_o$

USE THIS ONE → La= **9.90** feet

4.) Where there is no well defined channel downstream of the outlet, the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than the elevation of the center of the pipe:

W=3*Do+La

USE THIS ONE → W= **9.81** feet

b. For maximum tailwater conditions where the tailwater depth is greater than the elevation of the center of the pipe:

W=3*Do+0.4*La

W= **5.96** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron.

***Rock Riprap***

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

$d_{50}=0.02*Q^{4/3}/(Tw*D_o)$

$d_{50}=$ **1.02** inches **USE 3** inches

$d_{50}$ minimum 3 inches

Where:
$d_{50}$ is the median stone diameter in feet
Tw is the tailwater depth above the invert of the pipe channel in feet
Q is the discharge from the pipe or channel in cubic feet per second
$D_o$ is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median size stone designated as $d_{50}$. The largest stone size in the mixture shall be 1.5 times the $d_{50}$ size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap
$d = 1.5*(1.5*d_{50}$(largest stone size))
d = **7** inches*

* must use a minimum of 6"

***Rock Rip Rap Gradation***

| % of weight smaller than the given size | size of stone in inches | | |
|---|---|---|---|
| **100** | **4.5** | to | **6.0** |
| **85** | **3.9** | to | **5.4** |
| **50** | **3.0** | to | **4.5** |
| **15** | **0.9** | to | **1.5** |

*Formulas Used (Reference NHDES Handbook, Pages 7-114, 7-115)*

Outlet # FES-02 (from HydroCAD IS2)

Q10 = 1.04 cfs $T_w$ = 0.5 feet

$D_o$ = 10 inches

## ***Design Criteria***

### *Apron Dimensions*

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe of width of the channel.

W= **2.5** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel:

La=1.8*Q/ Do^3/2+ 7Do

La= **8.29** feet

Where:

La is the length of the apron
Q is the discharge from the pipe or channel
$D_o$ is the diameter of pipe of width of channel

3.) When the depth of the tailwater at the outlet of the pipe or channel is equal to or greater than one-half the diameter of the pipe or the width of the channel. Then the following formula applies:

La=3.0*Qo/ Do^1.5 +7$D_o$

USE THIS ONE

La= **9.93** feet

4.) Where there is no well defined channel downstream of the outlet, the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than the elevation of the center of the pipe:

W=3*Do+La

USE THIS ONE

W= **10.79** feet

b. For maximum tailwater conditions where the tailwater depth is greater than the elevation of the center of the pipe:

W=3*Do+0.4*La

W= **6.47** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron.

***Rock Riprap***

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

$d_{50}=0.02*Q^{4/3}/(Tw*D_o)$

$d_{50}=$ **0.61** inches **USE 3** inches

$d_{50}$ minimum 3 inches

Where:
$d_{50}$ is the median stone diameter in feet
Tw is the tailwater depth above the invert of the pipe channel in feet
Q is the discharge from the pipe or channel in cubic feet per second
$D_o$ is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median size stone designated as $d_{50}$. The largest stone size in the mixture shall be 1.5 times the $d_{50}$ size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap
$d = 1.5*(1.5*d_{50}$(largest stone size))
d = **7** inches*

* must use a minimum of 6"

***Rock Rip Rap Gradation***

| % of weight smaller than the given size | size of stone in inches | | |
|---|---|---|---|
| **100** | **4.5** | to | **6.0** |
| **85** | **3.9** | to | **5.4** |
| **50** | **3.0** | to | **4.5** |
| **15** | **0.9** | to | **1.5** |

*Formulas Used (Reference NHDES Handbook, Pages 7-114, 7-115)*

Outlet # FES-03 (from HydroCAD P-6)

Q10 = 0.28 cfs $T_w$ = 0.33 feet

$D_o$ = 8 inches

***Design Criteria***

***Apron Dimensions***

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe of width of the channel.

W= **2** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel:

La=1.8*Q/ Do^3/2+ 7Do

La= **5.59** feet

Where:

La is the length of the apron
Q is the discharge from the pipe or channel
$D_o$ is the diameter of pipe of width of channel

3.) When the depth of the tailwater at the outlet of the pipe or channel is equal to or greater than one-half the diameter of the pipe or the width of the channel. Then the following formula applies:

La=3.0*Qo/ Do^1.5 +7$D_o$

USE THIS ONE La= **6.21** feet

4.) Where there is no well defined channel downstream of the outlet, the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than the elevation of the center of the pipe:

W=3*Do+La

USE THIS ONE W= **7.59** feet

b. For maximum tailwater conditions where the tailwater depth is greater than the elevation of the center of the pipe:

W=3*Do+0.4*La

W= **4.48** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron.

***Rock Riprap***

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

$d_{50}=0.02*Q^{4/3}/(Tw*D_o)$

$d_{50}=$ **0.20** inches **USE 3** inches

$d_{50}$ minimum 3 inches

Where:
$d_{50}$ is the median stone diameter in feet
Tw is the tailwater depth above the invert of the pipe channel in feet
Q is the discharge from the pipe or channel in cubic feet per second
$D_o$ is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median size stone designated as $d_{50}$. The largest stone size in the mixture shall be 1.5 times the $d_{50}$ size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap
$d = 1.5*(1.5*d_{50}(\text{largest stone size}))$
d = **7** inches*

* must use a minimum of 6"

***Rock Rip Rap Gradation***

| % of weight smaller than the given size | size of stone in inches | | |
|---|---|---|---|
| **100** | **4.5** | to | **6.0** |
| **85** | **3.9** | to | **5.4** |
| **50** | **3.0** | to | **4.5** |
| **15** | **0.9** | to | **1.5** |

*Formulas Used (Reference NHDES Handbook, Pages 7-114, 7-115)*

Outlet # FES-04 (from HydroCAD B2)

Q10 = 0.52 cfs $T_w$ = 0.33 feet

$D_o$ = 8 inches

***Design Criteria***

***Apron Dimensions***

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe of width of the channel.

W= **2** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel:

La=1.8*Q/ Do^3/2+ 7Do

La= **6.39** feet

Where:

La is the length of the apron
Q is the discharge from the pipe or channel
$D_o$ is the diameter of pipe of width of channel

3.) When the depth of the tailwater at the outlet of the pipe or channel is equal to or greater than one-half the diameter of the pipe or the width of the channel. Then the following formula applies:

La=3.0*Qo/ Do^1.5 +7$D_o$

USE THIS ONE La= **7.53** feet

4.) Where there is no well defined channel downstream of the outlet, the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than the elevation of the center of the pipe:

W=3*Do+La

USE THIS ONE W= **8.39** feet

b. For maximum tailwater conditions where the tailwater depth is greater than the elevation of the center of the pipe:

W=3*Do+0.4*La

W= **5.01** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron.

***Rock Riprap***

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

$d_{50}=0.02*Q^{4/3}/(Tw*D_o)$

$d_{50}=$ **0.46** inches **USE 3** inches

$d_{50}$ minimum 3 inches

Where:

$d_{50}$ is the median stone diameter in feet

Tw is the tailwater depth above the invert of the pipe channel in feet

Q is the discharge from the pipe or channel in cubic feet per second

$D_o$ is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median size stone designated as $d_{50}$. The largest stone size in the mixture shall be 1.5 times the $d_{50}$ size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap

$d = 1.5*(1.5*d_{50}$(largest stone size))

d = **7** inches*

* must use a minimum of 6"

***Rock Rip Rap Gradation***

| % of weight smaller than the given size | size of stone in inches | | |
|---|---|---|---|
| **100** | **4.5** | to | **6.0** |
| **85** | **3.9** | to | **5.4** |
| **50** | **3.0** | to | **4.5** |
| **15** | **0.9** | to | **1.5** |

*Formulas Used (Reference NHDES Handbook, Pages 7-114, 7-115)*

Outlet # FES-05 (from HydroCAD B3)

Q10 = 0.00 cfs $T_w$ = 0.00 feet

$D_o$ = 8 inches

***Design Criteria***

***Apron Dimensions***

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe of width of the channel.

W= **2** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel:

La=1.8*Q/ Do^3/2+ 7Do

La= **4.67** feet

Where:

La is the length of the apron
Q is the discharge from the pipe or channel
$D_o$ is the diameter of pipe of width of channel

3.) When the depth of the tailwater at the outlet of the pipe or channel is equal to or greater than one-half the diameter of the pipe or the width of the channel. Then the following formula applies:

La=3.0*Qo/ Do^1.5 +7$D_o$

USE THIS ONE La= **4.67** feet

4.) Where there is no well defined channel downstream of the outlet, the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than the elevation of the center of the pipe:

W=3*Do+La

USE THIS ONE W= **6.67** feet

b. For maximum tailwater conditions where the tailwater depth is greater than the elevation of the center of the pipe:

W=3*Do+0.4*La

W= **3.87** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron.

***Rock Riprap***

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

$d_{50}=0.02*Q^{4/3}/(Tw*D_o)$

$d_{50}=$ **0.00** inches **USE 3** inches

$d_{50}$ minimum 3 inches

Where:
$d_{50}$ is the median stone diameter in feet
Tw is the tailwater depth above the invert of the pipe channel in feet
Q is the discharge from the pipe or channel in cubic feet per second
$D_o$ is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median size stone designated as $d_{50}$. The largest stone size in the mixture shall be 1.5 times the $d_{50}$ size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap
$d = 1.5*(1.5*d_{50}(\text{largest stone size}))$
d = **7** inches*

* must use a minimum of 6"

***Rock Rip Rap Gradation***

| % of weight smaller than the given size | size of stone in inches | | |
|---|---|---|---|
| **100** | **4.5** | to | **6.0** |
| **85** | **3.9** | to | **5.4** |
| **50** | **3.0** | to | **4.5** |
| **15** | **0.9** | to | **1.5** |

*Formulas Used (Reference NHDES Handbook, Pages 7-114, 7-115)*

Outlet # FES-06 (from HydroCAD B1)

Q10 = 1.03 cfs $T_w$ = 0.33 feet

$D_o$ = 8 inches

***Design Criteria***

***Apron Dimensions***

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe of width of the channel.

W= **2** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel:

La=1.8*Q/ Do^3/2+ 7Do

La= **8.07** feet

Where:

La is the length of the apron
Q is the discharge from the pipe or channel
$D_o$ is the diameter of pipe of width of channel

3.) When the depth of the tailwater at the outlet of the pipe or channel is equal to or greater than one-half the diameter of the pipe or the width of the channel. Then the following formula applies:

La=3.0*Qo/ Do^1.5 +7$D_o$

USE THIS ONE La= **10.34** feet

4.) Where there is no well defined channel downstream of the outlet, the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than the elevation of the center of the pipe:

W=3*Do+La

USE THIS ONE W= **10.07** feet

b. For maximum tailwater conditions where the tailwater depth is greater than the elevation of the center of the pipe:

W=3*Do+0.4*La

W= **6.14** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron.

***Rock Riprap***

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

$d_{50}=0.02*Q^{4/3}/(Tw*D_o)$

$d_{50}=$ **1.12** inches **USE 3** inches

$d_{50}$ minimum 3 inches

Where:
$d_{50}$ is the median stone diameter in feet
Tw is the tailwater depth above the invert of the pipe channel in feet
Q is the discharge from the pipe or channel in cubic feet per second
$D_o$ is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median size stone designated as $d_{50}$. The largest stone size in the mixture shall be 1.5 times the $d_{50}$ size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap
$d = 1.5*(1.5*d_{50}$(largest stone size))
d = **7** inches*

* must use a minimum of 6"

***Rock Rip Rap Gradation***

| % of weight smaller than the given size | size of stone in inches | | |
|---|---|---|---|
| **100** | **4.5** | to | **6.0** |
| **85** | **3.9** | to | **5.4** |
| **50** | **3.0** | to | **4.5** |
| **15** | **0.9** | to | **1.5** |

*Formulas Used (Reference NHDES Handbook, Pages 7-114, 7-115)*

## Site Specific Soil Survey Report

TES ENVIRONMENTAL CONSULTANTS, L.L.C.

*Environmental Planning and Permitting*
*Soil and Wetlands Investigation*

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# SITE-SPECIFIC
# SOIL SURVEY REPORT

*performed at*

ATDG, LLC
Tax Map 315, Lot 5
360 Corporate Drive
Portsmouth, New Hampshire

*prepared for*

Allen & Major Associates, Inc.
250 Commercial Street
Manchester, New Hampshire

TES Project # 23-0031

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1494 Route 3A, Unit 1
Bow, NH 03304
(603) 856-8925

tom@tesenviro.comcastbiz.net

August 9, 2023

Mr. Brian D. Jones, P.E.
Allen & Major Associates, Inc.
400 Harvey Road
Manchester, New Hampshire 03103

RE: Site Specific Soil Map for ATDG, LLC
Tax Map 315, Lot 5; 360 Corporate Drive, Portsmouth, New Hampshire

Dear Mr. Jones:

On August 9, 2023 I performed field work on the above-referenced property for a Site Specific Soil Survey as you requested. This parcel was depicted on an Existing Conditions Plan and surveyed boundary map printed at a scale of 1" = 40', with a 1-foot contour interval, which served as the field base map for the soil survey. Ample ground control for the soil survey was provided by the flagged wetland boundaries, tree lines, a stone wall, trails, individual trees and boulders and development features on and adjacent to the site including edge of pavement, a shed, utility poles, storm drains, concrete piers and property boundary markers.

This Site Specific Soil Survey was completed utilizing SSSNNE Special Publication No. 3; Site Specific Soil Mapping Standards for New Hampshire and Vermont, Version 7.0, March 2021. The soil legend used for this soil map conforms to the New Hampshire State-Wide Numerical Soils Legend, Issue #10, January 2011 established and maintained by the Natural Resources Conservation Service.

The purpose of this soil survey was to provide information for an Alteration of Terrain permit application related to planned site development. Field work for this survey included the examination of numerous soil profiles via hand dug spade pits and soil auger borings taken at intervals sufficient to delineate the boundaries between soil map units. The NRCS Soil Survey of Rockingham County, New Hampshire was reviewed to determine the soils that have been mapped on and in the vicinity of the site, which were entirely Urban Land-Canton complex (799). As would be expected, Site Specific Soil mapping observations revealed discrepancies with the broad-scaled NRCS mapping. Altered soils are present, mainly in the western portion of the mapping area, moderately well drained soils exist adjacent to and between site wetlands, and poorly drained soils are present within wetlands in the central portion of the site. All New Hampshire-jurisdictional wetlands on the parcel were previously delineated by others, and I concurred with the delineation.

The following report includes a Site Specific Soil Map Key with accompanying Hydrologic Soil Groups and High Intensity Soil Survey codes, as well as soil map unit descriptions. The general soil conditions on the site consist of nearly level to moderately sloping lands having soils formed in loamy glacial till deposits. As noted in the above paragraph, altered soils are found along the lot frontage along Corporate Drive, consisting of regraded land extending approximately 140-160 feet east from Corporate Drive. Most of this area is lawn, although an asphalt-paved parking

lot exists in the northwest corner of the site. The remainder of the site is forested, with two wetland drainageways originating at the rear of the regraded portion of the site to the eastern property boundary. Site soils were mostly found to be derived from loamy, loose glacial till deposits, with the poorly drained soils in the wetlands having a loam to silt loam substratum likely derived from glaciomarine deposits

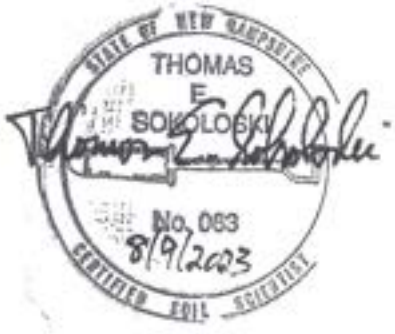
.

If you have any questions regarding the soils on this site and the accompanying report, please contact our office.

Very truly yours,

Thomas E. Sokoloski

Thomas E. Sokoloski
New Hampshire Certified Soil Scientist No. 63



SITE SPECIFIC SOIL MAP UNIT KEY

| Symbol* | Map Unit | Slope Class | Drainage Class | HISS Symbol | Hydrologic Soil Group |
|---|---|---|---|---|---|
| 42B | Canton fine sandy loam | 0-8% | Well | 221BH | B |
| 42C | Canton fine sandy loam | 8-15% | Well | 221CH | B |
| 444B | Newfields fine sandy loam | 0-8% | Moderately well | 321BH | B |
| 444C | Newfields fine sandy loam | 8-15% | Moderately well | 321CH | B |
| 500B/ccabb | Udorthents, loamy | 0-8% | Well | 261BH | B |
| 500C/ccabb | Udorthents, loamy | 8-15% | Well | 261CH | B |
| 500D/ccabb | Udorthents, loamy | 15-25% | Well | 261DH | B |
| 500E/ccabb | Udorthents, loamy | 25% + | Well | 261EH | B |
| 500B/hchbb | Udorthents, loamy | 0-8% | Undeterminable | 761BH** | B** |
| 538B | Squamscott fine sandy loam | 0-8% | Poorly | 551BH | C |
| 921B | Newfields Variant (SPD) | 0-8% | Somewhat poorly | 421BH | C |

* Refer to accompanying report for 5-unit supplemental symbol explanation.

** Assumed based upon adjacent soils without impervious surfaces.

This detailed Site-Specific Soil Map, prepared on August 9, 2023 by Thomas E. Sokoloski, Certified Soil Scientist #063 of TES Environmental Consultants, L.L.C. in Bow, New Hampshire, conforms to the standards of SSSNNE Publication No. 3, Version 7.0, "Site-Specific Soil Mapping Standards for New Hampshire and Vermont", March 2021. This map has been prepared to comply with soil mapping requirements of RSA 485 A: 17 and NHDES Env-Wq 1500, Alteration of Terrain. See accompanying report for methodology, map symbol legend, and interpretations. Use of the map symbol denominators for disturbed or altered soils, where given, is at the discretion of the Certified Soil Scientist.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for use in support of a New Hampshire Alteration Terrain permit application. It was produced by a certified Soil Scientist, and is not a product of the USDA Natural Resources Conservation Service. There is a narrative report that accompanies this map.

## Supplemental Symbols

The five components of the Disturbed Soil Mapping Unit Supplement are as follows:

**Symbol 1: Drainage Class**
a-Excessively Well Drained
b-Somewhat Excessively Drained
c-Well Drained
d-Moderately Well Drained
e-Somewhat Poorly Drained
f-Poorly Drained
g-Very Poorly Drained
h-Not Determined

**Symbol 2 -: Parent Material (of naturally formed soil only, if present)**
a-No natural soil within 60"
b-Glaciofluvial Deposits (outwash/terraces of sand or sand and gravel)
c-Glacial Till Material (active ice)
d-Glaciolacustrine very fine sand and silt deposits (glacial lakes)
e-Loamy/sandy over silt/clay deposits
f-Marine Silt and clay deposits (ocean waters)
g-Alluvial Deposits (floodplains)
h-Organic Materials-Fresh water Bogs, etc
i- Organic Materials-Tidal Marsh

**Symbol 3: Restrictive/Impervious Layers**
a-None
b-Bouldery surface with more than 15% of the surface covered with boulders
c-Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hardpan, platy structure or clayey texture with consistence of at least firm, i.e. more than 20 newtons. For other examples of soil characteristics that qualify for restrictive layer, see "Soil Manual for Site evaluations in NH" 2nd Ed., page 3-17, figure 2-14
d-Bedrock in the soil profile 0-20 inches
e-Bedrock in the soil profile 20-60 inches
f-Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types
g-Subject to Flooding
h –man-made impervious surface including pavement, concrete, or built-up surfaces (i.e. buildings) with no morphological restrictive layer within control section

**Symbol 4 Estimated Ksat* (most restrictive layer excluding symbol 3h above).**
a- High
b-Moderate
c-Low
d-Not determined
*See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA

**Symbol 5: Hydrologic Soil Group***
a-Group A
b-Group B
c-Group C
d-Group D
e-Not determined

*excluding man-made impervious/restrictive layers

# SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 42

Map Unit Name: Canton fine sandy loam

Landscape Settings: Upland slopes and crests, forests or fields

Surface Features: None

Drainage Class: Well

Parent Material: Loamy glacial till material with no mineral restrictive features (hardpan)

Complex: Yes ( ) No ( **X** )

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

None.

Additional Notes: Typical observed soil profile description:

| Depth | Horizon | Color | Texture | Structure | Consistency | Redox | Notes |
|---|---|---|---|---|---|---|---|
| 0-2" | Oe | 10YR 2/2 | -- | -- | -- | -- | Forest duff |
| 2-10" | Ap | 10YR 2/2 | Sandy loam | Granular | Very friable | None | |
| 10-28" | Bw | 10YR 5/6 | Sandy loam | Blocky | Friable | None | |
| 28-40"+ | C | 2.5Y 6/4 | Loamy sand | Single grain | Loose | None within 40" | |

Groundwater not encountered. SHWT below 40".

Southern portion of Tax Map 315, Lot 5.

Thomas E. Sokoloski August 9, 2023

# SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 444

Map Unit Name: Newfields fine sandy loam

Landscape Settings: Lower slopes of glacial till uplands, forests or fields

Surface Features: None

Drainage Class: Moderately well

Parent Material: Loamy glacial till material with no mineral restrictive features (hardpan)

Complex: Yes ( ) No ( **X** )

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Small inclusions of somewhat poorly drained soils along wetland boundaries, mostly in northern and eastern portions of site, less than 5% of map unit.

Additional Notes: Typical observed soil profile description:

| Depth | Horizon | Color | Texture | Structure | Consistency | Redox | Notes |
|---|---|---|---|---|---|---|---|
| 0-2" | Oe | 10YR 2/2 | -- | -- | -- | -- | Forest duff |
| 2-8" | A | 10YR 2/2 | Sandy loam | Granular | Very friable | None | |
| 10-22" | Bw | 10YR 5/6 | Sandy loam | Blocky | Friable | None | |
| 22-40"+ | C | 2.5Y 5/3 | Loamy sand | Single grain | Loose | 10YR 5/6 | |

Groundwater not encountered. SHWT 15-40".

Across most of forested uplands adjacent to site wetlands on Tax Map 315, Lot 5.

Thomas E. Sokoloski August 9, 2023

# SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500BE/ccabb

Map Unit Name: Udorthents, loamy

Landscape Settings: Regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Well

Parent Material: Filled or regraded glacial till material with no mineral restrictive features

Complex: Yes ( ) No ( **X** )

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

None.

Additional Notes: Typical observed soil profile description:

| Depth | Horizon | Color | Texture | Structure | Consistency | Redox | Notes |
|---|---|---|---|---|---|---|---|
| 0-8" | Af | 10YR 3/3 | Sandy loam | Granular | Very friable | None | Fill |
| 8-18" | Bw | 10YR 5/6 | Sandy loam | Blocky | Friable | None | |
| 18-40"+ | C | 2.5Y 6/4 | Loamy sand | Single grain | Loose | None within 40" | |

Groundwater not encountered. SHWT below 40".

Western and southern portions of Tax Map 315, Lot 5.

Thomas E. Sokoloski August 9, 2023

# SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

| | |
|---|---|
| Map Unit Symbol: | 500B/hchbb |
| Map Unit Name: | Udorthents, loamy |
| Landscape Settings: | Developed, impervious land surfaces (buildings, pavement) |
| Surface Features: | Buildings and pavement |
| Drainage Class: | Undeterminable (assumed to be well drained as are adjacent soils) |
| Parent Material: | Filled or regraded glacial till material with no mineral restrictive features (hardpan) |
| Complex: | Yes ( ) No ( **X** ) |

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

None.

Additional Notes: Typical observed soil profile description:

Soil not observed due to impervious surface.

Western portion of Tax Map 315, Lot 5.

Thomas E. Sokoloski August 9, 2023

# SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 538

Map Unit Name: Squamscott fine sandy loam

Landscape Settings: Low-lying portions of forests or fields; wetlands

Surface Features: None

Drainage Class: Poorly

Parent Material: Loamy glacial till material with silty substrata (glaciomarine deposits)

Complex: Yes ( ) No ( **X** )

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

None.

Additional Notes: Typical observed soil profile description:

| Depth | Horizon | Color | Texture | Structure | Consistency | Redox | Notes |
|---|---|---|---|---|---|---|---|
| 0-1" | Oa | 10YR 2/1 | -- | -- | -- | -- | Muck |
| 1-6" | A | 10YR 2/1 | Sandy loam | Granular | Very friable | None | |
| 6-15" + | Bg | 10YR 5/2 | Sandy loam | Blocky | Friable | 10YR 5/6 | |
| 15-30"+ | Cg | 2.5Y 5/2 | Loam/silt loam | Massive | Friable | 10YR 5/6 | |

Groundwater at 14". SHWT above surface.

Central portion of Tax Map 315, Lot 5.

Thomas E. Sokoloski August 9, 2023

# SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 921

Map Unit Name: Newfields Variant (Somewhat Poorly Drained)

Landscape Settings: Low-lying portions of forests or fields; adjacent to wetlands

Surface Features: None

Drainage Class: Somewhat poorly

Parent Material: Loamy glacial till material with no mineral restrictive features (hardpan)

Complex: Yes ( ) No ( **X** )

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes: Typical observed soil profile description:

| Depth | Horizon | Color | Texture | Structure | Consistency | Redox | Notes |
|---|---|---|---|---|---|---|---|
| 0-2" | Oe | 10YR 2/2 | -- | -- | -- | -- | Forest duff |
| 2-10" | A | 10YR 2/2 | Sandy loam | Granular | Very friable | None | |
| 10-20" | Bw | 10YR 5/4 | Sandy loam | Blocky | Friable | 10YR 5/6 | |
| 20-28"+ | C1 | 2.5Y 6/3 | Loamy sand | Single grain | Loose | 10YR 5/6 & 2.5Y 5/2 | |
| 28-40" | C2 | 2.5Y 5/2 | Silt loam | Massive | Friable | 10YR 5/8 | |

Groundwater at 25". SHWT between 12-15".

Southern portion of Tax Map 315, Lot 5.

Thomas E. Sokoloski August 9, 2023

## Infiltration Feasibility Report

# Infiltration Feasibility Report

The project proposes seven systems that require infiltration to function properly. These systems are identified on the plans as Infiltration System 1, 2, and 3, as well as a bioretention system 1, 2, 3, and 4.

## Infiltration System 1

1. Location of the practice

Infiltration System 1 – This system is located in the center of the site, behind the proposed building, below the proposed parking lot.

2. Existing topography at the location of the practice

The existing topography within the area of Infiltration System 1 is relatively flat. Existing elevations where the system is proposed range from 57 to 58.

3. Test pit location

In accordance with Env-Wq 1504.13, NHDES requires that a minimum number of test pits be dug in the location of each system, depending on the size of the proposed system.

The footprint of the bottom of Infiltration System 1 is 3,087± S.F. and 2 test pits were dug in the vicinity of the proposed practice. These pits are identified on the plans as TP7 and TP8.

4. Seasonal high-water table (SHWT) and bedrock elevations

The seasonal high-water table was observed in TP7 at 40" below grade, or elevation 54.5. Bedrock/refusal was not encountered in TP7, which was advanced to a depth of 72" below grade.
The seasonal high-water table was observed in TP8 at 36" below grade, or elevation 54.6. Bedrock/refusal was not encountered in TP8, which was advanced to a depth of 72" below grade.

## 5. Profile Description

Test pits were completed on 07-17-2023 and observed by Allen & Major Associates.

| Test Pit 7 (TP7)<br>Existing Ground Elevation: 57.8<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-3" | Leaf litter |
| 3-8" | Sandy loam, massive friable, dry |
| 8-14" | Sandy loam, massive friable, dry |
| 14-72" | Sandy loam, massive friable, dry to moist |
| ESHWT: 40" (Elevation 54.5)<br>Weep: None<br>Bedrock/Refusal: None | |

| Test Pit 8 (TP8)<br>Existing Ground Elevation: 57.6<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-3" | Leaf litter |
| 3-6" | Sandy loam, massive friable, dry |
| 6-12" | Sandy loam, massive friable, dry |
| 12-72" | Sandy loam, massive friable, dry to moist |
| ESHWT: 36" (Elevation 54.6)<br>Weep: None<br>Bedrock/Refusal: None | |

## 6. Summary of field-testing data used to determine the infiltration rate

The NRCS Soil Report shows the site to be Urban Land soil type, for which no Ksat value is provided. Given the test pit results, it was assumed that the Ksat value for the adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes would be applicable. The Ksat value provided in the Soil Report for this soil type is 10.1993 micrometers per second which equals 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

## Infiltration System 2

1. Location of the practice

Infiltration System 2 – This system is located on the southeast side of the site, behind the proposed building and below the proposed parking lot.

2. Existing topography at the location of the practice

The existing topography within the area of Infiltration System 2 is moderately sloped. Existing elevations where the system is proposed range from 55 to 61.

3. Test pit location

In accordance with Env-Wq 1504.13, NHDES requires that a minimum number of test pits be dug in the location of each system, depending on the size of the proposed system.

The footprint of the bottom of Infiltration System 2 is 6,031± S.F. and 2 test pits were dug in the vicinity of the proposed practice. These pits are identified on the plans as TP5 and TP6.

4. Seasonal high-water table (SHWT) and bedrock elevations

The seasonal high-water table was observed in TP5 at 36" below grade, or elevation 53.7. Bedrock/refusal was not encountered in TP5, which was advanced to a depth of 72" below grade.
The seasonal high-water table was observed in TP6 at 34" below grade, or elevation 53.6. Bedrock/refusal was not encountered in TP6, which was advanced to a depth of 80" below grade.

## 5. Profile Description

Test pits were completed on 07-17-2023 and observed by Allen & Major Associates.

| Test Pit 5 (TP5)<br>Existing Ground Elevation: 56.7<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-3" | Leaf litter |
| 3-9" | Sandy loam, massive friable, dry |
| 9-14" | Sandy loam, massive friable, dry |
| 14-72" | Sandy loam, massive friable, dry to moist |
| ESHWT: 36" (Elevation 53.7)<br>Weep: None<br>Bedrock/Refusal: None | |

| Test Pit 6 (TP6)<br>Existing Ground Elevation: 56.4<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-3" | Leaf litter |
| 3-10" | Sandy loam, massive friable, dry |
| 10-16" | Sandy loam, massive friable, dry |
| 16-80" | Sandy loam, massive friable, dry to moist |
| ESHWT: 34" (Elevation 53.6)<br>Weep: None<br>Bedrock/Refusal: None | |

## 6. Summary of field-testing data used to determine the infiltration rate

The NRCS Soil Report shows the site to be Urban Land soil type, for which no Ksat value is provided. Given the test pit results, it was assumed that the Ksat value for the adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes would be applicable. The Ksat value provided in the Soil Report for this soil type is 10.1993 micrometers per second which equals 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

**Infiltration System 3**

1. Location of the practice

Infiltration System 3 – This system is located on the west side of the site, between the proposed building and Corporate Drive, below the proposed parking lot.

2. Existing topography at the location of the practice

The existing topography within the area of Infiltration System 3 is relatively flat. Existing elevations where the system is proposed range from 61 to 62.

3. Test pit location

In accordance with Env-Wq 1504.13, NHDES requires that a minimum number of test pits be dug in the location of each system, depending on the size of the proposed system.

The footprint of the bottom of Infiltration System 3 is 1,971± S.F. and 1 test pit was dug in the vicinity of the proposed practice. This pit is identified on the plans as TP2.

4. Seasonal high-water table (SHWT) and bedrock elevations

The seasonal high-water table was observed in TP2 at 70" below grade, or elevation 55.6. Bedrock/refusal was not encountered in TP2, which was advanced to a depth of 96" below grade.

## 5. Profile Description

Test pits were completed on 07-17-2023 and observed by Allen & Major Associates.

| Test Pit 2 (TP2)<br>Existing Ground Elevation: 61.4<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-80" | Loamy sand (fill), dry to moist |
| 80-82" | Buried organics |
| 82-96" | Fine sandy loam, massive, firm, moist |
| ESHWT: 70" (Elevation 55.6)<br>Weep: None<br>Bedrock/Refusal: None | |

## 6. Summary of field-testing data used to determine the infiltration rate

The NRCS Soil Report shows the site to be Urban Land soil type, for which no Ksat value is provided. Given the test pit results, it was assumed that the Ksat value for the adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes would be applicable. The Ksat value provided in the Soil Report for this soil type is 10.1993 micrometers per second which equals 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

**Bioretention System 1**

1. Location of the practice

Bioretention System 1 – This system is located on the south side of the site, between the parking lot and the southerly property line.

2. Existing topography at the location of the practice

The existing topography within the area of Bioretention System 1 is relatively flat. Existing elevations where the system is proposed range from 60 to 61.

3. Test pit location

In accordance with Env-Wq 1504.13, NHDES requires that a minimum number of test pits be dug in the location of each system, depending on the size of the proposed system.

The footprint of Bioretention System 1 is 571± S.F. and 1 test pit was dug in the vicinity of the proposed practice. The pit is identified on the plans as TP4.

4. Seasonal high-water table (SHWT) and bedrock elevations

The seasonal high-water table was observed in TP4 at 67" below grade, or elevation 55.2. Bedrock/refusal was not encountered in TP4, which was advanced to a depth of 96" below grade.

## 5. Profile Description

Test pits were completed on 07-17-2023 and observed by Allen & Major Associates.

| Test Pit 4 (TP4)<br>Existing Ground Elevation: 60.8<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-18" | Loamy sand (fill), dry |
| 18-24" | Sandy loam, massive friable, dry |
| 24-32" | Sandy loam, massive friable, dry |
| 32-48" | Sandy loam, massive friable, dry |
| 48-96" | Sandy loam, massive firm, dry to moist |
| ESHWT: 67" (Elevation 55.2)<br>Weep: None<br>Bedrock/Refusal: None | |

## 6. Summary of field-testing data used to determine the infiltration rate

The NRCS Soil Report shows the site to be Urban Land soil type, for which no Ksat value is provided. Given the test pit results, it was assumed that the Ksat value for the adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes would be applicable. The Ksat value provided in the Soil Report for this soil type is 10.1993 micrometers per second which equals 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

**Bioretention System 2**

1. Location of the practice

Bioretention System 2 – This system is located on the west side of the site, between the parking lot and Corporate Drive.

2. Existing topography at the location of the practice

The existing topography within the area of Bioretention System 2 is relatively flat. Existing elevations where the system is proposed range from 61 to 61.5.

3. Test pit location

In accordance with Env-Wq 1504.13, NHDES requires that a minimum number of test pits be dug in the location of each system, depending on the size of the proposed system.

The footprint of the system which uses infiltration is 258± S.F. and 1 test pit was dug in the vicinity of the proposed practice. The pit is identified on the plans as TP3.

4. Seasonal high-water table (SHWT) and bedrock elevations

The seasonal high-water table was observed in TP3 at 76" below grade, or elevation 55.9. Bedrock/refusal was not encountered in TP3, which was advanced to a depth of 94" below grade.

## 5. Profile Description

Test pits were completed on 07-17-2023 and observed by Allen & Major Associates.

| Test Pit 3 (TP3)<br>Existing Ground Elevation: 62.2<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-60" | Loamy sand (fill), dry, some construction debris |
| 60-94" | Sandy loam, massive, firm, dry to moist |
| ESHWT: 76" (Elevation 55.9)<br>Weep: None<br>Bedrock/Refusal: None | |

## 6. Summary of field-testing data used to determine the infiltration rate

The NRCS Soil Report shows the site to be Urban Land soil type, for which no Ksat value is provided. Given the test pit results, it was assumed that the Ksat value for the adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes would be applicable. The Ksat value provided in the Soil Report for this soil type is 10.1993 micrometers per second which equals 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

**Bioretention System 3**

1. Location of the practice

Bioretention System 3 – This system is located in the northwest corner of the site, near the intersection of Corporate Drive and International Drive.

2. Existing topography at the location of the practice

The existing topography within the area of Bioretention System 3 is relatively flat. Existing elevations where the system is proposed range from 60 to 61.5.

3. Test pit location

In accordance with Env-Wq 1504.13, NHDES requires that a minimum number of test pits be dug in the location of each system, depending on the size of the proposed system.

The footprint of the system which uses infiltration is 1,639± S.F. and 1 test pit was dug in the vicinity of the proposed practice. The pit is identified on the plans as TP1.

4. Seasonal high-water table (SHWT) and bedrock elevations

The seasonal high-water table was observed in TP1 at 72" below grade, or elevation 55.5. Bedrock/refusal was not encountered in TP1, which was advanced to a depth of 96" below grade.

## 7. Profile Description

Test pits were completed on 07-17-2023 and observed by Allen & Major Associates.

| Test Pit 1 (TP1)<br>Existing Ground Elevation: 61.5<br>Date: 07-17-2023 | |
|---|---|
| Depth | Description |
| 0-48" | Loamy sand (fill), dry, some construction debris |
| 48-96" | Sandy loam, massive, firm, dry to moist |
| ESHWT: 72" (Elevation 55.5)<br>Weep: None<br>Bedrock/Refusal: None | |

## 5. Summary of field-testing data used to determine the infiltration rate

The NRCS Soil Report shows the site to be Urban Land soil type, for which no Ksat value is provided. Given the test pit results, it was assumed that the Ksat value for the adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes would be applicable. The Ksat value provided in the Soil Report for this soil type is 10.1993 micrometers per second which equals 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

**Bioretention System 4**

1. Location of the practice

Bioretention System 4 – This system is located on the north side of the site, near the proposed driveway entrance to International Drive.

2. Existing topography at the location of the practice

The existing topography within the area of Bioretention System 4 is relatively flat. Existing elevations where the system is proposed range from 58.5 to 59.

3. Test pit location

In accordance with Env-Wq 1504.13, NHDES requires that a minimum number of test pits be dug in the location of each system, depending on the size of the proposed system.

The footprint of the system that uses infiltration is 516± S.F. At this time no test pits have been performed in the vicinity of this practice. With that said, soils and depths to SHWT on site are consistent throughout and so it is reasonable to expect this system to function properly as designed. It has been noted on the plan that one confirmatory test pit shall be performed within the footprint of the practice prior to construction.

4. Summary of field-testing data used to determine the infiltration rate

The NRCS Soil Report shows the site to be Urban Land soil type, for which no Ksat value is provided. Given the test pit results, it was assumed that the Ksat value for the adjacent Chatfield-Hollis-Canton Complex, 0-8% slopes would be applicable. The Ksat value provided in the Soil Report for this soil type is 10.1993 micrometers per second which equals 1.445 inches per hour. A 2x safety factor was applied and 0.72 inches per hour was used for the design exfiltration rate.

## Registration and Notification Form for Storm Water Infiltration to Groundwater

NHDES-W-03-135

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

# REGISTRATION AND NOTIFICATION FORM FOR STORMWATER INFILTRATION TO GROUNDWATER (5H1)

Groundwater Discharge Program

**RSA/Rule:** RSA 485-A:6, VII; 485:3, X; Env-Wq 402

**Applicant Information**

| | | |
|---|---|---|
| Name: ATDG, LLC | Daytime Phone: 603-799-6787 | |
| Mailing Address: 1 Merrill Crossing | | |
| City: Bow | State: NH | ZIP: 03304 |
| Contact Person Name: Alexander Slocum | Email: ahslocum@gmail.com | |
| Contact Person Phone Number: 603-777-6506 | Fax Number: | |

**Facility Information**

| | | |
|---|---|---|
| Name: ASC / Medical Office | | |
| Address: 360 Corporate Drive | | |
| City: Portsmouth | State: NH | ZIP: 03801 |
| Property Tax Map: 315 | Lot Number: 5 | |
| Latitude & Longitude of discharge point(s): 43.073484, -70.801090 | | |

**Facility Owner Information** (complete only if different than applicant)

| | | |
|---|---|---|
| Owner Name: same as applicant | Daytime Phone: | |
| Mailing Address: | | |
| City/Town: | State: | ZIP: |
| Contact Person Name: | Email: | |
| Contact Person Phone Number: | Fax Number: | |

**Property Owner** (complete only if different then Applicant)

| | | |
|---|---|---|
| Name: Pease Development Authority | Daytime Phone: | |
| Mailing Address: 360 Corporate Drive | | |
| City: Portsmouth | State: NH | ZIP: 03801 |
| Contact Person Name: | Email: | |
| Contact Person Phone Number: | Fax Number: | |

**Facility Operator's Information** (complete only if different than applicant)

| | | |
|---|---|---|
| Facility Operator Name: same as applicant | Daytime Phone: | |
| Mailing Address: | | |
| City: | State: | ZIP: |

*Complete this form if you are using a drywell or other subsurface infiltration structures to recharge stormwater to the ground or groundwater. If a completed Underground Injection Control (UIC) registration form was submitted to the Alteration of Terrain Bureau for this project, then one is not required to be sent directly to the Drinking Water and Groundwater Bureau (DWGB).*

NHDES-W-03-135

**REGISTRATION AND NOTIFICATION FORM FOR STORMWATER INFILTRATION TO GROUNDWATER (attach additional sheets, as necessary, for responses to questions below)**

| Please provide a complete description of the facility including historic uses, any former contamination and/or ongoing remedial action at the site. |
|---|
| The site was used as an officer's quarters on Pease Air Base when the base was operational. The AoT screening layers show two remedial actions on the site, "PAFB 92.00 Command Center", and "PAFB 87.00 Command Center Site". There is no known ongoing remedial action being performed on the site. |

| Please provide information concerning the location of the infiltration activity, include Locus map (i.e. USGS map). |
|---|
| Infiltration systems 1-3 are located on the east and west sides of the site, below the proposed parking lot. Bioretention Systems 1-4 are located around the perimeter of the site, adjacent to the proposed parking lot. |

| Please describe the pretreatment system, if any, and capacity of the system. |
|---|
| All runoff directed to the four infiltration systems enters through an isolator row lined with fabric, which prevents migration of sediment to the rest of the system. Runoff directed to the four bioretention systems will be pretreated by one of four sediment forebays. |

| Please describe the materials and products used for the subsurface infiltration structure (i.e., pipe and stone leachfield, plastic chamber units, concrete drywell, etc.). |
|---|
| The four infiltration systems are designed as ADS Stormtech SC-310 and SC-160 chambers. As mentioned above, the inlet (isolator) rows are lined with filter fabric for pretreatment. The systems are backfilled with coarse stone which provides additional storage volume. The bioretention systems include 24" of filter media, per Env-Wq 1508.07(k)(4), and underlaid with coarse gravel and pea gravel, per NH Stormwater Manual, Chapter 4.3c. |

| Please describe the disposal method and location. Include a site plan showing: the infiltration structure, any other on-site infiltration structures, dimensions, depth to groundwater (if known), adjacent septic system(s), and drinking water source(s). |
|---|
| Stormwater runoff will be infiltrated using the systems described above. There are no known existing septic systems, and the project will connect to the existing municipal sewer system. Drinking water will be provided by a municipal connection. Site plans are provided which show locations of the various systems, as well as test pit data that was used in the design. |

| Please provide information concerning methods and schedule for periodic inspection and/or maintenance. |
|---|
| A complete Operation & Maintenance Plan is included with the AoT submittal which outlines the methods and schedule of inspections. |

**Applicant/Owner Certification Statement and Signature**

**By signing this application, the signer certifies that the information contained in or otherwise submitted with this application is true, complete and not misleading to the best of the signer's knowledge and belief.**

**By signing this application, the signer understands that submission of false, incomplete or misleading information is grounds for:**

- **Denying the application;**
- **Revoking any application that is granted based on the information; and**
- **If the signer is acting as or on behalf of a listed engineer as defined in Env-C 502.10, debarring the listed engineer from the roster.**

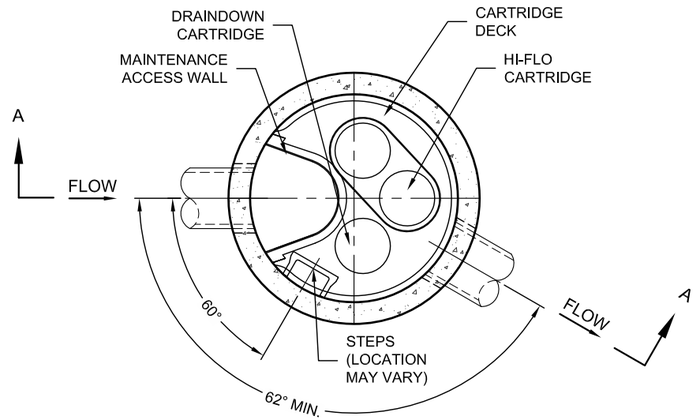
**By signing the application, the signer and applicant agree to comply with all applicable rules and conditions of this permit and to not discharge to the holding tank(s) until written permission from the department has been received.**

DocuSigned by:
Alexander H Slocum Jr
3D12626EBF66412

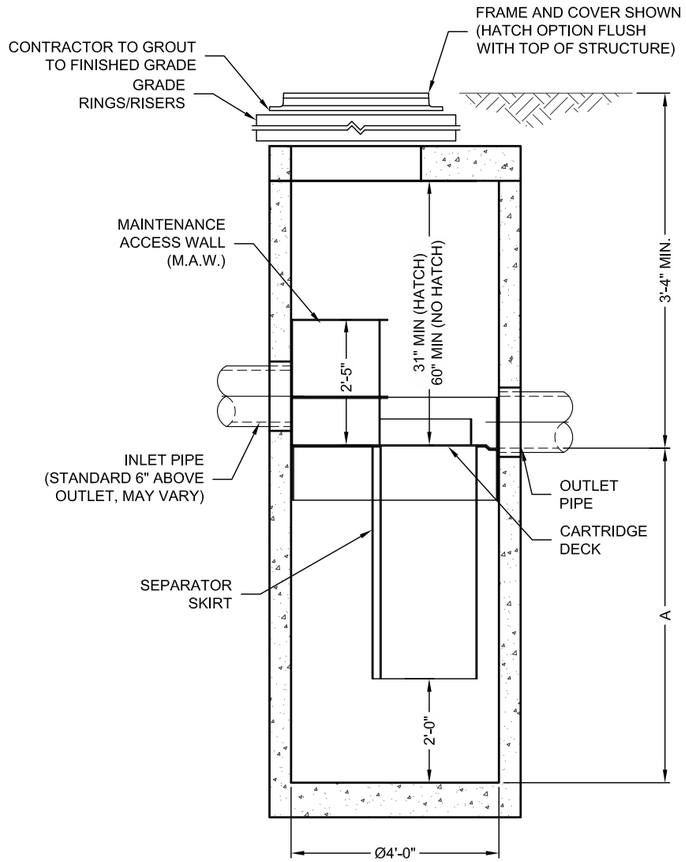
8/16/2023 | 1:59:46 PM CDT

**Signature of Facility Owner or Contact** **Date**

## Jellyfish Standard Detail Treatment Capacity




## PLAN VIEW




## SECTION A-A

Jellyfish® Filter

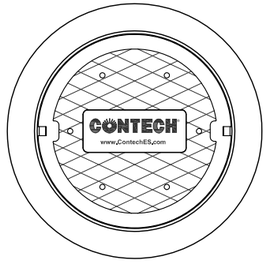
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENT NO. 8,287,726, 8,221,618 & US 8,123,935; OTHER INTERNATIONAL PATENTS PENDING

## JELLYFISH DESIGN NOTES

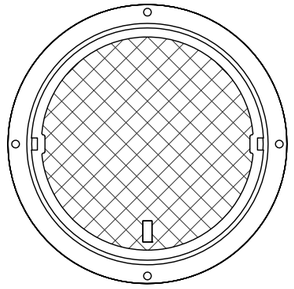
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN. Ø48" MANHOLE JELLYFISH PEAK TREATMENT CAPACITY IS 0.45 CFS. IF THE SITE CONDITIONS EXCEED 0.45 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

| CARTRIDGE DEPTH | 54" | 40" | 27" | 15" |
|---|---|---|---|---|
| OUTLET INVERT TO STRUCTURE INVERT (A) | 6'-5" | 5'-3" | 4'-2" | 3'-2" |
| FLOW RATE HIGH-FLO / DRAINDOWN (cfs) (per cart) | 0.18 / 0.09 | 0.13 / 0.065 | 0.09 / 0.045 | 0.05 / 0.025 |
| MAX. CARTS HIGH-FLO / DRAINDOWN | 2 / 1 | | | |




**FRAME AND COVER**
(DIAMETER VARIES)
N.T.S.



**HATCH**
(Ø36" CAST INTO SLAB)
N.T.S.

## SITE SPECIFIC DATA REQUIREMENTS

| | |
|---|---|
| STRUCTURE ID | * |
| WATER QUALITY FLOW RATE (cfs) | * |
| PEAK FLOW RATE (cfs) | * |
| RETURN PERIOD OF PEAK FLOW (yrs) | * |
| # OF CARTRIDGES REQUIRED (HF / DD) | * / * |
| CARTRIDGE SIZE | * |

| PIPE DATA: | I.E. | MATERIAL | DIAMETER |
|---|---|---|---|
| INLET PIPE #1 | * | * | * |
| INLET PIPE #2 | * | * | * |
| OUTLET PIPE | * | * | * |

| | |
|---|---|
| RIM ELEVATION | * |

| ANTI-FLOTATION BALLAST | WIDTH | HEIGHT |
|---|---|---|
| | * | * |

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 3', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

# JELLYFISH JF4
# STANDARD DETAIL
# OFFLINE CONFIGURATION

I:\COMMON\CAD\TREATMENT\13 JELLYFISH FILTER\40 STANDARD DRAWINGS\OFFLINE\DWG\JF4-DTL.DWG 6/26/2015 4:07 PM

## TSS and Nitrogen Worksheets

## TSS REMOVAL CALULATIONS

The calculations provide the TSS removal rate for the treatment train with Infiltration systems

| Stormwater Management BMP | TSS Removal rate |
|---|---|
| Street Sweeping | 5 % |
| Deep Sump Catch Basins | 15 % |
| Infiltration System | 90 % |

| | | | |
|---|---|---|---|
| Average Annual Load | = | 100% | |
| Street Sweeping | = | 5.0 | % Removal Rate |
| | | 95.0 | % TSS Load Remains |
| TSS Load Remaining | = | 95.0 | % |
| Deep Sump Catch Basins | = | 15.0 | % Removal Rate |
| | | 80.8 | % TSS Load Remains |
| TSS Load Remaining | = | 80.8 | % |
| Infiltration System | = | 90.0 | % Removal Rate |
| | | 8.1 | % TSS Load Remains |

Initial TSS Load - Percentage of TSS Remaining = Final TSS Removal Rate

100 - 8.1 = 91.9 %

## TSS REMOVAL CALULATIONS

The calculations provide the TSS removal rate for the treatment train with Bioretention systems

| Stormwater Management BMP | TSS Removal rate |
|---|---|
| Street Sweeping | 5 % |
| Bioretention | 90 % |

| | | | |
|---|---|---|---|
| Average Annual Load | = | 100% | |
| Street Sweeping | = | 5.0 | % Removal Rate |
| | | 95.0 | % TSS Load Remains |
| TSS Load Remaining | = | 95.0 | % |
| Bioretention | = | 90.0 | % Removal Rate |
| | | 9.5 | % TSS Load Remains |

Initial TSS Load - Percentage of TSS Remaining = Final TSS Removal Rate

100 - 9.5 = 90.5 %

## Nitrogen REMOVAL CALULATIONS

The calculations provide the Nitrogen removal rate for the treatment train with Infiltration systems

| Stormwater Management BMP | Nitrogen Removal rate |
|---|---|
| Deep Sump Catch Basins | 5 % |
| Infiltration System | 60 % |

| | | | |
|---|---|---|---|
| Average Annual Load | = | 100.0 | % |
| Deep Sump Catch Basins | = | 5.0 | % Removal Rate |
| | | 95.0 | % Nitrogen Load Remains |
| Nitrogen Load Remaining | = | 95.0 | % |
| Infiltration System | = | 60.0 | % Removal Rate |
| | | 38.0 | % Nitrogen Load Remains |

Initial Nitrogen Load - Percentage of Nitrogen Remaining = Final Removal Rate

100 - 38.0 = 62.0 %

## Nitrogen REMOVAL CALULATIONS

The calculations provide the Nitrogen removal rate for the treatment train with Bioretention systems

| Stormwater Management BMP | Nitrogen Removal rate |
|---|---|
| Bioretention | 65 % |

Nitrogen Load Remaining = 100.0 %
Bioretention = 65.0 % Removal Rate

35.0 % Nitrogen Load Remains

| Initial Nitrogen Load - Percentage of Nitrogen Remaining = Final Removal Rate |
|---|
| 100 - 35.0 = 65.0 % |

## Pipe Sizing Calculations

**ASC / Medical Office**
**360 Corporate Drive, Portsmouth, NH**
**Allen & Major Associates, Inc.**
**A&M Project Number: 3250-01**

ALLEN & MAJOR ASSOCIATES, INC.

## Drainage Pipe Design Analysis

**Date: 18-Sep-23**
**Created By: SM**
**Checked By: BDJ**
**Approved By: BDJ**

***Manning's Formula***

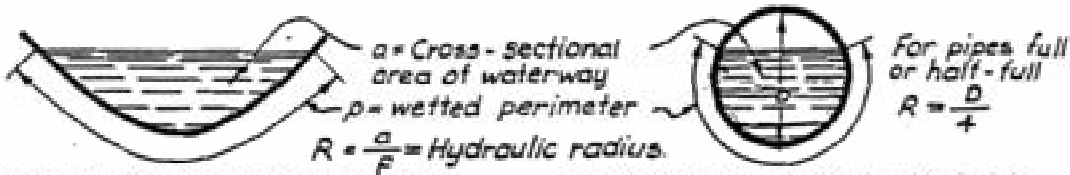
*V=1.486/n*R^ 2/3 *S^ 1/2*
*Q = V*A*
*(25-Year storm)*

*Where: V is the velocity in Ft/sec.*
*n is Manning's coefficient of friction*
*R is the Hydraulic Radius*
*S is the slope of the pipe*

*R = Area/Wetted Perimeter*

*Where: Area = Pi*(R/12)2*
*Wetted Perimeter = 2*Pi*R/12*

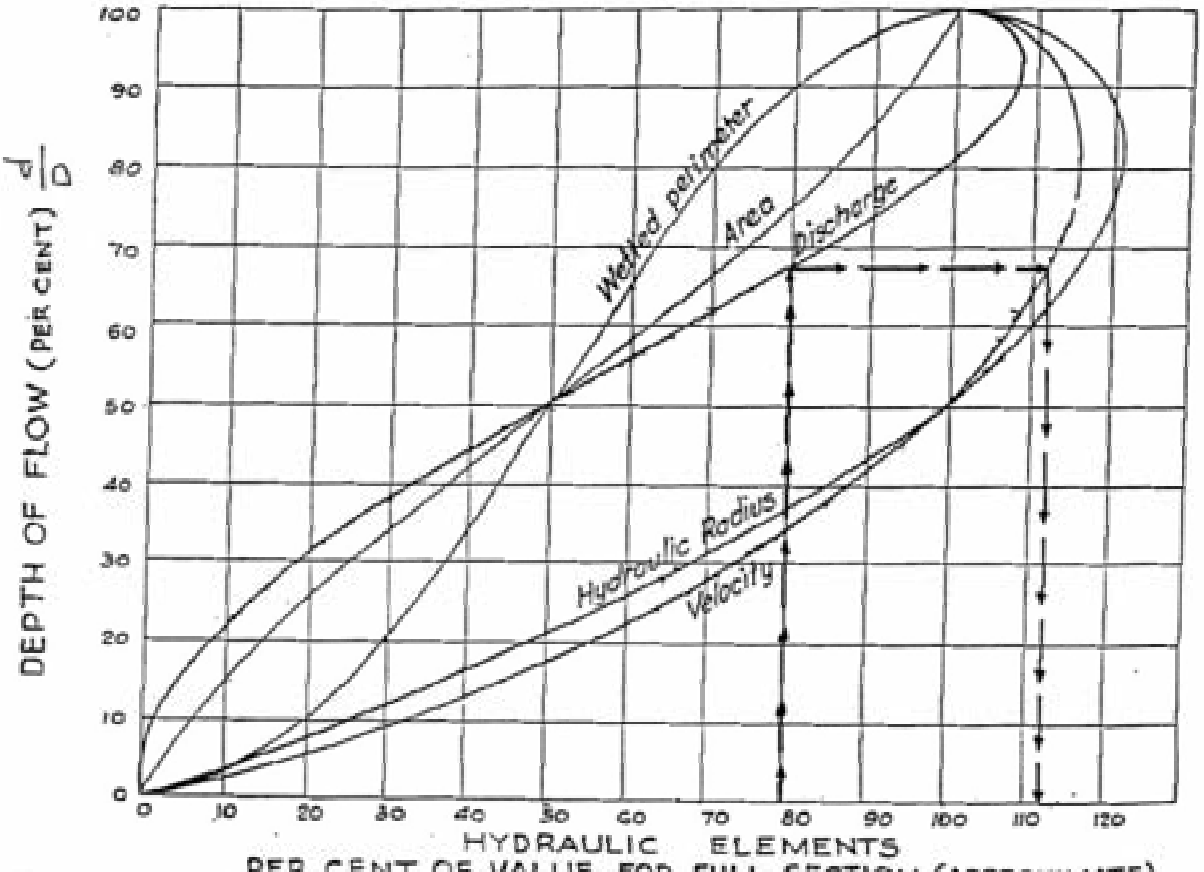
| PIPE | $Q_{design}$ (cfs) | n | Diameter (inches) | A ($ft^2$) | Wp (ft) | R (ft) | S (feet/foot) | $Q_{full}$ (cfs) | $Q_{full}$ ³ $Q_{design}$ | $V_{full}$ (ft/s) | $Q_d/Q_f$ | Results Fig. 4-4A | $V_{design}$ (ft/s) | $V_{design}$ ≤ 12 ft/s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DMH-01 | 1.42 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0142 | 1.44 | OK | 4.13 | 0.99 | 1.15 | 4.74 | OK |
| DMH-03 | 1.90 | 0.013 | 10 | 0.55 | 2.62 | 0.21 | 0.0342 | 4.05 | OK | 7.43 | 0.47 | 0.97 | 7.21 | OK |
| OCS-01 | 0.75 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0057 | 0.91 | OK | 2.61 | 0.82 | 1.12 | 2.93 | OK |
| OCS-02 | 0.17 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0181 | 1.63 | OK | 4.66 | 0.10 | 0.59 | 2.75 | OK |
| OCS-03 | 1.44 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0327 | 2.19 | OK | 6.26 | 0.66 | 1.07 | 6.70 | OK |
| RD-01 | 1.10 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0145 | 1.46 | OK | 4.17 | 0.76 | 1.10 | 4.59 | OK |
| RD-02 | 1.70 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0208 | 1.74 | OK | 4.99 | 0.98 | 1.15 | 5.74 | OK |
| RD-03 | 0.10 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0113 | 1.28 | OK | 3.68 | 0.08 | 0.55 | 2.02 | OK |
| WQ-01 | 0.37 | 0.013 | 8 | 0.35 | 2.09 | 0.17 | 0.0052 | 0.87 | OK | 2.50 | 0.42 | 0.94 | 2.35 | OK |




SECTION OF ANY OPEN CHANNEL — SECTION OF CIRCULAR PIPE

V = Average or mean velocity in feet per second.
Q = a V = Discharge of pipe or channel in cubic feet per second (c.f.s.).
n = Coefficient of roughness of pipe or channel surface, see Table A-Pg. 18-68.
S = Slope of Hydraulic Gradient (water surface in open channels or pipes not under pressure, same as slope of channel or pipe invert only when flow is uniform in constant section.

## HYDRAULIC ELEMENTS OF CHANNEL SECTIONS.




EXAMPLE: Given: Discharge = 12 c.f.s. through a pipe which has capacity flowing full of 15 c.f.s. at a velocity of 7.0 ft. per sec. Required to find V for Q = 12 c.f.s.
∴ Percentage of full discharge = 12/15 = 80%. Enter chart at 80% of value for full section of Hydraulic Elements, find V = 112.5% × 7 = 7.9 ft. per sec.

## VALUES OF HYDRAULIC ELEMENTS OF CIRCULAR SECTION FOR VARIOUS DEPTHS OF FLOW.

Figure 4-4A

## Extreme Precipitation Tables

# Extreme Precipitation Tables

## Northeast Regional Climate Center

***Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.***

### Metadata for Point

| | |
|---|---|
| **Smoothing** | Yes |
| **State** | |
| **Location** | |
| **Latitude** | 43.073 degrees North |
| **Longitude** | 70.802 degrees West |
| **Elevation** | 10 feet |
| **Date/Time** | Mon Jul 03 2023 09:22:30 GMT-0400 (Eastern Daylight Time) |

## Extreme Precipitation Estimates

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1yr** | 0.26 | 0.40 | 0.50 | 0.65 | 0.82 | 1.04 | **1yr** | 0.70 | 0.98 | 1.21 | 1.56 | 2.03 | 2.66 | 2.92 | **1yr** | 2.35 | 2.81 | 3.21 |
| **2yr** | 0.32 | 0.50 | 0.62 | 0.81 | 1.02 | 1.30 | **2yr** | 0.88 | 1.18 | 1.52 | 1.94 | 2.49 | 3.21 | 3.57 | **2yr** | 2.84 | 3.43 | 3.93 |
| **5yr** | 0.37 | 0.58 | 0.73 | 0.97 | 1.24 | 1.60 | **5yr** | 1.07 | 1.46 | 1.88 | 2.43 | 3.14 | 4.07 | 4.57 | **5yr** | 3.60 | 4.40 | 5.03 |
| **10yr** | 0.41 | 0.64 | 0.81 | 1.11 | 1.44 | 1.88 | **10yr** | 1.25 | 1.72 | 2.22 | 2.88 | 3.74 | 4.87 | 5.53 | **10yr** | 4.31 | 5.31 | 6.07 |
| **25yr** | 0.47 | 0.75 | 0.96 | 1.33 | 1.76 | 2.32 | **25yr** | 1.52 | 2.13 | 2.76 | 3.62 | 4.73 | 6.17 | 7.10 | **25yr** | 5.46 | 6.82 | 7.78 |
| **50yr** | 0.53 | 0.85 | 1.09 | 1.52 | 2.05 | 2.74 | **50yr** | 1.77 | 2.51 | 3.27 | 4.30 | 5.65 | 7.40 | 8.58 | **50yr** | 6.55 | 8.25 | 9.40 |
| **100yr** | 0.60 | 0.97 | 1.25 | 1.76 | 2.39 | 3.22 | **100yr** | 2.06 | 2.96 | 3.86 | 5.11 | 6.74 | 8.86 | 10.38 | **100yr** | 7.84 | 9.98 | 11.35 |
| **200yr** | 0.67 | 1.09 | 1.41 | 2.02 | 2.79 | 3.80 | **200yr** | 2.41 | 3.49 | 4.58 | 6.09 | 8.06 | 10.62 | 12.55 | **200yr** | 9.40 | 12.07 | 13.71 |
| **500yr** | 0.79 | 1.30 | 1.69 | 2.45 | 3.43 | 4.71 | **500yr** | 2.96 | 4.34 | 5.71 | 7.66 | 10.19 | 13.50 | 16.15 | **500yr** | 11.95 | 15.53 | 17.61 |

## Lower Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1yr** | 0.23 | 0.36 | 0.44 | 0.59 | 0.73 | 0.89 | **1yr** | 0.63 | 0.87 | 0.92 | 1.32 | 1.66 | 2.23 | 2.53 | **1yr** | 1.97 | 2.43 | 2.85 |
| **2yr** | 0.32 | 0.49 | 0.60 | 0.81 | 1.00 | 1.19 | **2yr** | 0.86 | 1.16 | 1.37 | 1.82 | 2.34 | 3.05 | 3.46 | **2yr** | 2.70 | 3.32 | 3.82 |
| **5yr** | 0.35 | 0.54 | 0.67 | 0.92 | 1.17 | 1.40 | **5yr** | 1.01 | 1.37 | 1.61 | 2.13 | 2.74 | 3.80 | 4.21 | **5yr** | 3.36 | 4.05 | 4.71 |
| **10yr** | 0.39 | 0.59 | 0.73 | 1.03 | 1.32 | 1.60 | **10yr** | 1.14 | 1.56 | 1.81 | 2.40 | 3.07 | 4.38 | 4.89 | **10yr** | 3.88 | 4.70 | 5.46 |

## Hydrologic Soil Maps

## SITE SPECIFIC SOIL MAP UNIT LEGEND

| SYMBOL* | MAP UNIT | SLOPE CLASS | DRAINAGE CLASS | HISS SYMBOL | HYDROLOGIC SOIL GROUP |
|---|---|---|---|---|---|
| 42B | CANTON FINE SANDY LOAM | 0–8% | WELL | 221BH | B |
| 42C | CANTON FINE SANDY LOAM | 8–15% | WELL | 221CH | B |
| 444B | NEWFIELDS FINE SANDY LOAM | 0–8% | MODERATELY WELL | 321BH | B |
| 444C | NEWFIELDS FINE SANDY LOAM | 8–15% | MODERATELY WELL | 321CH | B |
| 500B/CCABB | UDORTHENTS, LOAMY | 0–8% | WELL | 261BH | B |
| 500C/CCABB | UDORTHENTS, LOAMY | 8–15% | WELL | 261CH | B |
| 500D/CCABB | UDORTHENTS, LOAMY | 15–25% | WELL | 261DH | B |
| 500E/CCABB | UDORTHENTS, LOAMY | 25% + | WELL | 261EH | B |
| 500B/HCHBB | UDORTHENTS, LOAMY | 0–8% | UNDETERMINABLE | 761BH** | B** |
| 538B | SQUAMSCOTT FINE SANDY LOAM | 0–8% | POORLY | 551BH | C |
| 921B | NEWFIELDS VARIANT (SPD) | 0–8% | SOMEWHAT POORLY | 421BH | C |

* REFER TO ACCOMPANYING REPORT FOR 5–UNIT SUPPLEMENTAL SYMBOL EXPLANATION.
** ASSUMED BASED UPON ADJACENT SOILS WITHOUT IMPERVIOUS SURFACES.

## LEGEND

- EX. PROPERTY LINE
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- EXISTING CURB
- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP A
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- EXISTING WETLANDS
- OPEN WATER
- IMPERVIOUS COVER

SOIL MAPPING NOTES:

1. THIS DETAILED SITE–SPECIFIC SOIL MAP, PREPARED ON AUGUST 9, 2023 BY THOMAS E. SOKOLOSKI, CERTIFIED SOIL SCIENTIST #063 OF TES ENVIRONMENTAL CONSULTANTS, L.L.C. IN BOW, NEW HAMPSHIRE, CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, VERSION 7.0, "SITE–SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT", MARCH 2021.
2. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A: 17 AND NHDES ENV–WQ 1500, ALTERATION OF TERRAIN. SEE ACCOMPANYING REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS. USE OF THE MAP SYMBOL DENOMINATORS FOR DISTURBED OR ALTERED SOILS, WHERE GIVEN, IS AT THE DISCRETION OF THE CERTIFIED SOIL SCIENTIST.
3. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SUPPORT OF A NEW HAMPSHIRE ALTERATION TERRAIN PERMIT APPLICATION. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP.

GRAPHIC SCALE
30 0 15 30 60 120
( IN FEET )
1 inch = 30 ft.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

| | | | |
|---|---|---|---|
| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
| SCALE: | 1" = 30' | DWG. NAME: | C-3250-01.dwg |
| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:

ALLEN & MAJOR ASSOCIATES, INC.
civil engineering ◆ land surveying
environmental consulting ◆ landscape architecture
www.allenmajor.com
400 HARVEY ROAD
MANCHESTER, NH 03103
TEL: (603) 627-5500
FAX: (603) 627-5501
WOBURN, MA ◆ LAKEVILLE, MA ◆ MANCHESTER, NH



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DRAWING TITLE:
PRE-CONSTRUCTION
HYDROLOGIC SOIL PLAN

SHEET No.
HSP-1


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## SITE SPECIFIC SOIL MAP UNIT LEGEND

| SYMBOL* | MAP UNIT | SLOPE CLASS | DRAINAGE CLASS | HISS SYMBOL | HYDROLOGIC SOIL GROUP |
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| 500D/CCABB | UDORTHENTS, LOAMY | 15–25% | WELL | 261DH | B |
| 500E/CCABB | UDORTHENTS, LOAMY | 25% + | WELL | 261EH | B |
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| 538B | SQUAMSCOTT FINE SANDY LOAM | 0–8% | POORLY | 551BH | C |
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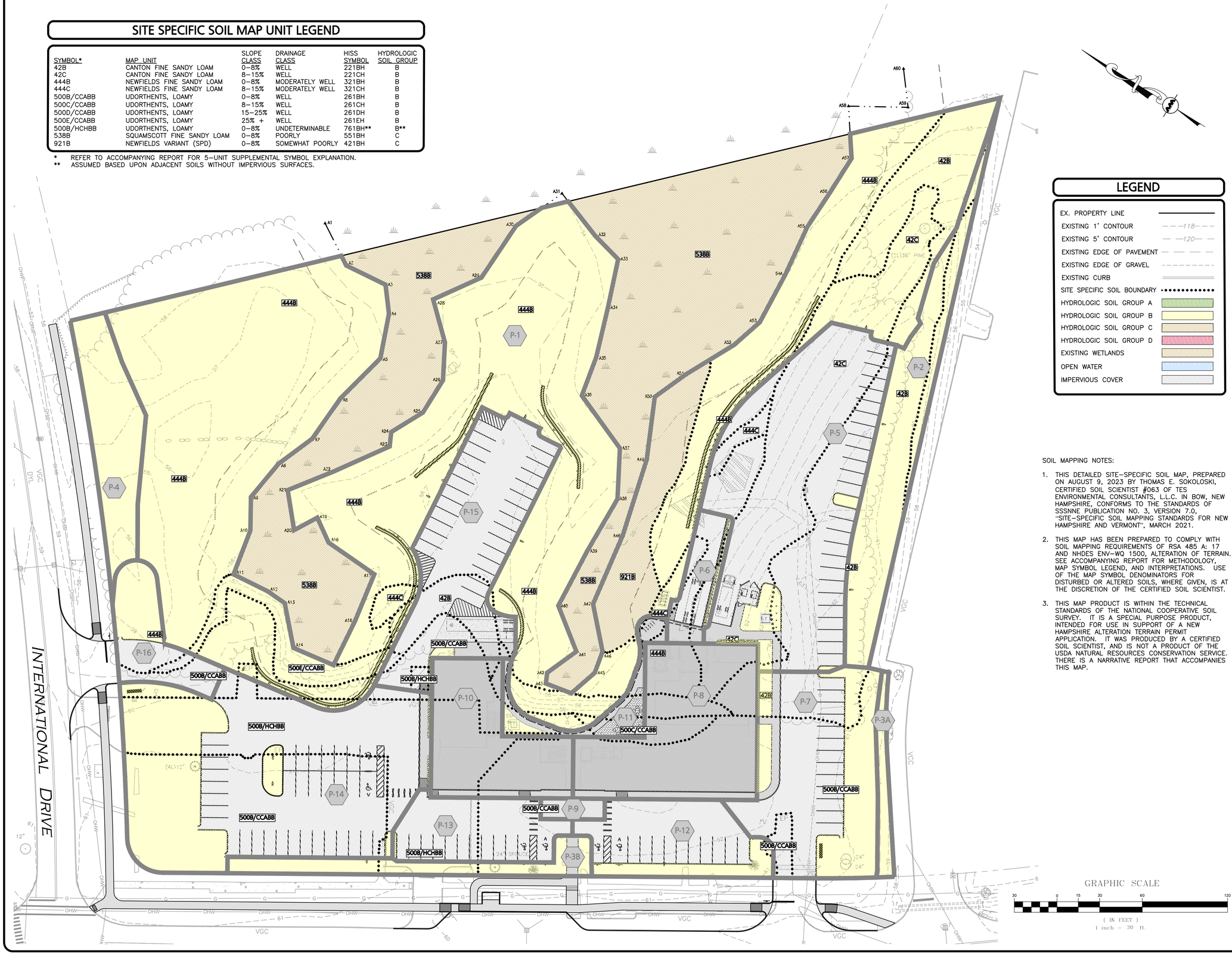
** ASSUMED BASED UPON ADJACENT SOILS WITHOUT IMPERVIOUS SURFACES.

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| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 09-18-23 | REVISED PER TAC COMMENTS |
| 1 | 08-17-23 | REVISED PER PDA COMMENTS |

APPLICANT/LESSEE:
ATDG, LLC
7 SINCLAIR DRIVE
EXETER, NH 03833

PROJECT:
ASC / MEDICAL OFFICE
360 CORPORATE DRIVE
TAX MAP 315, LOT 5
PORTSMOUTH, NH 03801

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| PROJECT NO. | 3250-01 | DATE: | 08-14-23 |
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| DESIGNED BY: | BDJ | CHECKED BY: | RPC |

PREPARED BY:

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DRAWING TITLE:
POST-CONSTRUCTION HYDROLOGIC SOIL PLAN

SHEET No.
HSP-2


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# Findings of Fact | Wetland Conditional Use Permit

## City of Portsmouth Planning Board

Date: December 21, 2023
Property Address: 60 Pleasant Point Dr.
Application #: LU-23-180
Decision: □ Approve □ Deny □ Approve with Conditions

Findings of Fact:

Per RSA 676:3, I: The local land use board shall issue a final written decision which either approves or disapproves an application for a local permit and make a copy of the decision available to the applicant. The decision shall include specific written findings of fact that support the decision. Failure of the board to make specific written findings of fact supporting a disapproval shall be grounds for automatic reversal and remand by the superior court upon appeal, in accordance with the time periods set forth in RSA 677:5 or RSA 677:15, unless the court determines that there are other factors warranting the disapproval. If the application is not approved, the board shall provide the applicant with written reasons for the disapproval. If the application is approved with conditions, the board shall include in the written decision a detailed description of the all conditions necessary to obtain final approval.

In order to grant Wetland Conditional Use permit approval the Planning Board shall find the application satisfies criteria set forth in the Section 10.1017.50 (Criteria for Approval) of the Zoning Ordinance.

| | Zoning Ordinance Sector 10.1017.50 Criteria for Approval | Finding (Meets Criteria for Approval) | Supporting Information |
|---|---|---|---|
| 1 | *1. The land is reasonably suited to the use activity or alteration.* | Meets<br><br>Does Not Meet | The existing lot has been used for residential use which already had a significant amount of impervious surface within the buffer. This application proposes to remove all impervious within 50' of the wetland resource while pushing much of the home and associated infrastructure farther back and away from the resource. While there is still impervious within the buffer, the applicant is proposing to restabilize the bank with native vegetation, replace all the grass with an eco-friendly micro clover mix, and there is extensive landscaping to help redirect and infiltrate stormwater on the property to reduce erosion, ponding and impacts to abutting properties. |

DRAFT

| | Zoning Ordinance Sector 10.1017.50 Criteria for Approval | Finding (Meets Criteria for Approval) | Supporting Information |
|---|---|---|---|
| 2 | *2. There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.* | Meets<br>Does Not Meet | The applicant is proposing to build the home and other structures outside of the 50' buffer, which will be an improvement from the existing site. The grading of this site does not allow for a lot of room to build without needing to bring in fill and regrade the site. While this proposal does include a large amount of impervious within the 100' buffer, the applicants are proposing to increase the health of the buffer with new plantings, stormwater control and bank stabilization. |
| 3 | *3. There will be no adverse impact on the wetland functional values of the site or surrounding properties.* | Meets<br>Does Not Meet | The applicant is proposing to redirect stormwater, revegetate the bank, increase buffer plantings, and replace grass with an eco-friendly micro clover mix. These additions will help mitigate the impacts of proposed impervious within the buffer. |
| 4 | *4. Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.* | Meets<br>Does Not Meet | The applicant will be restoring the natural vegetated state of the bank and buffer, which will increase the vegetative state of the buffer compared to the existing site. The applicant has proposed an extensive land management plan which will address buffer health through invasive species removal and native plantings. |
| 5 | *5. The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.* | Meets<br>Does Not Meet | The applicant is proposing a slight reduction to impervious impacts in the buffer but has implemented a robust landscaping plan which includes an invasive species removal program and revegetation and stabilization of the bank. |
| 6 | *6. Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.* | Meets<br>Does Not Meet | The applicant is proposing to restore areas previously disturbed in the vegetative buffer with a revegetation of the bank which will help reduce erosion and stormwater sheet flow. |
| 7 | <u>Other Board Findings:</u> | | |

DRAFT

ALTUS ENGINEERING

*Civil*
*Site Planning*
*Environmental*
*Engineering*

133 Court Street
Portsmouth, NH
03801-4413

November 28, 2023

Peter Britz, Planning and Sustainability Director
City of Portsmouth Municipal Complex
1 Junkins Avenue
Portsmouth, New Hampshire 03801

**Re: Application for Conditional Use Permit**
**Assessor's Map 207, Lot 13**
**60 Pleasant Point Drive**
**Altus Project No. 5138**

Dear Peter,

On behalf of Michelle and John Morris and 120-0 Wild Rose Lane, LLC, Altus Engineering and the design team is excited to submit an application for a Conditional Use Permit to the Planning Board for consideration at the December 21st hearing. On November 8, 2023, Altus and the design team presented the application to the Conservation Commission. The Commission voted to recommend approval to the Planning Board with two stipulations.

Both stipulations have been added to the Conditional Use Permit Application Plan and are noted below.

1. In accordance with Section 10.1018.40, the applicant shall install permanent wetland boundary markers along the 25-foot no cut buffer during project construction.

2. The applicant shall provide monthly invasive management and planting updates to the Planning and Sustainability Department once removal begins and until the end of the restoration process (see management calendar for treatment and planting). These updates shall be a report summarizing the activities performed, the success rates, any proposed plan changes, and upcoming activities involving the 25-foot vegetative buffer on site. If plants have not achieved an 80% success rate or greater after one year, applicants will replant and report back to the Planning and Sustainability Department one year after planting is complete and each subsequent year until an 80% success rate has been achieved.

The 1950's vintage home was constructed prior to NHDES and City wetland buffer regulations. Portions of the built infrastructure are within the NHDES 50-foot primary tidal wetlands buffer. The existing lawn and maintained areas extend into the 25-foot no cut buffer. In addition to local permitting for work within the 100-foot wetland buffer, the project proponents will need to secure a NHDES Wetlands Bureau Dredge/Fill Permit for sitework activities within 100-feet of the highest observable tide line (HOTL) and a Shoreland Permit for work between 100 and 250-feet of the HOTL. The existing earthen bank is eroding. We intend to stabilize it with coir logs and native vegetation. There are two deteriorated stairs that provide

access to the waterfront that will be replaced. Invasive species dominate the natural landscape. Extensive efforts will be made to eradicate the invasives and restore the waterfront buffer with native species.

The new home and all of the built infrastructure will be greater than 50-feet from the HOTL with the exception of replacing the stairs accessing the waterfront and providing underground utility services to the existing dock.

Enclosed for the Planning Board's consideration please find the following:

- Letter of Authorization
- Conditional Use Permit Narrative
- Stormwater Operation and Maintenance Manual
- Wetland Buffer Function and Values Assessment (Cuomo)
- Parterre Ecological Services Invasive Species Removal Report
- Project Site Plans

Concurrently, both the NHDES Wetlands Dredge/Fill permit application and the NHDES Shoreland Permits are being filed. The Wetlands application is expected to be presented to the Conservation Commission on December 13, 2023.

Please feel free to call or email me directly should you have any questions or need any additional information.

Sincerely,

**ALTUS ENGINEERING, LLC**

Enclosures

eCopy: Michelle and John Morris
Johanna Cairns, Mathew-Cunningham
Miles Connors, Parterre Ecological Services
Michael Cuomo, Wetlands Scientist
Ben Auger, Auger Building Company

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**Letter of Authorization**

I, John Morris, of 120-0 Wild Rose Lane, LLC, hereby authorize Altus Engineering, Inc. of Portsmouth, NH to represent me as the Owner and Applicant in all matters concerning the engineering and related permitting of a residential redevelopment on Portsmouth Tax Map 207, Lot 13 located at 60 Pleasant Point Drive, Portsmouth, New Hampshire. This authorization shall include any signatures required for Federal, State and Municipal permit applications.

| | | |
|---|---|---|
| Signature | John Morris | Date |
| Witness | Print Name | Date |

ALTUS ENGINEERING

*Civil*
*Site Planning*
*Environmental*
*Engineering*

133 Court Street
Portsmouth, NH
03801-4413

**CONDITIONAL USE PERMIT APPLICATION**
**60 PLEASANT POINT DRIVE**
**NARRATIVE**
**OCTOBER 25, 2023**

On behalf of the Applicant, 120-0 Wild Rose Lane, LLC and Michelle and John Morris, Altus Engineering, LLC ((Altus) respectfully submits a Wetlands Conditional Use Permit application for the redevelopment of a single-family residence at 60 Pleasant Point Drive. The Morris's propose to raze the 1950's vintage single story ranch style home and replace it with a new energy efficient home.

The house was constructed prior to NHDES and City wetland buffer regulations. The existing pool and appurtenances are within the NHDES 50-foot primary tidal wetlands buffer. The existing lawn and maintained areas extend into the 25-foot no cut buffer. In addition to local permitting for work within the 100-foot wetland buffer, the project proponents will need to secure a NHDES Wetlands Bureau Dredge/Fill Permit for sitework activities within 100-feet of the highest observable tide line (HOTL) and a Shoreland Permit for work between 100 and 250-feet of the HOTL. The entire parcel is within the 250-foot NHDES Shoreland Buffer.

The new home and all of the built infrastructure will be greater than 50-feet from the HOTL with the except of replacing the stairs accessing the waterfront and providing underground utility services to the existing dock.

In accordance with Article 10 Environmental Protection Standards Section 10.1010 Wetland Protect, the redevelopment will require a Conditional Use Permit from the Planning Board. The project does not require any additional relief from the City of Portsmouth Zoning Ordinance.

Per Section 10.1017.50 for criteria for approval of a Conditional Use Permit, Altus offers the following:

(1) The land is reasonably suited to the use, activity, or alteration.

*The property is within the SRB Zoning District, which is a residential zone. All of the abutting properties are residential. The parcel is used as a residence and will continue to do so. The minimum lot size in the zoning district is 15,000 SF. The subject parcel is over 3 times the minimum lot size. The lot fronts on the Piscataqua River. Other than wetlands/tidal waters there are no other wetlands on the property. There is a natural buffer on the property where the existing is located and where the proposed structure will be sited. The tidal waters "wrap"*

*around the property which puts most of the property within the 100-foot buffer. Using the parcel as a residence is a reasonable and the only viable use.*

(2) There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity, or alteration.

*The 46,840 SF parcel is relatively large for the zoning district which allows lots as small as 15,000 SF. Only 12,313 SF of the lot (26.2%) is not within the 100-foot wetland buffer. Taking the front and side yard setbacks into consideration, there is only 9,093 SF of the lot can be built upon without zoning relief or a Conditional Use Permit. It is not reasonable to limit the development to a small portion of the lot where it is low in grade and would create drainage issues if the house were constructed in that location. Additionally, siting the house entirely in the by right building envelope would diminish the value of the property as the existing house in the buffer has tremendous views that would be lost if the house was moved from the high point.*

(3) There will be no adverse impact on the wetland functional values of the site or surrounding properties;

*Michael Cuomo, Wetlands Scientist has provided a function and values assessment that demonstrates that the wetland buffer will be enhanced with the development. The invasive species will be removed and more diverse native plantings will be installed in both the buffer and throughout the site. The eroding bank along the shoreline will be stabilized with a living shoreline rather than a hardened barrier.*

*The proposed landscape reduces the lawn by 14,437 sf (a 53% decrease) and replaces it entirely with Sodco micro-clover lawn or similar brand. The proposed landscape increases the planting by 8,849 sf (a 43% increase) and removes all invasive species on the property. The reduction of lawn and increase in native plant material will further protect the shoreline and the adjacent properties from runoff.*

*The proposed project will reduce impervious by over 200 square feet with approximately 623 square foot reduction in the 0-50-foot buffer.*

*Stormwater treatment will be provided where none currently exists. Peak runoff flows will be reduced and treatment provided to improve water quality runoff by way of stone drip edges along the building perimeter, permeable paved surfaces at the pool and in the driveway. The eroding earthen bank along the waterfront will be stabilized with vegetation to minimize the potential for future erosion.*

(4) Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals; and

*Although we are removing 1-tree in the buffer that is within the existing landscaped yard, there will be numerous tree and shrub plantings to offset the loss.*

(5) The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.

*The proposed project will remove 623 square feet of impervious area in the 50-foot buffer and will have approximately a 30 square foot decrease in the 100-foot buffer. The eroding shoreline will be stabilized. With the removal of the invasives, and new plantings there will be a ±4,500 square foot increase in naturalized areas on the site. 2 sets of stairs are proposed, which replace 2 sets of stairs to the waterfront. Because there is limited beach area, we believe it is better for the environment and safer for the owners to access each portion of the waterfront rather than walking along the waterfront.*

(6) Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.

*The existing sloped buffer along the water currently has a substantial number of invasive species and there is evidence of progressively worsening erosion. Parterre Ecological has prepared a Land Management Plan that will rehabilitate and restore the coastal bank along the property line through the removal of invasive species, erosion control techniques, and planting of native perennials, grasses, and shrubs.*

**Compliance with Stormwater Facility Maintenance Requirements**

***RESPONSIBLE PARTIES:***

***Owner***: *Michelle and John Morris* (617) 283-2294 Jgmorris63@gmail.com
*Name* *Phone* *Email*

***Inspection:*** Qualified personnel to be determined .
*Name* *Company* *Phone*

***Maintenance:*** Qualified personnel to be determined .
*Name* *Company*

.
*Telephone* *Email*

The property owner is the responsible party for ensuring that stormwater facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. The maintenance responsibility for a stormwater facility may be designated within a maintenance agreement for the property. Property owners shall be aware of their responsibilities regarding stormwater facility maintenance.

Long term inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on the developed property. Routine inspections will ensure permit compliance; will reduce the potential for deterioration of infrastructure and the high cost to repair/replace, and will reduced the degradation of water quality.

**Inspection & Maintenance – Annual Reporting**

Requirements for the long-term inspection and maintenance of stormwater facilities, as well as reporting requirements are included in this Stormwater Management Facility Operation and Maintenance (O&M) Manual. The attached Long Term Inspection & Maintenance Schedule outlines specific requirements.

**Preventative Measures to Reduce Maintenance Costs**

The most effective way to maintain the water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and into the resource area. The maintenance program includes measures to address these potential contaminants, and will save money and time in the long run. Key of the maintenance program includes:

- Educate property owners, staff and patrons to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep the property, driveway, gutters and parking lots free of trash and debris
- Ensure the proper disposal of hazardous wastes and chemicals.
- Lawn care shall be planned to minimize the use of chemicals and pesticides.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Sweep paved surfaces of sediment and lawn clippings; dispose of offsite or in upland areas at least 100 feet from wetlands. Mulching mowers are encouraged.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out all components of the storm drainage system, including inlets, storm sewer and outfalls. Dispose of catch basin cleanings offsite.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff and erosion.

**Safety**

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

**Inspecting Stormwater Management Facilities**

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspections should follow the inspection guidance found in O&M manual for the specific type of facility.

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility.

General Information

This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall. The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected on an annual basis at a minimum. In addition, all facilities should be inspected after a significant precipitation event to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff. For the purpose of this Stormwater Management Program, a significant rainfall event is considered an event of three (3) inches in a 24-hour period or 0.5 inches in a one-hour period. It is anticipated that a short, intense event is likely to have a higher potential of erosion for this site than a longer, high volume event.

Inspection Scoring

For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

0 = No deficiencies identified.

1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.

2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program (See SOP in appendix A). This can include items like vegetation management or debris/trash removal.

3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature (outlet works, forebay, etc), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

C. Verification of Inspection and Form Submittal

The *Stormwater Management Facility Inspection Form* provides a record of inspection of the facility. The verification and the inspection form(s) shall be reviewed and maintained by the property owner or property manager. Any transfer in ownership shall be documented in writing to NHDES.

**Maintaining Stormwater Management Facilities**

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained. Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

The following provides a list of recommendations and guidelines for managing the stormwater facilities.

**STREET/PARKING LOT SWEEPING (DENSE PAVEMENT)**

*Function* – Parking lots/paved areas accumulate sand and debris. Street sweeping removes the sand and debris, which lowers transport of sediment and pollutants the stormwater systems and into the environment.

*Maintenance*

- A regular periodic cleaning schedule is recommended. The more frequent, the greater the sediment and pollutant removal. Regular cleaning of paved areas reduces the frequency of cleaning catch basins and drainage systems. It is recommended that the parking area and access ways shall be swept at least once a month during winter months.

**LANDSCAPE AREAS - LITTER CONTROL**

*Function* – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

*Maintenance*

- Litter Control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots, and lawns before materials are transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

**DRAINAGE STRUCTURE CLEANING**
(LEACHING CATCH BASIN)

*Function* – Catch basins and area drains collect stormwater, catch basins primarily from parking lots and area drains from lawn areas. Stormwater often contains sediment and contaminants.

Catch basin sumps serve to trap sediment, trace metals, nutrients and debris. Hooded catch basins trap hydrocarbons and floating debris.

*Maintenance*

- Remove leaves and debris from drainage structures on an as-needed basis, especially in the fall when leaves all falling.
- Catch basin sumps shall be cleaned on an annual basis to protect water quality. Debris shall be disposed of at a solid waste disposal facility.
- Remove cover of area drains and drop inlets and inspect pipes for debris.

## DE-ICING CHEMICAL USE AND STORAGE

*Function* – Salt and sand is used for de-icing of walkways and drives. Care shall be taken to prevent the over-application of salt for melting ice.

*Maintenance*

- Proper storage of salt is critical. Salt is highly water-soluble. Contamination of wetlands and other sensitive areas can occur when salt is stored in open areas. Salt shall be stored in a building at all times
- When parking lots and walkways are free of snow and ice, they shall be swept clean. Disposal of sweepings shall be at a solid waste disposal facility.

## CONTROL OF INVASIVE SPECIES

See separate document from Parterre Ecological.

## CONTRACTOR'S GENERAL CLEAN UP

Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet basket, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drainpipes that may have accumulated during construction.

Once in operation, all paved areas of the site should be swept at least once annually, preferably at the end of winter prior to significant spring rains.

**Michael Cuomo, Soil Scientist**
6 York Pond Road, York, Maine 03909
207 363 4532
mcuomosoil@gmail.com

Eric Weinrieb, P.E.
Altus Engineering, Inc.
133 Court Street
Portsmouth, NH 03801-4413

20 October 2023

Dear Mr. Weinrieb;

This letter is in reference to the property at 60 Pleasant Point in Portsmouth, NH. The purpose of this work is to evaluate the existing wetland buffer and compare it to the proposed wetland buffer which will be created for the redevelopment of this single family home site.

The tidal buffer is currently developed with an existing home, lawn, pool, and landscaping. As shown in the graphic prepared by Parterre Ecological Services (dated 14 December 2022) on sheet 6, invasive plants are significant on this property. The invasive species infestation is mostly within 25 feet of the highest observable tide line.

A Land Management Plan has been prepared by Parterre. This plan inventories existing invasive, problematic, and native plants; addresses control of invasive plants with specific techniques; and generally outlines methods to stabilize the eroding coastal bank along the shore. This work will occur along the unstable coastal bank and in the upland landscaped areas. No work is proposed in the coastal wetland and no wetland fill is proposed.

A landscape plan has been prepared by Matthew Cunningham Landscape Design, LLC, dated 11 September 2023. It presents a list of appropriate native plant materials from which the actual plantings can be selected, depending on plant material availability, timing of work, and the owner's preference. It specifies which areas will be planted, with what type (trees, shrubs, seedlings, and/or seed mix), and in what quantities. The density of trees and shrubs in the tidal buffer will increase. The landscape plan indicates 52 new native trees and over 500 new native shrubs over the entire parcel.

After the redevelopment of this site there will be a slight reduction (net 206sf less) of impervious surface, as demonstrated in Altus Engineering's draft sheet C2. This is achieved by the beneficial use of previous pavement, patios, and walkways.

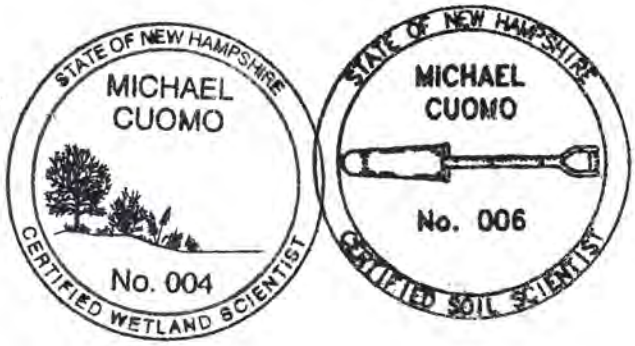
A comprehensive stormwater treatment plan is being developed by Altus Engineering where none currently exists. Peak runoff flows will be reduced and treatment will be provided to improve water quality of runoff entering the tidal wetland and Piscataqua River. Altus Engineering is also preparing a plan to control erosion and sedimentation during construction.

The control of invasive plants, increase in native plants, and stabilizing the eroding tidal bank will be significant environmental gains. The post-redevelopment wetland buffer will be ecologically superior to the existing wetland buffer.

Please call if you have questions regarding this work.

Sincerely,

Michael Cuomo
NH Wetland Scientist #004
NH Soil Scientist #006



# Land Management Plan:

## A Narrative for Invasives Removal and Native Restoration

PARTERRE ECOLOGICAL

60 PLEASANT POINT DR, PORTSMOUTH, NH

# Project Introduction

This document outlines a systematic strategy for invasive species management and native restoration planting at 60 Pleasant Point Drive in Portsmouth, New Hampshire. The property is just over an acre with considerable frontage on the Piscataqua River as it nears its delta with the Atlantic Ocean. The environment is a brackish coast.

Happily, the rocky beach margin of the property is colonized primarily by salt march cord grass, glasswort, American beachgrass and sea lavender. However as the slope rises, so does the incidence of invasive plant inhabitance. In some areas, the invasive presence is light, but through much of the site it is quite substantial.

The homeowners are requesting approval to rehabilitate and restore this coastal bank in conjunction with developing an ornamental and programmatic landscape around their home.

**The primary goal of this Land Management Plan is to gain approval from the Portsmouth Conservation Commission to both control invasive plant species and diversify the existing native plant community along the maritime coastal bank.**

This document inventories the invasives plants we propose to remove, provides a description of each, and details best management practices for control and management. It also includes a narrative for proposed restoration, and provides a planting plan with species and quantities. Finally, it provides a detailed maintenance calender for all aspects of proposed management and ecological restoration over an extended timeline.

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4 Invasives Inventory and Mapping

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13 Native Species Inventory

14 Restoration Planting Species and Techniques

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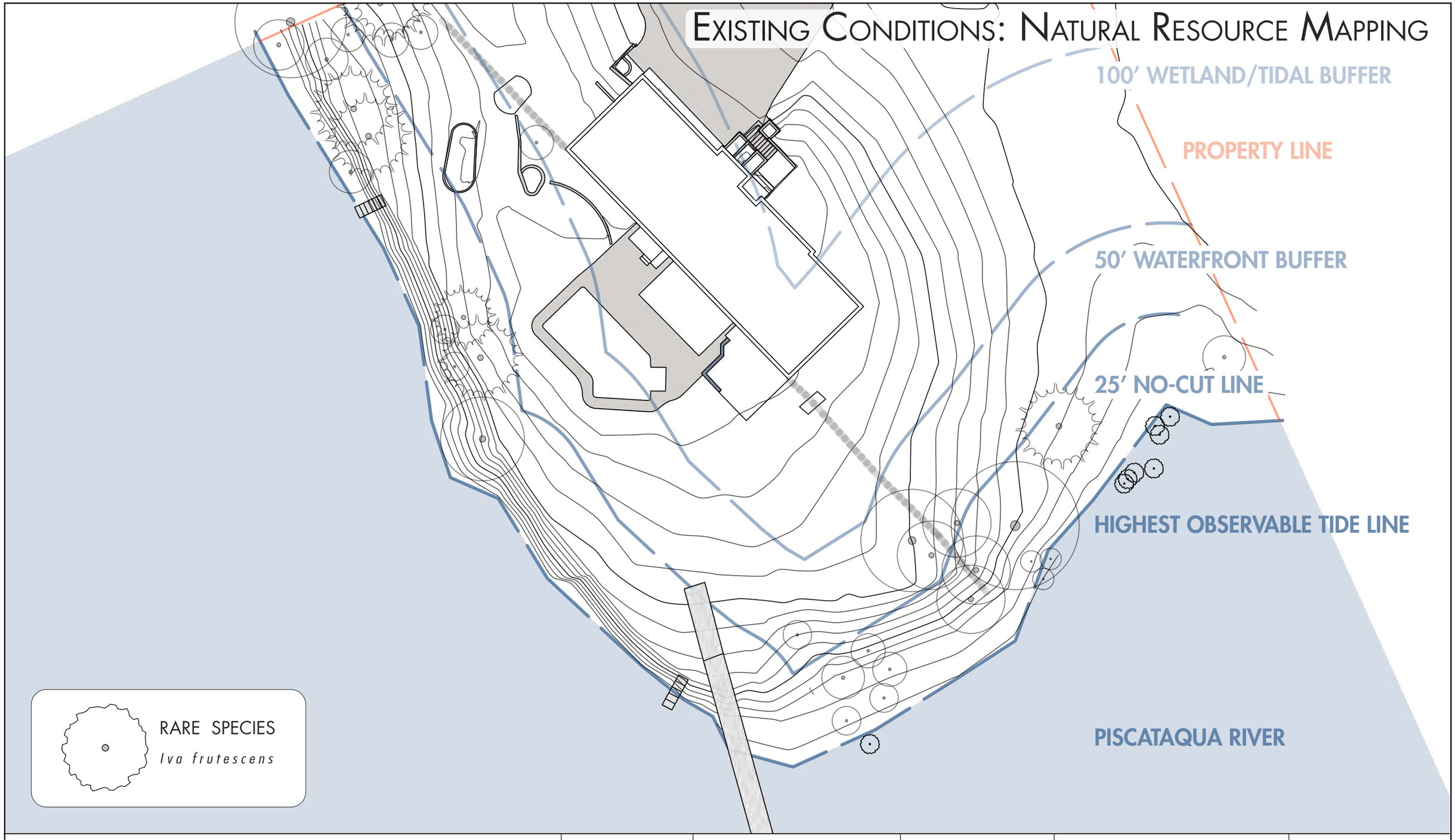
25 Appendix A: Directory of Invasive Plants

27 Appendix B: Directory of Likely Invasive Plants

# Existing Conditions: Natural Resource Mapping




| | | | | | |
|---|---|---|---|---|---|
| PARTERRE ECOLOGICAL | 1"= 25' | Natural Resource Mapping | Morris | 60 Pleasant Point Dr, Portsmouth, NH | Sheet 3 of 27<br>12/14/22 |

# Existing Conditions: Inventory of Invasive + Problematic Plants

## Invasive Plants

| BOTANICAL NAME | COMMON NAME |
|---|---|
| *Acer platanoides* | Norway Maple |
| *Celastrus orbiculatus* | Asiatic Bittersweet |
| *Frangula alnus* | Glossy Buckthorn |
| *Lonicera morrowii* | Morrow's Honeysuckle |
| *Rhamnus cathartica* | Common Buckthorn |
| *Rosa multiflora* | Multiflora Rose |

## Likely Invasive Plants

| BOTANICAL NAME | COMMON NAME |
|---|---|
| *Berberis vulgaris* | European Barberry |
| *Ligustrum obtusifolium* | Border Privet |
| *Chelidonium majus* | Greater Celandine |

## Problematic Plants*

| BOTANICAL NAME | COMMON NAME |
|---|---|
| *Arctium Spp.* | Burdock |
| *Malus Spp.* | Crab Apple |
| *Pyrus calleryana* | Callery Pear |
| *Rosa rugosa* | Rugosa Rose |
| *Solanum dulcamara* | Bittersweet Nightshade |
| *Securigera varia* | Crownvetch |
| *Tanacetum vulgare* | Tansy |
| *Verbascum thapsus* | Common Mullein |
| *Wisteria sinensis* | Chinese Wisteria |

* Denotes plants that, are not technically labeled as invasive in Massachusetts, but are in some way harmful or objectionable within the environment in question.

Many invasives have maintain an ecological edge by remaining green - and hence photosynthesizing - later into the season than natives.

At left: the herbaceous basal leaves of crownvetch and celandine.

At right: Multiflora rose keeps blooming through late autumn, each flowering followed by copious red fruit.

Below: Most of the green and all of the red seen below is invasive plant material.

Although bittersweet often invades the forest canopy, it is equally as pernicious on the ground plane, where it outcompetetes native vegetation.

Far left: *Celastrus* climbing.

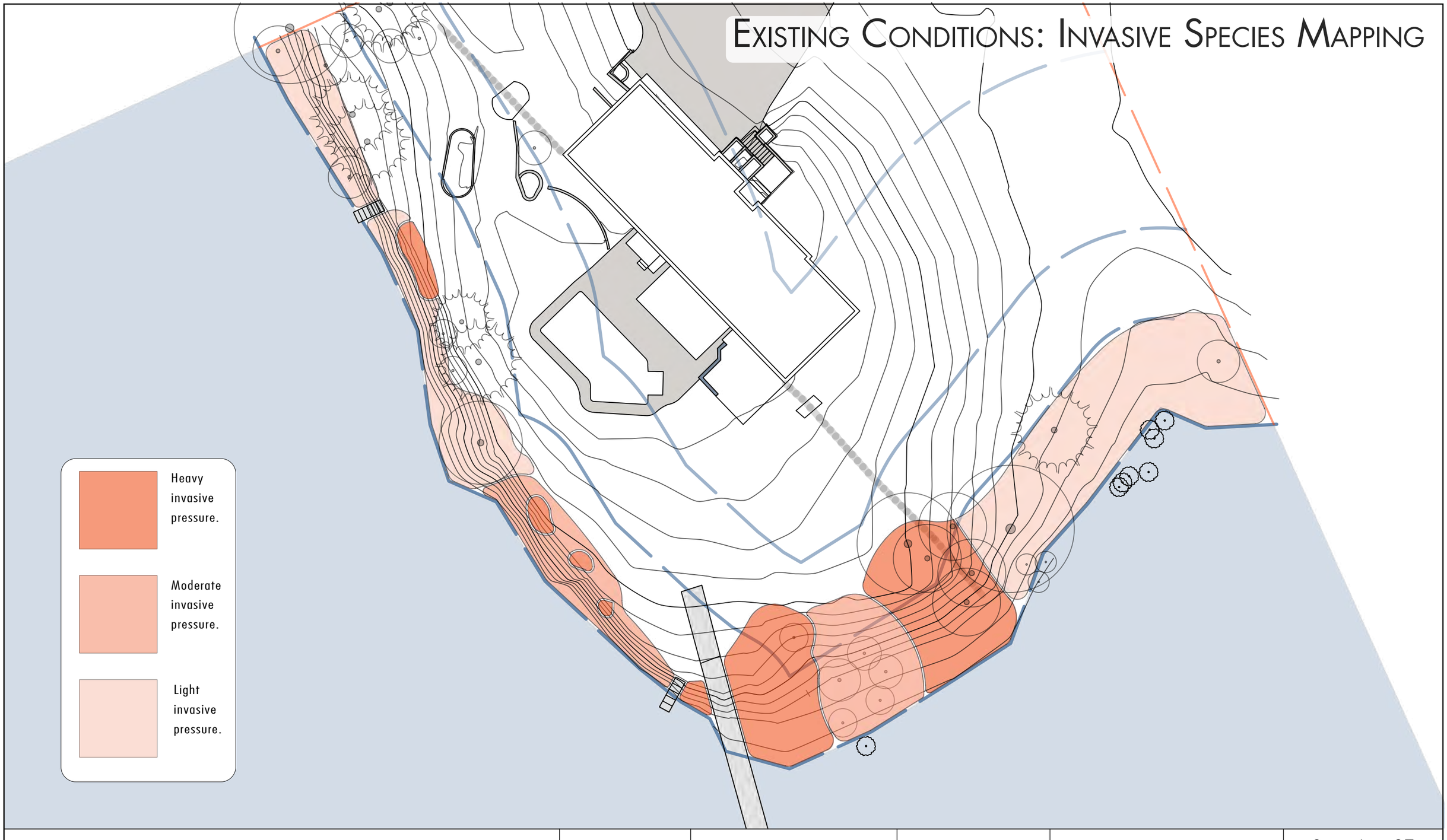
Middle left: *Celastrus* twining.

Near left: The bright red berries of bittersweet are attractive to humans and birds alike, which accounts for the plant's wide range.

Left: This thicket is primarily comprised of intertwined multiflora rose, honeysuckle, and bittersweet.

Right: Here bittersweet has supplied scaffolding for a knot of invasives.

# Existing Conditions: Invasive Species Mapping




| | | | | | |
|---|---|---|---|---|---|
| PARTERRE ECOLOGICAL | 1"= 25' | Invasive Species Mapping | Morris | 60 Pleasant Point Dr, Portsmouth, NH | Sheet 6 of 27<br>12/14/22 |

# Heavy Invasive Pressure

Areas experiencing high invasive pressure have little or no native vegetation.

| | | | | | |
|---|---|---|---|---|---|
| PARTERRE ECOLOGICAL | 1"= 25' | Heavy Invasive Pressure | Morris | 60 Pleasant Point Dr, Portsmouth, NH | Sheet 7 of 27<br>12/14/22 |

# Moderate Invasive Pressure

Areas with moderate invasive pressure usually have native and invasive plants co-mingling.

| | | | | | |
|---|---|---|---|---|---|
| PARTERRE ECOLOGICAL | 1"= 25' | Moderate Invasive Pressure | Morris | 60 Pleasant Point Dr, Portsmouth, NH | Sheet 8 of 27<br>12/14/22 |

# Light Invasive Pressure

The areas with lightest invasive pressure have a healthy herbaceous native layer. In the image above, it is a colony of American beachgrass.

| | | | | | |
|---|---|---|---|---|---|
| PARTERRE ECOLOGICAL | 1"= 25' | Light Invasive Pressure | Morris | 60 Pleasant Point Dr, Portsmouth, NH | Sheet 9 of 27 |
| | | | | | 12/14/22 |

# Proposed General Invasive Management Techniques

## Manual Hand Removal Methods:

Manual methods of invasive plant management - including hand pulling and cutting - will be prioritized whenever possible. For tenacious woody plants, use of a weed-wrench is recommended. To minimize soil disturbance (which can activate invasive seed banks), only shallow-rooted invasive plants less than 1" in caliper should be hand pulled from the soil. Invasive plant species greater than 1" caliper are best cut and treated.

## Mechanical Management:

Mechanical methods of invasive control include mowing, string-trimming, and sawing down of single large specimens or extensive stands of a particular plant. In a few cases repeated mowing or cutting is all that is needed to weaken a plant's resources to the point of die-off. With most aggressive invasives however, mowing and cutting are only the first step in a more intensive program plan that involves selective herbicidal treatments.

Hand pulling invasive bittersweet in a meadow restoration.

Mechanical mowing of a dense stand of invasive plant species.

Mature woodies require use of a chainsaw.

# Proposed General Invasive Management Techniques

## Cut and Dab Herbicide Application:

All invasive plant species that have a base greater than 1" in caliper are should be addressed with herbicide application. Invasive plants of this size usually have extensive fibrous root systems which provide beneficial soil stabilization and are best left in situ. Unfortunately, they also maintain the ability to resprout, which is why Parterre Ecological utilizes a cut and dab method with a triclopyr-based herbicide (Garlon™) or glyphosate-based herbicide (trade name Rodeo™) on individual cut stumps. Licensed Herbicide Applicators must complete this step in invasives control.

## Foam Application:

Some invasives, particularly persistent herbaceous plants and resprouting woodies, are best managed with a foliar foam application. This technique allows the technician to systematically target the new green growth of a plant, where herbicide is absorbed most effectively. The foam adheres to the foliage and the herbicide is trans-located  through the vascular system of the plant. Foliar foam wipes are best performed in late summer to fall when the plant is actively reserving energy in the rootstock.

## Removal and Disposal:

For many species, especially those with prolific seeds and/ or berries, proper off-site disposal is critical. Even species that chiefly propagate rhizomatically will be handled with care lest cuttings left on site reroot. However, seedless, fruitless brush piles left on site can provide valuable wildlife habitat, as can the snag that remains after a mature invasive tree is cut down.

Qualified and licensed applicators with necessary Personal Protective Equipment paint the stems of invasive species after cutting.

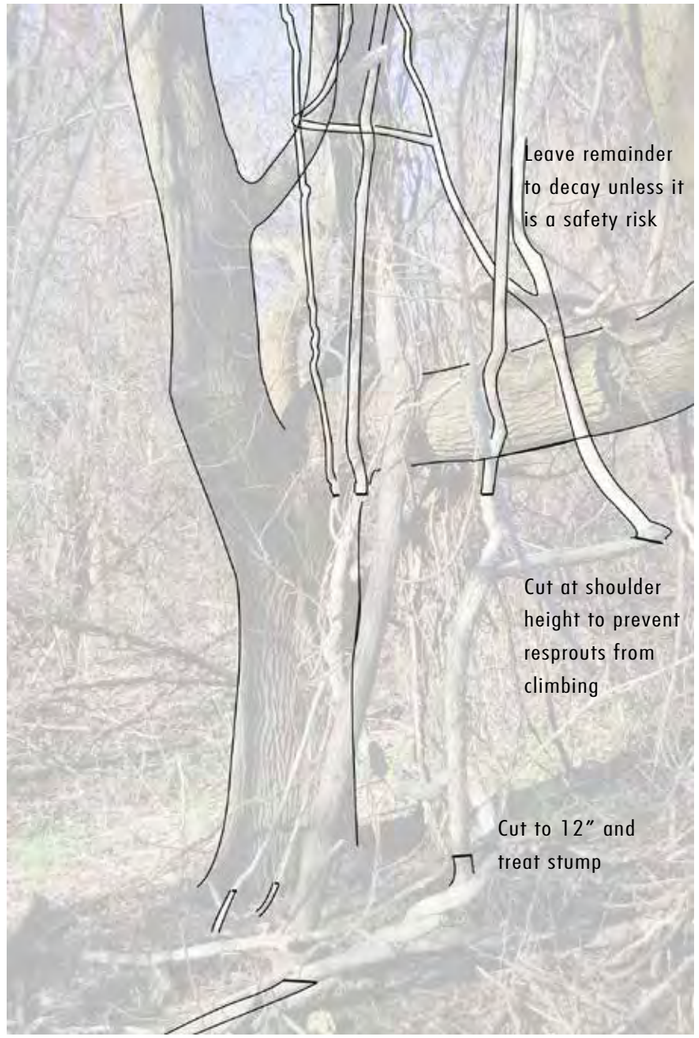
Highly targeted foliar foam applications adhere to leaf surface.

Responsible removal of fecund invasives is key to a successful management plan.

# Proposed Specialized Invasive Management Techniques: Oriental Bittersweet

Invasive Bittersweet (*Celastrus orbiculatus*) has the capacity to girdle, weaken, and even kill mature canopy trees. Without consistent management, they will eventually open large holes in the canopy while suppressing saplings from filling the gaps. They readily resprout after being cut and can damage the aesthetic and ecological value of meadows and forests alike.

Mature stems produce thousands of bright red berries that mature in late fall and are spread by birds.




Removing the entire vines from trees is often dangerous and unnecessary (unless it poses safety risk). Best management practice involves making cuts at shoulder height followed by a cut at 12" and immediate herbicide treatment. Bittersweet aggressively suckers after cutting so it is important to cut and treat during or after its flowering period (late June to December).

# Existing Conditions: Inventory of Native Plants

## Protected Native Plants

| *BOTANICAL NAME* | *COMMON NAME* |
|---|---|
| *Iva frutescens* | Bigleaf Marsh-Elder |

## Woody Native Plants

| *BOTANICAL NAME* | *COMMON NAME* |
|---|---|
| *Juniperus horizontalis* | Creeping Juniper |
| *Juniperus virginiana* | Eastern Red Cedar |
| *Myrica pensylvanica* | Bayberry |
| *Prunus maritima* | Beach Plum |
| *Prunus serotina* | Black Cherry |
| *Rosa virginiana* | Virginia Rose |
| *Rubus Spp.* | Brambles |

## Herbaceous Native Plants

| *BOTANICAL NAME* | *COMMON NAME* |
|---|---|
| *Ammophila breviligulata* | American Beachgrass |
| *Asclepias Spp.* | Milkweed |
| *Limonium carolinianum* | Sea Lavender |
| *Salicornia depressa* | American Glasswort |
| *Spartina alterniflora* | Salt Marsh Cordgrass |
| *Symphyotrichum puniceum* | Swamp Aster |

The sloped beach front harbors two types of native juniper: *Juniperus virginiana*- the upright Eastern Red Cedar - and *Juniperus horizontalis*, its creeping procumbent cousin.

Bayberry (right) and beach plum (far right) will also thrive in the full sun, harsh winds, and saline conditions found on an exposed coast.

Glasswort (above) and Sea lavender (middle left) are obligate salt water coastal plants, while swamp aster (miffddle right) and milkweed (far right), can tolerate saline conditions, but grow elsewhere as well.

# Proposed Planting Schedule

Restoration planting is the essential conclusion to any invasives management plan, and the key to ongoing stewardship. It will be undertaken in three basic strategies: soil stabilization, seeding, and planting. Seeding disturbed sites is most successful in spring or late fall, and can be applied to large swaths of area. Planting allows for move immediate visual impact and for the creation of swaths and drifts of particular species. Soil stabilization can be performed at any time of year, but is best performed in conjunction with one of the vegetation strategies.

The list below indicates the species of plant material to be used in revegating the coastal bank once invasives have been successfully manged.

## Shrubs

| BOTANICAL NAME | COMMON NAME |
|---|---|
| *Aronia arbutifolia* | Red Chokecherry |
| *Arctostaphylos uva-ursi* | Bearberry |
| *Baccharis halmifolia* | Salt Bush |
| *Comptonia peregrina* | Sweetfern |
| *Ilex glabra* | Inkberry |
| *Myrica pennsylvanica* | Bayberry |
| *Prunus maritima* | Beach Plum |
| *Rhus Spp* | Sumac |
| *Rosa virginiana* | Virginia Rose |
| *Viburnum dentatum* | Arrowwood Viburnum |

## Pots + Plugs

| BOTANICAL NAME | COMMON NAME |
|---|---|
| *Amorpha canescens* | Lead Plant |
| *Amsonia Spp.* | Bluestar |
| *Aquilegia candensis* | Eastern Columbine |
| *Asclepias tuberosa* | Butterfly Milkweed |
| *Baptisia australis* | Blue False Indigo |
| *Eurybia spectabilis* | Eastern Showy Aster |
| *Heuchera americana* | American Alumroot |
| *Penstemon digitalis* | Beard-tongue |
| *Solidago sempervirens* | Seaside Goldenrod |
| *Waldsteinia fragarioides* | Barren Strawberry |

| BOTANICAL NAME | COMMON NAME |
|---|---|
| *Andropogon gerardii* | Big Bluestem |
| *Ammophila breviligulata* | American Beachgrass |
| *Bouteloua gracilis* | Blue Gramma |
| *Baptisia australis* | Blue False Indigo |
| *Eragrostis specatabilis* | Purple Lovegrass |
| *Festuca rubra* | Red Fescue |
| *Panicum amarum* | Atlantic Coastal Panic Grass |
| *Panicum virgatum* | Switchgrass |
| *Sporabolus heterolepsis* | Prairie Dropseed |
| *Sorghastrum nutans* | Indian Grass |
| *Schizachyrium scoparium* | Little Bluestem |

## Seed

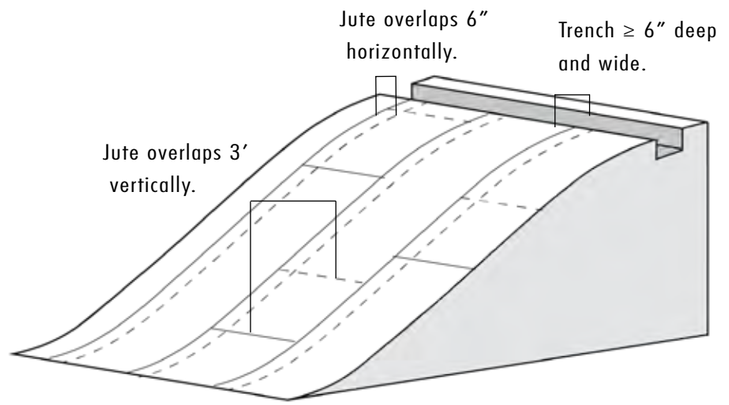
| NAME |
|---|
| New England Wetland Plants' 'New England Coastal Salt Tolerant Grass Mix ' |

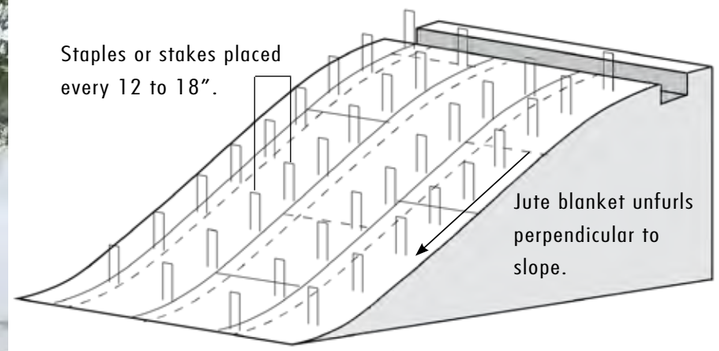
# Native Restoration Techniques: Erosion Control Planting on Slopes

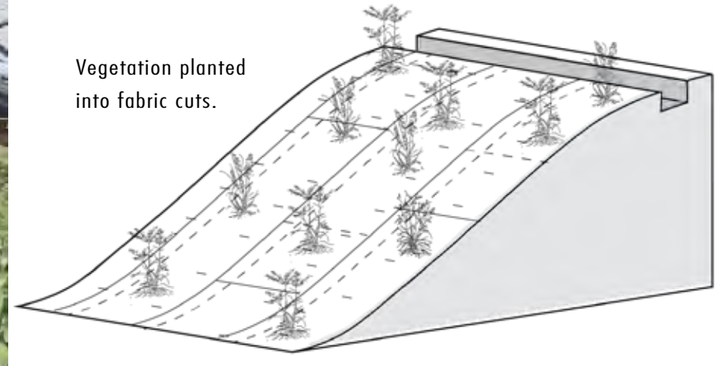
## Coir/ Jute Erosion Control

- After invasive species have been cut and treated, and debris cleared from the surface, we dig a trench 6" deep and 6" wide along the ridge of the slope to be planted. The ends of the fabric are buried in the trench and the coir blanket unrolls perpendicular to the slope.
- The flat coir blanket must have full contact with the soil. It will be spliced to go evenly around and places where rocks or vegetation prevent soil contact.
- Wooden stakes or staples are installed every 12" - 18."
- The coir blanket overlays horizontally by approximately 6" and 3' vertically.
- Indicated vegetation is planted by cutting through the coir.
- The blanket provides a stabilizing pressure on the disturbed soil while the new plantings establish.
- Over time, the new root systems will hold the bank in place and the coir blanket biodegrades.

## Jute Planting Detail



# Restoration Planting: Shrubs

Restoration planting is the essential conclusion to any invasives management plan, and the key to ongoing stewardship. The species shown represent a potential plating palette for 60 Pleasant Point Drive, and are all suitable for a coastal bank planting as they will withstand the saline conditions, periodic inundation and sandy soils prevalent in this habitat. All are highly ornamental shrubs, and as a suite they will provide 4 seasons of interest, from flowers, to berries to brilliant fall colors to showy winter fruit. They are best installed as somewhat mature shrubs for more immediate visual interest and ecological service.

Coastal bank Shrubs

Virginia Rose
*Rosa virginiana*

Virginia Rose
*Rosa virginiana*

Beach Plum
*Prunus maritima*

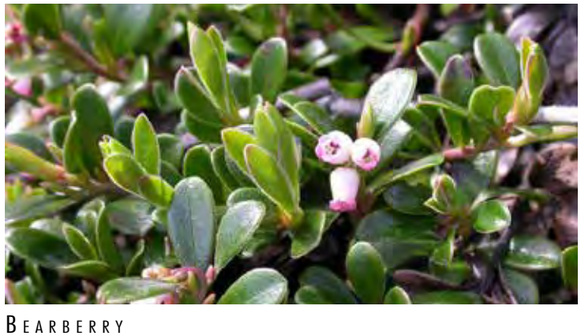
Beach Plum
*Prunus maritima*

Salt Bush
*Baccharis halimifolia*

Inkberry
*Ilex glabra*

Inkberry
*Ilex glabra*

Bayberry
*Myrica pensylvanica*



Bearberry
*Arctostaphylos uva-ursi*

Sweetfern
*Comptonia peregrina*

Arrowwood Viburnum
*Viburum dentatum*

Arrowwood Viburnum
*Viburum dentatum*

# Native Restoration Techniques: Planting Shrubs

## Planting Shrubs

» Planting shrubs may require the removal of some remnant roots should they hamper planting. If roots systems cannot be moved, locate the shrub around them.

» Ideally, planting holes should be roughly twice as wide as the root ball, with sloped sides, and exactly as deep. Try to keep a mound of compacted or otherwise undisturbed soil directly beneath the root ball to prevent the shrub From settling.

» For large B&B shrubs, the burlap and caging should be removed entirely from the root ball so as to allow unimpeded growth into surrounding soil.

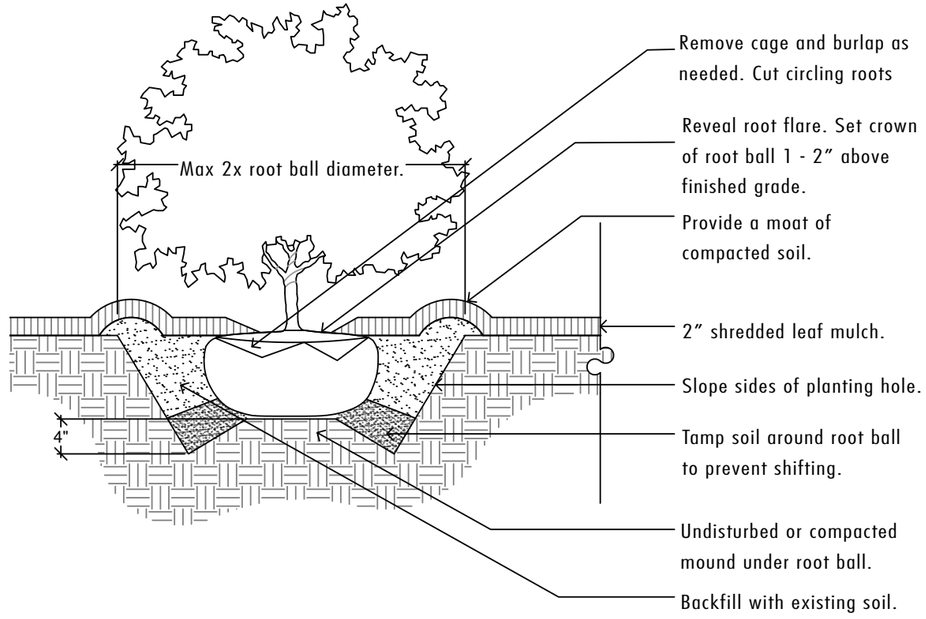
» For container-grown shrubs, any circling toots must be cut, and compacted rootballs should be well scarified before planting.

» Tamp the soil down repeatedly throughout the planting process.

» Use excess soil to construct a "well" around the base of the planted shrub, roughly as wide as the rootball.

» Water in well.

## Shrub Planting Detail



# Restoration Planting: Seeding

Grassses Suitable for a Coastal Bank Planting

Seeding disturbed soils is often the first step in a restoration planting. The grass species shown below are compatible with a maritime environment, and the final planting palette at 60 Pleasant Point Drive will likely draw from this suite.

Big Bluestem
*Andropogon gerardii*

Atlantic Coastal Panic Grass
*Panicum amarum*

Purple Lovegrass
*Eragrostis spectabilis*

Salt Meadow Rush
*Juncus gerardii*

Red Fescue
*Festuca rubra*

Path Rush
*Juncus tenuis*

Prairie Dropseed
*Sporobolus heterolepis*

American Beachgrass
*Ammophila breviligulata*

Switch Grass
*Panicum virgatum*

Indian Grass
*Sorghastrum nutans*

Little Bluestem
*Schizachyrium scoparium*

Blue Gramma
*Bouteloua gracilis*

# Native Restoration Techniques: Seeding Disturbed Soils

Restoration Seeding

- The first step in seeding is a thorough site evaluation. Environmental factors such as sun exposure, soil type, topography, grade, and existing vegetation must all be considered. These attributes determine the native plant species best suited for the area.
- The second very crucial task is management of existing invasive species. This can be done though manual and mechanical means, or through the targeted sand elective use of herbicides.
- Prepare the site for sowing and planting. Clear off leaves and debris, pick up twigs and sticks, and scarify the soil surface in preparation for sowing.
- Hand-broadcasting seed is the preferred method in delicate wetland soils. Plugs and container plants can be installed at the same time or can be planted once the seedlings have emerged.
- Finally, mulch the area after sowing. Mainely Mulch® protects germinating seeds while providing room for them to emerge.
- A three-year maintenance plan is recommended to ensure greatest success. If a newly seeded installation is managed intensively and responsibly during its establishment, it will become self-regulating and require very little to no maintenance in the future.

# Restoration Planting: Seeding

## New England Wetland Plants:

### Coastal Salt Tolerant Grass Mix

New England Coastal Salt Tolerant Grass Mix

Big Bluestem
*Andropogon gerardii*

Red Fescue
*Festuca rubra*

Switch Grass
*Panicum virgatum*

Canada Wild Rye
*Elymus canadensis*

Atlantic Coastal Panic Grass
*Panicum amarum*

Path Rush
*Juncus tenuis*

Indian Grass
*Sorghastrum nutans*

Other Suitable Grasses

Purple Lovegrass
*Eragrostis spectabilis*

Prairie Dropseed
*Sporobolus heterolepis*

Little Bluestem
*Schizachyrium scoparium*

Salt Meadow Rush
*Juncus gerardii*

American Beachgrass
*Ammophila breviligulata*

Blue Gramma
*Bouteloua gracilis*

# Restoration Planting: Plugs + Containers

The perennials shown here all have a high tolerance for saline conditions and poor soils. They also thrive in the open sunny conditions that prevail on an exposed coastal bank.

The herbaceous planting at 60 Pleasant point Drive will be drawn from this list.

Shrubs Suitable for Salt Marsh Coastal Bank Planting

Lead Plant

*Amorpha canescens*

Blue Star

*Amsonia Spp.*

Eastern Columbine

*Aquilegia candensis*

Butterfly Milkweed

*Asclepias tuberosa*

Blue False Indigo

*Baptisia australis*

Eastern Showy Aster

*Eurybia spectabilis*

American Alumroot

*Heuchera americana*

Button Blazing Star

*Liatris aspera*

Beard-tongue

*Penstemon digitalis*

Seaside Goldenrod

*Solidago sempervirens*

Barren Strawberry

*Waldsteinia fragarioides*

# Native Restoration Techniques: Planting Plugs + Containers

Many native herbaceous perennials and grasses are best installed as plugs, quarts, or even 1 - 3 gallon specimens for the more immediate coverage and impact they provide. They can be used to establish an herbaceous layer entire or overlaid in a matrix on a newly-seeded area. Container plants also allow for the creation of drifts and masses of plants in a way that simple seeding cannot. Planted correctly, their roots can quickly expand into neighboring soil, quickly creating an understory of healthy native vegetation. However, planting requires careful mapping out and placement, so regular so a cohesive strategy is key.

## Planting Plugs

- Plugs and container plants are small, with compact root systems, and must be kept moist at all times. Water thoroughly two to three hours before planting. This also facilitates laying out the plugs, as the roots will not be as liable to dessicate if thoroughly watered ahead of time.

- Determine the spacing of the plugs. Dependent on species and container size, this could range anywhere from 8" to 3' on center, in a grid formation. If massing species together, take care to put taller varieties towards the "back" of the meadow or plot, with shorter plants in "front".

- Planting holes can be dug with a variety of tools - trowels, picks, soil knives, shovels, even augers, mechanical or otherwise (especially useful in highly compacted soil). The plug's or plant's crown should sit at soil level and be gently tamped down around its base. Water immediately, and continue to water on a regular basis the first year of establishment.

- Mulch helps conserve soil moisture and reduces weed pressure. We recommend 2" of shredded leaf much immediately after planting. Avoid bark mulch, which is too heavy for small plugs or quarts.

- Whole plants will fill in more quickly than seeded areas, but weed pressure may still be high. Be vigilant in maintenance.

Plugs and container plants usually have dense root systems that must be kept moist.

Using an auger in compacted clay soil

Laying out plugs ensures even vegetated cover.

# Management Calendar for Treatment and Planting

| Task | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hand removal seedlings, saplings < 1" caliper | | | | | | | | | | | | |
| Hand pull herbaceous invasives | | | | | | | | | | | | |
| Mechanical management of woody invasives | | | | | | | | | | | | |
| Dab herbicide woody invasive species | | | | | | | | | | | | |
| Dab herbicide bittersweet | | | | | | | | | | | | |
| Invasive vine cut and dab herbicide application | | | | | | | | | | | | |
| Restoration: Seeding | | | | | | | | | | | | |
| Restoration: Planting | | | | | | | | | | | | |

- Optimal timing and efficiency
- Not optimal but mostly effective
- Possible, but not ideal

The timing of various containment and restoration strategies is critical to their success. Fortunately, the calender provides ample opportunity for action at any time of the year. Chemical management must only be performed by licensed herbicide applicators . These recommendations for restoration take into consideration the long term health of 60 Pleasant Point Drive. Once invasive plants have been managed in a particular area, the installation of natives can begin.

# Proposed Management, Restoration + Maintenance Schedule

## Winter/Spring 2023

» Mechanical and manual management of mature woody invasives. Mowing, chopping and clearing. Hand pull invasive seedlings less than 1" in diameter.

» Utilize prophylactic control methods of invasive plant management to exhaust seed bank. (Achieved by preventing dispersal of seed heads, fruit of invasive shrubs, etc.)

» Cover any newly exposed soils with cover crop.

## Spring/Summer 2023

» Manage spring invasives in order to prohibit their contribution to the seed bank.

» Planting approved shrubs, grasses and perennials.

## Summer/Fall 2023

» Follow-up invasive plant management

» Cut and dab herbicide application to any resprouting invasive tree, shrub, and vine species.

» Hand pull any invasive seedlings less than 1" in diameter; stem treat invasive perennials and remove seed heads.

## Ongoing Maintenance and Monitoring:

» After the treatments FALL 2024, the management plan should be evaluated. If treatments have been successful, only monitoring and minimal hand removal need be continued to keep invasive plant species at bay. Native trees, shrubs, and herbaceous forbs should dominate the forest, and a native maritime suite should be self-perpetuating on the coastal bank.

» Implementation and surveillance of the LMP should be completed by qualified professionals including:
- Licensed pesticide applicators
- MA Certified Massachusetts Invasive Species Managers
- MA Certified Massachusetts Invasive Species Managers

» Massachusetts Certified Horticulturalists (MCH)Monitoring reports shall be submitted to Conservation Commission at the end of each growing season outlining invasive species management efforts, assessing success, and indicating the establishment of restoration plantings.

# Appendix A: Inventory of Invasive Plant Species

**Norway Maple**
*Acer platanoides*

## Description:

*Acer platanoides,* Norway Maple is a tree occurring in all regions of the state in upland and wetland habitats. It is especially common in urban areas. It grows in full sun to shade. It out-competes native vegetation, including sugar maple, *Acer saccharum* which it is frequently confused with.

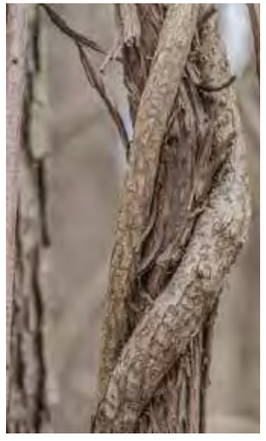
## Habitat:

Norway maple is well adapted to various soils, grows in dry conditions, and can tolerate areas of soil pollution. Norway maples were widely planted in the United States as street trees and have escaped to natural habitats. Trees produce large numbers of seeds that are wind dispersed and invade natural areas, displacing native trees. Quickly establishing, they create a canopy of dense shade that prevents regeneration of native seedlings. May be alleopathic

## Management:

Manual methods of hand-pulling seedlings is recommended. For larger saplings, a 'Weed Wrench' is effective. Girdling the tree by cutting through the bark (cambium) layer all around the trunk is also an option as is basal bark treatment with a Triclopyr-based herbicide. Girdling is most effective in spring and should include reducing the canopy for safety, but consider leaving trunks for habitat value.

**Asiatic Bittersweet**
*Celastrus orbiculatus*



## Description:

*Celastrus orbiculatus*, Asiatic Bittersweet is a deciduous climbing vine common in areas of disturbance in our New England forests. It has glossy, rounded leaves that are alternate with finely toothed margins. The leaves turn yellow in the fall. The fruiting plants produce small greenish flower clusters from leaf axils that mature in fall to produce high numbers of fruiting seed. The seed are noticeably yellow, globular capsules that split open at maturity to reveal red-orange fruiting seeds. Roots are also distinctly orange.

## Habitat:

Bittersweet spreads easily into forest edges, woodlands, unmanaged meadows and old fields. Most disturbed sites that are not being actively managed that receive full sun are susceptible. The vine can tolerate shade but is often found in more open, sunny areas.

## Management:

Small seedlings can be hand pulled, but bittersweet resprouts prolifically from root fragments, so more aggressive measures need be taken on all specimens but the very smallest. For established plants, vines should be cut to ground to reduce mass, but repeat cuttings will promote resprouting roots and should be avoided in most cases. Rake any seeds present, bagging in plastic bags, tying, and disposing of correctly.

**Glossy Buckthorn**
*Frangula alnus*

## Description:

*Frangula alnus,* or Glossy Buckthorn, is a deciduous shrub that grows up to 20 ft. tall. The oblong leaves are up to 2" long, arranged alternately along the stem and are dark green on the surface, glossy above and slightly pubescent beneath. The leaves turn yellow in the fall, and remain on the plant when most other species have already lost their leaves. The yellow-green flowers are arranged in 1-8 flowered sessile, glabrous umbels. This plant flowers after the leaves expand, from May to September . The fruit ripen from red to black July to August.

## Habitat:

Buckthorn thrives in early successional habitat. Buckthorn will also tolerate wetland soils where it can form dense stands that suppress the growth of native plant species. The seed is readily dispersed by birds, and the extended productivity of the fruit into winter allows the plant to be dispersed through the entire season.

## Management:

Hand cut plant approximately 6" above the ground and apply a triclopyr-based solution or perform a basal-bark painting in late fall. All fruiting plant material should be bagged and disposed of to prevent reestablishment.

## Morrow's Honeysuckle
*Lonicera morrowii*

### Description:

*Lonicera morrowii,* Morrow's honeysuckles are upright, deciduous shrubs that typically have a multi-stem mounding appearance. Oval leaves are opposite along the stem with smooth edges (no teeth or lobes) and hairy on the underside. Mature stems are often hollow on the interior and peeling on the outer bark. In the spring pairs of fragrant, tubular flowers less than an inch long are borne along the stem in the leaf axils. The fruits are red to orange, and fleshy.

### Habitat:

Honeysuckles are relatively shade-intolerant and usually colonize forest edges, abandoned fields, and other open, upland habitats. Grazed meadows and disturbed woodlands are especially vulnerable. Woodlands and open meadows, especially those that have been grazed or otherwise disturbed and are left unmanaged are also highly susceptible. Morrow's Honeysuckle are highly adaptable and can grow in even challenging environments such as roadsides and wetland edges.

### Management:

Honeysuckle management can combine mechanical mowing and manual hand pulling with cut and dab herbicide treatments. Small specimens may be removed manually as honeysuckle root systems are fairly shallow. Root resprouting can persist for a few years and several seasons of management may be required to fully control the population.

## Common Buckthorn
*Rhamnus cathartica*

### Description:

*Rhamnus cathartica,* Common buckthorn s a small deciduous tree or large shrub that can grow up to 30' tall. It has dull green oval,a and finely serrated leaves and is easily identified by the small thorns at the tip of each branch. Branches are tipped with a short thorn; a thorn may also be found in the fork between two branches. Small yellowish-green flowers occur in the axils or along the stem, which give way to small bluish or black berries a dark purplish or black color.

### Habitat:

Common Buckthorn is native to much of Europe and Asia and was imported to the US as a windbreak. It forms dense thickets in lightly shaded areas and is tolerant of many soil conditions from well-drained sand to clay. It is frequently found on roadsides, forest edges and on streambanks.

### Management:

Hand cut plant approximately 6" above the ground and apply a triclopyr-based herbicide. Any portions of the root system not removed or killed by herbicide will potentially re-sprout, so follow up applications will be necessary to control population. All fruited or seed-bearing plant material will be bagged and disposed of to prevent reestablishment.

## Multiflora Rose
*Rosa multiflora*

### Description:

*Rosa multiflora,* Multiflora Rose is a shrub with arching canes with a mounding shape in the landscape. The leaves are divided into five to eleven sharply toothed leaflets. The base of each leaf stalk has a pair of fringed bracts which is a key identifier of the plant from other wild rose. Beginning in early summer, clusters of showy white flowers appear. The flowers are followed by developing red fruit, or hips, during the summer that remain on the plant through the winter.

### Habitat:

Multiflora Rose thrives in early successional habitat. The rose has a wide tolerance for various soil, moisture, and light conditions. It occurs in dense woods, along river banks and roadsides and in open unmanaged fields. It can form a dense understory that suppresses growth of native plant species. The seed is readily dispersed by birds, and the extended productivity of the fruit into winter months allows wide spread distribution of the plant.

### Management:

Manual methods of hand-pulling seedlings is effective. For more established shrubs, a combination of pruning to reduce mass followed by cut & dab treatments with a triclopyr-based herbicide is recommended. Persistent root infestations may require repeat cutting over several seasons. Rake any seeds present, bagging and disposing of correctly.

# Appendix B: Inventory of Likely Invasive Species

**Greater Celandine**
*Chelidonium majus*

## Description:

*Chelidonium majus*, Greater Celandine, is an herbaceous perennial native to Europe. The delicate kidney-shaped leaves are pale green with hairy undersides. The stalk is conspicuously fuzzy. Greater celandine flowers copiously from late spring through fall. It can be distinguished by its height and the profusion of yellow buttercup-like flowers that cover the plant, usually consisting of 4 petals and many yellow stamens.

## Habitat:

Celandine prefers slightly to moderately moist conditions. These include stream and riverbanks, but also fertile moist woodlands, thickets, roadsides and disturbed sites. It tolerates all light conditions, from deep shade to sun.

## Management:

The seeds of Celandine can remain viable in the soil for many years, so management requires a long term commitment to regular maintenance. The goal should be to prevent seed production until the stored seed in soil is exhausted. Hand removal of plants is possible for light infestations before flowering, removing the plants entire root system (new plants can sprout from root fragments).

**Border Privet**
*Ligustrum obtusifolium*

## Description:

Border privet is a multi-stemmed dense shrub with arching branches. Short spur branches sometimes give the appearance of stout thorns. The Its opposite leaves are leaves are glossy green on top, pubescent on bottom. White tubular flowers bloom in late spring and round purple-black fruit follow.

## Habitat:

They thrive in floodplains, fields, disturbed forests and forest edges. Border privet grows in human-dominated areas such as abandoned fields and roadsides, disturbed forests,and will also invade wood margins, canopy openings in forests, stream edges and floodplains.

## Management:

Manual methods of hand-pulling seedlings is effective. For more established shrubs, a combination of pruning to reduce mass followed by cut & dab treatments with a triclopyr-based herbicide is recommended. Persistent root infestations may require repeat cutting over several seasons. Rake any seeds present, bagging and disposing of correctly.

**European Barberry**
*Berberis vulgaris*

## Description:

European Barberry, or *Berberis vulgaris* is an understory shrub in leaf from early spring to late fall. Leaves are simple, emerging red, and remaining green throughout the season. Tiny yellow flowers appear in late spring to early summer, and are followed by numerous fruit. It has three-parted spines at the base of the leaves.

## Habitat:

European Barberry is shade tolerant, drought resistant, and adaptable to a variety of open and forested habitats, and disturbed areas. It prefers to grow in full sun, but will flower and fruit even in heavy shade. There is also strong research to support the surprise benefit of controlling Japanese Barberry in the reduction of black legged (or deer) tick populations.

## Management:

European Barberry is produces seed prolifically, so removal of fruiting branches is high priority. However, barberry also spreads by rhizome, so underground root fragments should be removed. Manual methods of hand pulling sprouts works well in small populations, but large populations may require chemical applications by applying a solution of glyphosate to foliage, or a triclopyr-based solution to cut stumps.

# CONDITIONAL USE PERMIT APPLICATION

# MORRIS RESIDENCE

60 Pleasant Point Drive
Portsmouth, New Hampshire


*Owner/Applicant:*
120-0 WILD ROSE LANE, LLC

*209 Water Street*
*Newburyport, MA 01950*
*(617) 283-2294*

*Civil Engineer:*
ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

*Landscape Architect:*
MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC
Attn.: Johanna Cairns
*366 Fore Street*
*Portland, ME 04101*
*(617) 905-2246*

*Surveyor:*
EASTERLY SURVEYING, INC.
c/o Peter Agrodnia, LLS
*1021 Goodwin Road, Suite #1*
*Eliot, ME 03903*
*(207) 439-6333*

*Soil Scientists/Wetland Scientists:*
JOSEPH W. NOEL, NH CWS #086
*P.O. Box 174*
*South Berwick, ME 03908*
*(207) 384-5587*

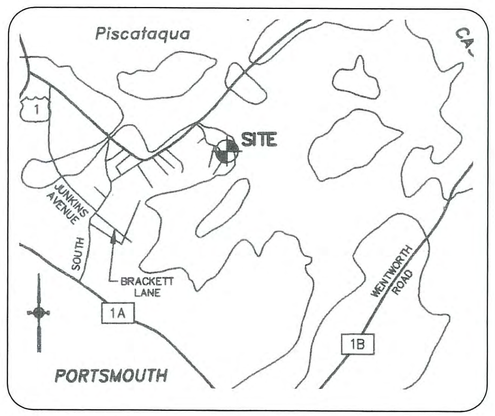
MICHAEL CUOMO, CWS
*6 York Pond Road*
*York, ME 03909*
*(207) 363-4532*


Assessor's Parcel 207, Lot 13

ISSUED FOR APPROVAL

Plan Issue Date:

NOVEMBER 28, 2023 PLANNING BOARD (CUP)

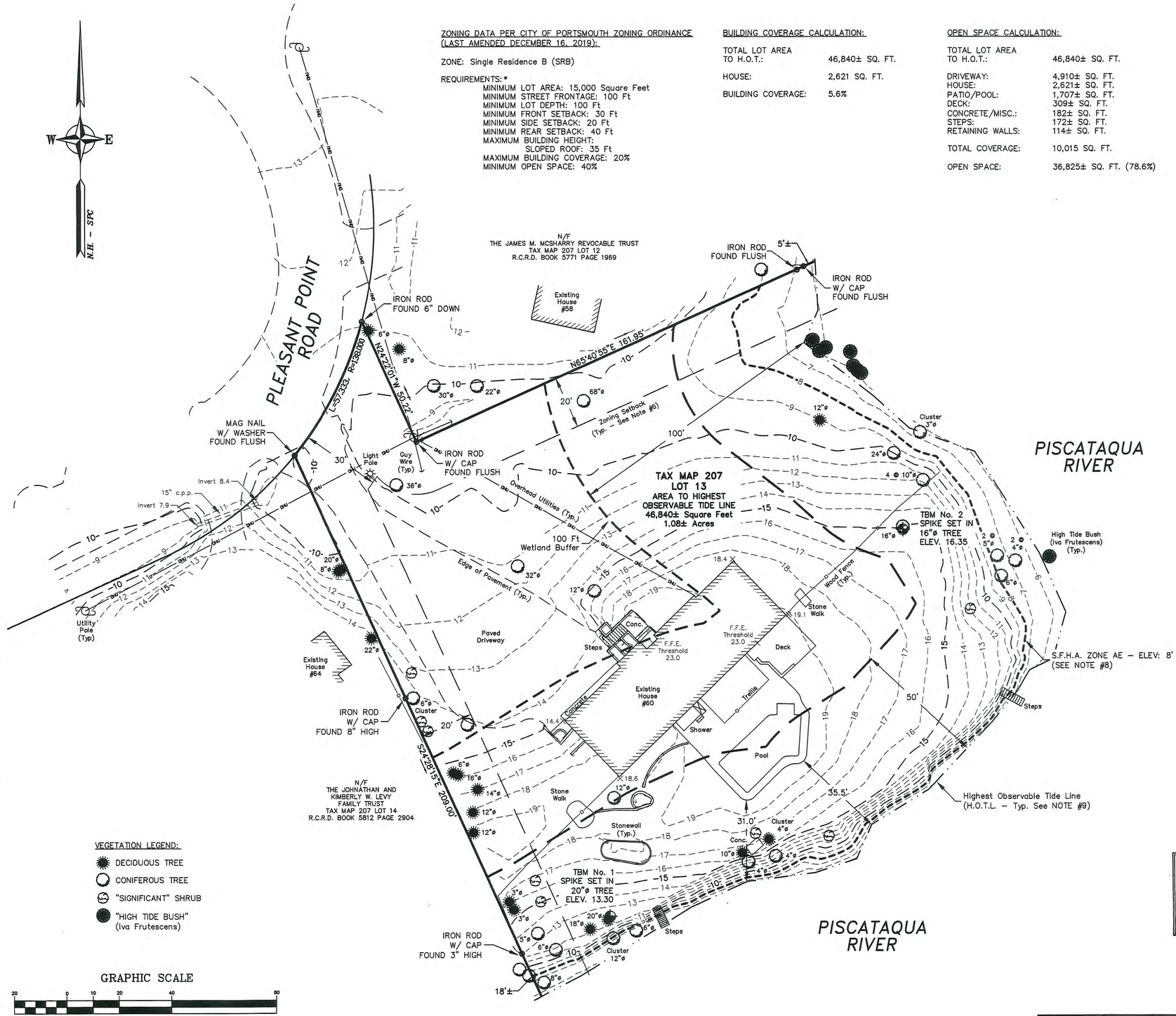



LOCUS NOT TO SCALE

| *Sheet Index Title* | *Sheet No.:* | *Rev.* | *Date* |
|---|---|---|---|
| Existing Conditions Plan | 1 of 1 | A | 04/02/21 |
| Demolition Plan | C-1 | 1 | 11/28/23 |
| Site Plan | C-2 | 1 | 11/28/23 |
| Stormwater Management & Grading Plan | C-3 | 1 | 11/28/23 |
| Erosion Control Plan | C-4 | 0 | 10/27/23 |
| Utilities Plan | C-5 | 0 | 10/27/23 |
| Illustrative Master Plan (by Matthew Cunningham) | L0.0 | 0 | 10/25/23 |
| Comparative Plan (by Matthew Cunningham) | L0.1 | 0 | 10/25/23 |
| Planting Plan (by Matthew Cunningham) | L0.2 | 0 | 10/25/23 |
| Planting Details (by Matthew Cunningham) | L0.3 | 0 | 10/25/23 |
| NHDES Wetlands & Shoreland Permit Application Plan | 1 of 1 | 0 | 11/28/23 |
| Conditional Use Permit Plan | 1 of 1 | 1 | 11/28/23 |
| Erosion Control Notes & Details | D-1 | 1 | 11/28/23 |
| Detail Sheet | D-2 | 1 | 11/28/23 |

| *Permit Summary:* | *Submitted* | *Received* |
|---|---|---|
| NHDES Wetlands Permit | To be submitted | – |
| NHDES Shoreland Permit | To be submitted | – |

P5090




VEGETATION LEGEND:

- DECIDUOUS TREE
- CONIFEROUS TREE
- "SIGNIFICANT" SHRUB
- "HIGH TIDE BUSH" (Iva Frutescens)

GRAPHIC SCALE

20 0 10 20 40 60

( IN FEET )
1 inch = 20 ft.
VERTICAL DATUM - NGVD29

ZONING DATA PER CITY OF PORTSMOUTH ZONING ORDINANCE (LAST AMENDED DECEMBER 16, 2019):

ZONE: Single Residence B (SRB)

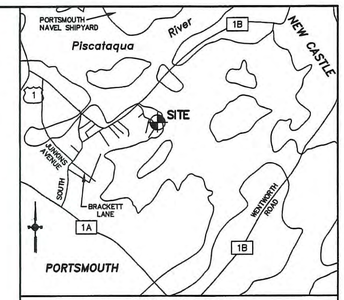
REQUIREMENTS: *
- MINIMUM LOT AREA: 15,000 Square Feet
- MINIMUM STREET FRONTAGE: 100 Ft
- MINIMUM LOT DEPTH: 100 Ft
- MINIMUM FRONT SETBACK: 30 Ft
- MINIMUM SIDE SETBACK: 20 Ft
- MINIMUM REAR SETBACK: 40 Ft
- MAXIMUM BUILDING HEIGHT: SLOPED ROOF: 35 Ft
- MAXIMUM BUILDING COVERAGE: 20%
- MINIMUM OPEN SPACE: 40%

BUILDING COVERAGE CALCULATION:

| | |
|---|---|
| TOTAL LOT AREA TO H.O.T.: | 46,840± SQ. FT. |
| HOUSE: | 2,621 SQ. FT. |
| BUILDING COVERAGE: | 5.6% |

OPEN SPACE CALCULATION:

| | |
|---|---|
| TOTAL LOT AREA TO H.O.T.: | 46,840± SQ. FT. |
| DRIVEWAY: | 4,910± SQ. FT. |
| HOUSE: | 2,621± SQ. FT. |
| PATIO/POOL: | 1,707± SQ. FT. |
| DECK: | 309± SQ. FT. |
| CONCRETE/MISC.: | 182± SQ. FT. |
| STEPS: | 172± SQ. FT. |
| RETAINING WALLS: | 114± SQ. FT. |
| TOTAL COVERAGE: | 10,015 SQ. FT. |
| OPEN SPACE: | 36,825± SQ. FT. (78.6%) |




*LOCATION MAP*
(not to scale)

PLAN REFERENCES:

1. "EXISTING CONDITIONS PLAN PLEASANT POINT DRIVE ASSESOR'S PARCEL 207-014 PORTSMOUTH, NEW HAMPSHIRE FOR OWNERS JOAN S. WALDRON KIMBERLY WALDRON LEVY", PREPARED BY JAMES VERRA AND ASSOCIATES, INC., DATED JULY 11, 2005.

2. "PLAN OF LOTS NEW CASTLE AVENUE PORTSMOUTH, N.H. FOR ROBERT A. MOEBUS & HENRY C. SIVIK", PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, DATED OCTOBER 1952, AND RECORDED AT THE R.C.R.D. AS PLAN No. 02160-B.

3. "LAND IN PORTSMOUTH, N.H. ROBERT A. MOEBUS TO HENRY C. SIVIK AND HENRY C. SIVIK TO ROBERT A. MOEBUS", PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, DATED JUNE 1951, REVISED DECEMBER 1953.

NOTES:

1. OWNERS OF RECORD:
   TAX MAP 207 LOT 13
   120-0 WILD ROSE, LLC
   R.C.R.D. BOOK 6174 PAGE 1450
   DATED OCTOBER 5, 2020

2. TOTAL EXISTING PARCEL AREA:
   TAX MAP 207 LOT 13
   1.08± Acres To H.O.T.L.

3. BASIS OF BEARING IS NEW HAMPSHIRE SPC.

4. APPROXIMATE ABUTTER'S LINES SHOWN HEREON ARE FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE RELIED UPON AS BOUNDARY INFORMATION.

5. EASEMENTS OR OTHER UNWRITTEN RIGHTS MAY EXIST THAT ENCUMBER OR BENEFIT THE PROPERTY NOT SHOWN HEREON.

6. ZONING INFORMATION AND SETBACKS SHOWN HEREON ARE FOR REFERENCE PURPOSES. CONFIRM CURRENT ZONING REQUIREMENTS WITH THE CITY OF PORTSMOUTH PRIOR TO DESIGN OR CONSTRUCTION.

7. THE BOUNDARY SHOWN HEREON IS DETERMINED FROM WRITTEN RECORDS, FIELD EVIDENCE AND PAROL TESTIMONY RECOVERED AT THE TIME OF SURVEY AND MAY BE SUBJECT TO CHANGE IF OTHER EVIDENCE BECOMES AVAILABLE.

8. A PORTION OF THE LOCUS PARCEL FALLS WITHIN SPECIAL FLOOD HAZARD AREA AE, WITH A BASE FLOOD ELEVATION OF 8 FT. PER FEMA FIRM MAP No. 33015C0278F, REVISED JANUARY 29, 2021.

9. THE HIGHEST OBSERVABLE TIDE LINE (HOTL) OF THE PISCATAQUA RIVER, WHICH CORRESPONDS WITH THE COASTAL WETLAND BOUNDARY, WAS DELINEATED BY JOSEPH W. NOEL, NEW HAMPSHIRE CERTIFIED WETLAND SCIENTIST #086 ON DECEMBER 11, 2020. REFER TO LETTER/REPORT DATED DECEMBER 15, 2020 FOR MORE INFORMATION.
THE DELINEATION WAS CONDUCTED IN ACCORDANCE WITH THE U.S. ARMY CORPS OF ENGINEERS DOCUMENT "CORPS OF EINGINEERS WETLAND DELINEATION MANUAL", (1987), ALONG WITH THE REQUIRED "REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION", (VERSION 2, JANUARY 2021).

PURPOSE OF PLAN:

THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING CONDITIONS FOR DESIGN PURPOSES. THIS PLAN IS NOT A STANDARD BOUNDARY SURVEY AND IS NOT INTENDED TO BE RECORDED, USED FOR CONVEYANCE, OR ANY OTHER TITLE PURPOSE.

STATE OF NEW HAMPSHIRE No. 829 LICENSED LAND SURVEYOR PETER A. LOSTUMBO SIGNATURE

10/19/2023

| REV. | DATE | STATUS | BY | CHKD | APPD. |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| A | 4/2/21 | ADDED ADDITIONAL TREES & ABUTTER BUILDINGS | A.H.P. | P.L.A. | P.L.A. |

# *EXISTING CONDITIONS PLAN*

FOR PROPERTY AT

**60 Pleasant Point Drive**
**Portsmouth, Rockingham County, New Hampshire**

OWNED BY

**120-0 Wild Rose Lane, LLC**
c/o Altus Engineering, Att. Erik Saari, V.P.
133 Court Street, Portsmouth, New Hampshire 03801


North
EASTERLY SURVEYING
SURVEYORS IN N.H. & MAINE 1021 GOODWIN ROAD, UNIT #1
(207) 439-6333 ELIOT, MAINE 03903


| SCALE: | PROJECT NO. | DATE: | SHEET: | DRAWN BY: | CHECKED BY: |
|---|---|---|---|---|---|
| 1" = 20' | 20770 | 02/04/21 | 1 OF 1 | A.H.P. | P.L.A. |

DRAWING No: 20770 EXISTING CONDITIONS
FIELD BOOK No: "Portsmouth #17"

***Tax Map 207 Lot 13***

## DEMOLITION NOTES

1. THE CONTRACTOR SHALL BRING ANY AND ALL DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS TO THE ATTENTION OF THE OWNER AND ENGINEER IMMEDIATELY FOR RESOLUTION.
2. ALL BUILDINGS, CURBING, CONCRETE, PAVEMENT AND SUBBASE MATERIALS SHALL BE REMOVED FROM PROPOSED LANDSCAPE AREAS TO A MINIMUM DEPTH OF 12" BELOW FINISH GRADE AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPE PURPOSES AND MEETING THE PROJECT SPECIFICATIONS.
3. IN AREAS WHERE CONSTRUCTION IS TO BE ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING AND/OR CHAIN LINK FENCING ALONG THE PROPERTY LINE IN ALL AREAS WHERE SILT FENCING OR OTHER PERIMETER SEDIMENT CONTROL MEASURE IS NOT OTHERWISE REQUIRED.
4. CITY DEMOLITION PERMIT REQUIRED PRIOR TO ANY DEMOLITION ACTIVITIES. CONTRACTOR IS NOTIFIED THAT THIS PERMIT PROCESS MAY REQUIRE A 30-DAY LEAD TIME.
5. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES & VEGETATION SCHEDULED TO REMAIN.

## DEMOLITION NOTES - continued

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TIMELY NOTIFICATION OF ALL PARTIES, CORPORATIONS, COMPANIES, INDIVIDUALS AND STATE AND LOCAL AUTHORITIES OWNING AND/OR HAVING JURISDICTION OVER ANY UTILITIES RUNNING TO, THROUGH OR ACROSS AREAS TO BE DISTURBED BY DEMOLITION AND/OR CONSTRUCTION ACTIVITIES WHETHER OR NOT SAID UTILITIES ARE SUBJECT TO DEMOLITION, RELOCATION, MODIFICATION AND/OR CONSTRUCTION.
7. ALL UTILITY DISCONNECTIONS/DEMOLITIONS/RELOCATIONS SHALL BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES, PORTSMOUTH DPW AND ABUTTING PROPERTY OWNERS. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED EXCAVATION, TRENCHING AND BACKFILLING.
8. WHERE SPECIFIED TO REMAIN, MANHOLE RIMS, CATCH BASIN GRATES, VALVE COVERS, HANDHOLES, ETC. SHALL BE ADJUSTED TO FINISH GRADE UNLESS OTHERWISE SPECIFIED.
9. SEE EROSION CONTROL PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES THAT SHALL BE IN PLACE PRIOR TO DEMOLITION ACTIVITIES.
10. ALL MATERIALS SCHEDULED FOR DEMOLITION OR REMOVAL ON PRIVATE PROPERTY SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.
11. ALL MATERIAL SCHEDULED TO BE REMOVED SHALL BE LEGALLY DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS/CODES.
12. WATER: PORTSMOUTH DPW WATER DIVISION, JIM TOW, (603) 427-1530.
13. SEWER: PORTSMOUTH DPW SEWER DIVISION, JIM TOW, (603) 427-1530.
14. TELECOMMUNICATIONS: CONSOLIDATED, JOE CONSIDINE, (603) 427-5525.
15. CABLE: COMCAST, MIKE COLLINS, (603) 679-5695, EXT. 1037.
16. ELECTRICAL: EVERSOURCE, MICHAEL BUSBY, (603) 332-4227, EXT. 5555334.
17. GAS: UNITIL, DAVID BEAULIEU, (603) 294-5144.
18. CONTRACTOR TO CONTACT PORTSMOUTH DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY DEMOLITION TO COORDINATE ALL WORK CONCERNING DISCONNECTION/DEMOLITION OF ANY WATER AND SEWER LINE SERVICES.
19. ENTIRE PARCEL LIES WITHIN THE NHDES 250-FOOT SHORELAND PROTECTION AREA.
20. ALL WATER MAIN AND SANITARY SEWER SERVICE DISCONNECTIONS SHALL CONFORM TO PORTSMOUTH DPW STANDARDS.
21. NO BURNING SHALL BE PERMITTED PER LOCAL REGULATIONS.
22. HAZARDOUS MATERIALS ENCOUNTERED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE ABATED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS.
23. AT NO TIME SHALL ANY UTILITY SERVICE OR VEHICULAR ACCESS TO ABUTTING PROPERTIES BE COMPLETELY INTERRUPTED UNLESS A FULL SHUTDOWN IS COORDINATED WITH ALL AFFECTED PARTIES AND UTILITY PROVIDER(S).
24. SHOULD GROUNDWATER BE ENCOUNTERED DURING EXCAVATION, APPROPRIATE BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED TO ENSURE SEDIMENT LADEN WATER IS NOT DISCHARGED INTO THE CITY DRAINAGE SYSTEM. A DISCHARGE PERMIT SHALL BE OBTAINED PRIOR TO DISCHARGING GROUNDWATER.
25. EXISTING HOUSE IS SERVICED BY A PROPANE TANK. REMOVAL AND DISPOSAL OF EXISTING TANK & INSTALLATION OF NEW PROPANE TANK, IF DESIRED, SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
26. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR THE DEMOLITION OF EXISTING SITE FEATURES. UNLESS OTHERWISE NOTED TO REMAIN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL BUILDING, PAVEMENT, CONCRETE, CURBING, SIGNS, POLES, UTILITIES, FENCES, VEGETATION AND OTHER EXISTING FEATURES AS NECESSARY TO FULLY CONSTRUCT THE PROJECT.
27. EXISTING SEWER SERVICE LOCATION IS APPROXIMATE BASED ON REFERENCE PLAN. CONTRACTOR SHALL INVESTIGATE THE EXISTING BUILDING DISCHARGE AND PERFORM TEST PITS AND OTHER WORK AS NECESSARY TO LOCATE THE CONNECTION. THE NEW SERVICE SHALL BE CONNECTED PER UTILITY PLAN & IN ACCORDANCE WITH DPW STANDARDS.

N/F
THE JAMES M. MCSHARRY REVOCABLE TRUST
TAX MAP 207 LOT 12
R.C.R.D. BOOK 5771 PAGE 1969

N/F
LISA & LARRY JOHN GOODWIN
TAX MAP 207 LOT 14
R.C.R.D. BOOK 6453 PAGE 2961

PLEASANT POINT DRIVE

PISCATAQUA RIVER

PISCATAQUA RIVER

Per Plan Ref. #1

EXISTING TIDAL BUFFER IMPERVIOUS TO REMAIN:

| | | |
|---|---|---|
| 0 – 50' DOCK: | 160 | SF |
| TOTAL: | 160 | SF |
| TOTAL IMPERVIOUS TO REMAIN: | 160 | SF |

EXISTING TIDAL BUFFER IMPERVIOUS TO BE REMOVED:

| | | |
|---|---|---|
| 0 – 50' STAIRS: | 50 | SF |
| CONC.: | 30 | SF |
| STONE WALKS/WALLS: | 73 | SF |
| POOL/PATIO: | 555 | SF |
| TOTAL: | 708 | SF |
| 50 – 100' POOL/PATIO: | 1075 | SF |
| RESIDENCE/DECK: | 2810 | SF |
| PAVEMENT: | 425 | SF |
| CONCRETE: | 70 | SF |
| STONE WALKS/WALLS: | 151 | SF |
| TOTAL: | 4531 | SF |
| 100 – 150' RESIDENCE: | 160 | SF |
| CONCRETE: | 190 | SF |
| PAVEMENT: | 2655 | SF |
| TOTAL: | 3005 | SF |
| 150 – 250' PAVEMENT: (INCLUDING OFF-SITE) | 2020 | SF |
| TOTAL IMPERVIOUS REMOVED: | 10,264 | SF |

GRAPHIC SCALE
20 0 10 20 40 80
( IN FEET )

P5138


ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com


ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/28/23

NOT FOR CONSTRUCTION

ISSUED FOR: NHDES APPROVAL

ISSUE DATE: NOVEMBER 28, 2023

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | INITIAL SUBMISSION | EDW | 10/27/23 |
| 1 | NHDES SUBMISSION | EDW | 11/28/23 |

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5138SITE.dwg

SCALE:
(22"x34") 1" = 20'
(11"x17") 1" = 40'

OWNER:
120-0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

APPLICANT:
120-0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

PROJECT:
JOHN & MICHELLE MORRIS RESIDENCE
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
DEMOLITION PLAN

SHEET NUMBER:
C - 1

## CONSERVATION COMMISSION RECOMMENDATIONS:

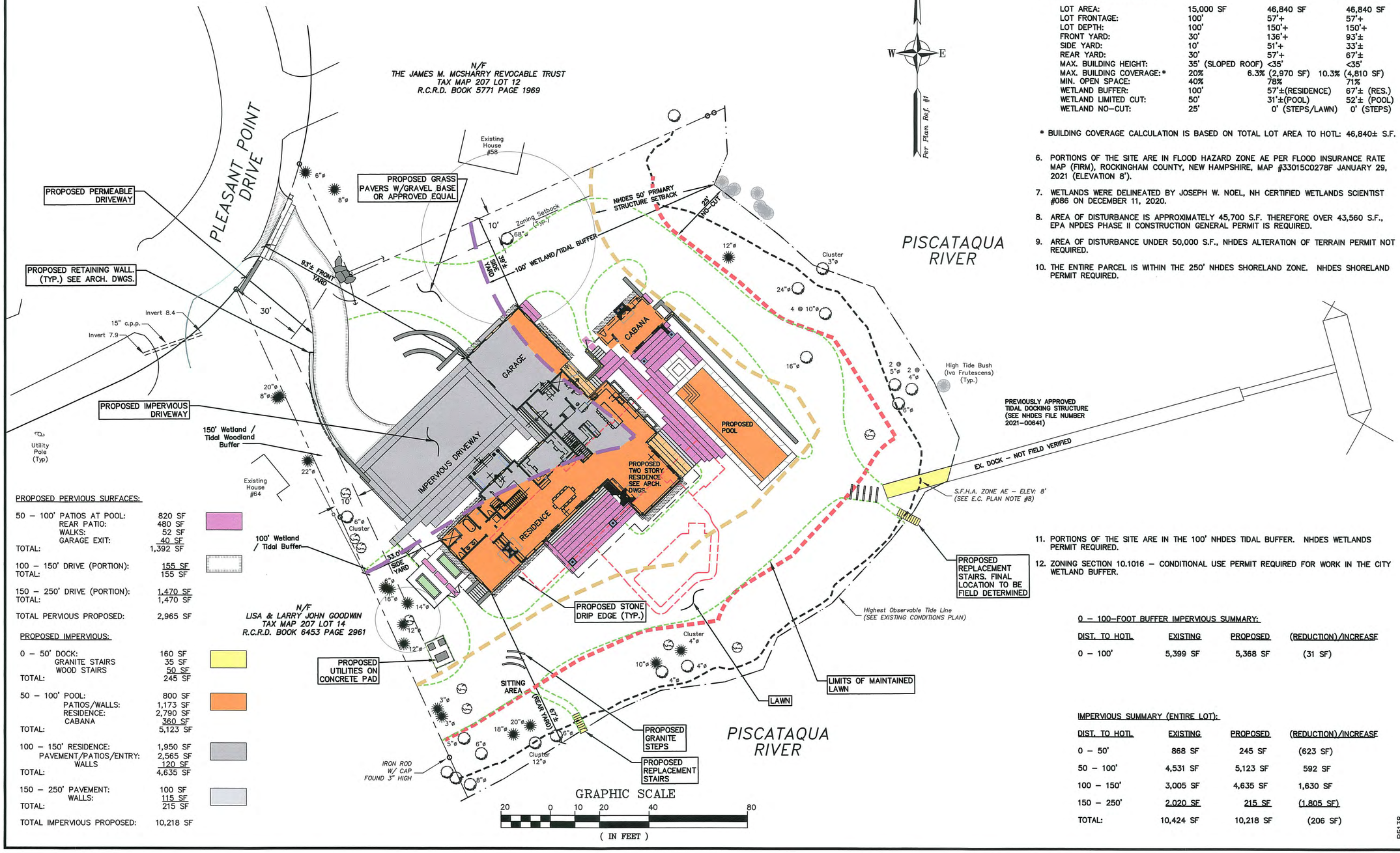
1. IN ACCORDANCE WITH SECTION 10.1018.40 OF THE ZONING ORDINANCE, APPLICANT SHALL INSTALL PERMANENT WETLAND BOUNDARY MARKERS ALONG THE 25' VEGETATIVE BUFFER DURING PROJECT CONSTRUCTION. THESE CAN BE PURCHASED THROUGH THE CITY OF PORTSMOUTH PLANNING AND SUSTAINABILITY DEPARTMENT.
2. APPLICANT SHALL PROVIDE MONTHLY INVASIVE MANAGEMENT AND PLANTING UPDATES TO THE PLANNING AND SUSTAINABILITY DEPARTMENT ONCE REMOVAL BEGINS AND UNTIL THE END OF THE RESTORATION PROCESS (SEE MANAGEMENT CALENDAR FOR TREATMENT AND PLANTING). THESE UPDATES SHALL BE A REPORT SUMMARIZING THE ACTIVITIES PERFORMED, THE SUCCESS RATES, ANY PROPOSED PLAN CHANGES, AND ANY UPCOMING ACTIVITIES INVOLVING THE 25' VEGETATIVE BUFFER ON SITE. IF PLANTS HAVE NOT ACHIEVED AN 80% SUCCESS RATE OR GREATER AFTER ONE YEAR, APPLICANTS WILL REPLANT AND REPORT BACK TO THE PLANNING AND SUSTAINABILITY DEPARTMENT ONE YEAR AFTER PLANTING IS COMPLETE AND EACH SUBSEQUENT YEAR UNTIL AN 80% PLANTING SUCCESS RATE HAS BEEN ACHIEVED.

LEGEND

- PROPERTY LINE
- HIGHEST OBSERVABLE TIDE LINE
- 25' NO CUT BUFFER
- 50' LIMITED CUT BUFFER
- 100' WETLAND / TIDAL BUFFER
- EXISTING TREES TO REMAIN
- HOUSE / DECK / POOL TO BE REPLACED

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE




PROPOSED PERVIOUS SURFACES:

| | | |
|---|---|---|
| 50 – 100' PATIOS AT POOL: | 820 SF | |
| REAR PATIO: | 480 SF | |
| WALKS: | 52 SF | |
| GARAGE EXIT: | 40 SF | |
| TOTAL: | 1,392 SF | |
| 100 – 150' DRIVE (PORTION): | 155 SF | |
| TOTAL: | 155 SF | |
| 150 – 250' DRIVE (PORTION): | 1,470 SF | |
| TOTAL: | 1,470 SF | |
| TOTAL PERVIOUS PROPOSED: | 2,965 SF | |

PROPOSED IMPERVIOUS:

| | | |
|---|---|---|
| 0 – 50' DOCK: | 160 SF | |
| GRANITE STAIRS | 35 SF | |
| WOOD STAIRS | 50 SF | |
| TOTAL: | 245 SF | |
| 50 – 100' POOL: | 800 SF | |
| PATIOS/WALKS: | 1,173 SF | |
| RESIDENCE: | 2,790 SF | |
| CABANA | 360 SF | |
| TOTAL: | 5,123 SF | |
| 100 – 150' RESIDENCE: | 1,950 SF | |
| PAVEMENT/PATIOS/ENTRY: | 2,565 SF | |
| WALLS | 120 SF | |
| TOTAL: | 4,635 SF | |
| 150 – 250' PAVEMENT: | 100 SF | |
| WALLS: | 115 SF | |
| TOTAL: | 215 SF | |
| TOTAL IMPERVIOUS PROPOSED: | 10,218 SF | |

## SITE NOTES

1. DESIGN INTENT – THE EXISTING ANTIQUATED SINGLE FAMILY RESIDENCE WILL BE RAZED & REPLACED WITH A NEW SINGLE FAMILY RESIDENCE.
2. THE BASE PLAN USED HERE WAS DEVELOPED FROM "EXISTING CONDITIONS PLAN FOR PROPERTY AT 60 PLEASANT POINT DRIVE, PORTSMOUTH, NH", DATED FEB. 4, 2021 BY EASTERLY SURVEYING, INC.
3. PROJECT PARCEL: MAP 207 LOT 13, 46,840 S.F (1.08 ACRES) TO HIGHEST OBSERVABLE TIDE LINE (HOTL).
4. ZONE: SRB (SINGLE RESIDENCE B)
   OVERLAY: FLOOD PLAIN DISTRICT OVERLAY
5. DIMENSIONAL REQUIREMENTS:

| | | EXISTING | PROPOSED |
|---|---|---|---|
| LOT AREA: | 15,000 SF | 46,840 SF | 46,840 SF |
| LOT FRONTAGE: | 100' | 57'+ | 57'+ |
| LOT DEPTH: | 100' | 150'+ | 150'+ |
| FRONT YARD: | 30' | 136'+ | 93'± |
| SIDE YARD: | 10' | 51'+ | 33'± |
| REAR YARD: | 30' | 57'+ | 67'± |
| MAX. BUILDING HEIGHT: | 35' (SLOPED ROOF) | <35' | <35' |
| MAX. BUILDING COVERAGE:* | 20% | 6.3% (2,970 SF) | 10.3% (4,810 SF) |
| MIN. OPEN SPACE: | 40% | 78% | 71% |
| WETLAND BUFFER: | 100' | 57'±(RESIDENCE) | 67'± (RES.) |
| WETLAND LIMITED CUT: | 50' | 31'±(POOL) | 52'± (POOL) |
| WETLAND NO-CUT: | 25' | 0' (STEPS/LAWN) | 0' (STEPS) |

* BUILDING COVERAGE CALCULATION IS BASED ON TOTAL LOT AREA TO HOTL: 46,840± S.F.

6. PORTIONS OF THE SITE ARE IN FLOOD HAZARD ZONE AE PER FLOOD INSURANCE RATE MAP (FIRM), ROCKINGHAM COUNTY, NEW HAMPSHIRE, MAP #33015C0278F JANUARY 29, 2021 (ELEVATION 8').
7. WETLANDS WERE DELINEATED BY JOSEPH W. NOEL, NH CERTIFIED WETLANDS SCIENTIST #086 ON DECEMBER 11, 2020.
8. AREA OF DISTURBANCE IS APPROXIMATELY 45,700 S.F. THEREFORE OVER 43,560 S.F., EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT IS REQUIRED.
9. AREA OF DISTURBANCE UNDER 50,000 S.F., NHDES ALTERATION OF TERRAIN PERMIT NOT REQUIRED.
10. THE ENTIRE PARCEL IS WITHIN THE 250' NHDES SHORELAND ZONE. NHDES SHORELAND PERMIT REQUIRED.
11. PORTIONS OF THE SITE ARE IN THE 100' NHDES TIDAL BUFFER. NHDES WETLANDS PERMIT REQUIRED.
12. ZONING SECTION 10.1016 – CONDITIONAL USE PERMIT REQUIRED FOR WORK IN THE CITY WETLAND BUFFER.

0 – 100–FOOT BUFFER IMPERVIOUS SUMMARY:

| DIST. TO HOTL | EXISTING | PROPOSED | (REDUCTION)/INCREASE |
|---|---|---|---|
| 0 – 100' | 5,399 SF | 5,368 SF | (31 SF) |

IMPERVIOUS SUMMARY (ENTIRE LOT):

| DIST. TO HOTL | EXISTING | PROPOSED | (REDUCTION)/INCREASE |
|---|---|---|---|
| 0 – 50' | 868 SF | 245 SF | (623 SF) |
| 50 – 100' | 4,531 SF | 5,123 SF | 592 SF |
| 100 – 150' | 3,005 SF | 4,635 SF | 1,630 SF |
| 150 – 250' | 2,020 SF | 215 SF | (1,805 SF) |
| TOTAL: | 10,424 SF | 10,218 SF | (206 SF) |

P5138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ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
11/28/23

NOT FOR CONSTRUCTION

ISSUED FOR: NHDES APPROVAL

ISSUE DATE: NOVEMBER 28, 2023

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|---|---|---|---|
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| 1 | NHDES SUBMISSION | EDW | 11/28/23 |

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5138SITE-8-30-2023

SCALE:
(22"x34") 1" = 20'
(11"x17") 1" = 40'

OWNER:
120-0 WILD ROSE LANE, LLC
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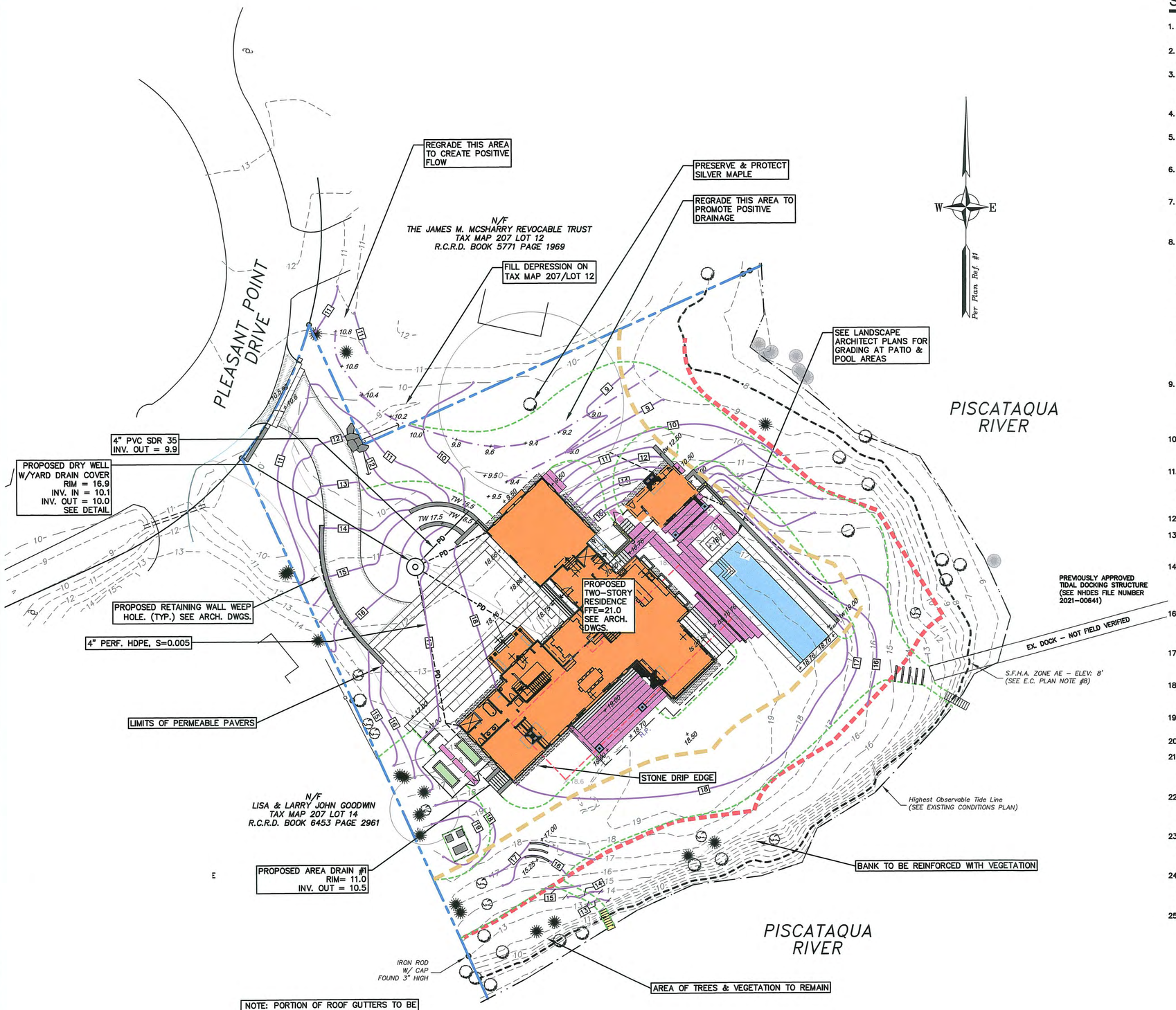
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
SITE PLAN

SHEET NUMBER:
C - 2




## STORMWATER MANANGEMENT NOTES

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
3. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
4. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
5. UNLESS OTHERMISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBM) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
6. PRIOR TO CONSTRUCTION, FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES. PRESERVE AND PROTECT LINES TO BE RETAINED.
7. TEMPORARY INLET PROTECTION MEASURES SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASINS WITHIN 100' OF THE PROJECT SITE WHEN SITE WORK WITHIN CONTRIBUTING AREAS IS ACTIVE OR SAID AREAS HAVE NOT BEEN STABILIZED.
8. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
9. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
10. ALL CATCH BASIN, MANHOLE AND OTHER DRAINAGE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISH GRADE. ANY RIM ABOVE SURROUNDING FINISH GRADE SHALL NOT BE ACCEPTED.
11. IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZING AND LOCATION OF ALL STRUCTURES AND IS DIRECTED TO RESOLVE ANY POTENTIAL DISCREPANCY WITH THE ENGINEER PRIOR TO CONSTRUCTION.
12. ALL CPP PIPE SHALL BE ADS N-12 OR APPROVED EQUAL.
13. TOTAL AREA OF PROJECT DISTURBANCE IS ±45,700 S.F. (>1 ACRE THEREFORE SUBJECT TO EPA NPDES PHASE II. CONTRACTOR SHALL BE RESPONSIBLE FOR REQUIRED INSPECTIONS.
14. NO EARTHWORK, STUMPING OR GRUBBING SHALL COMMENCE UNTIL ALL APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE PROPERLY MAINTAINED IN GOOD WORKING ORDER FOR THE DURATION OF CONSTRUCTION AND THE SITE IS STABILIZED.
16. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DESIGN STANDARDS AND SPECIFICATIONS SET FORTH IN THE NHDES NH STORMWATER MANUALS, VOL. 1-3, DATED DECEMBER 2008 AS AMENDED.
17. CONTRACTOR SHALL CONTROL DUST BY SPRAYING WATER, SWEEPING PAVED SURFACES, PROVIDING TEMPORARY VEGETATION, AND/OR MULCHING EXPOSED AREAS AND STOCKPILES.
18. THE CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY TO PREVENT EROSION, PREVENT SEDIMENT FROM LEAVING THE SITE AND/OR ENTERING WETLANDS AND ENSURE PERMANENT SOIL STABILIZATION.
19. ALL EROSION CONTROL BLANKETS AND FASTENERS SHALL BE BIODEGRADEABLE.
20. ALL SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
21. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE SIX (6") INCHES OF COMPACTED LOAM, LIMESTONE, ORGANIC FERTILIZER, SEED, AND MULCH USING APPROPRIATE SOIL STABILIZATION TECHNIQUES OR AS INDICATED ON THE LANDSCAPE ARCHITECTURAL PLANS.
22. UPON COMPLETION OF CONSTRUCTION, ALL DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT AND ALL TEMPORARY EROSION AND SEDIMENT CONTROLS REMOVED AND ANY AREAS DISTURBED BY THE REMOVAL SMOOTHED AND REVEGETATED.
23. THE ENGINEER OF RECORD SHALL SUBMIT A WRITTEN REPORT WITH PHOTOGRAPHS AND ENGINEERS STAMP CERTIFYING THAT THE STORMWATER INFRASTRUCTURE WAS CONSTRUCTED TO THE APPROVED PLANS AND WILL MEET THE DESIGN PERFORMANCE.
24. THE RESIDENCE SHALL BE CONSTRUCTED WITH STONE DRIP EDGES, WHERE APPROPRIATE. DRIP EDGE UNDERDRAINS SHALL BE DIRECTED TO A STORMWATER PIPE OR DAYLIGHT IN AN AREA OUTSIDE THE CITY 100 FOOT WETLANDS BUFFER.
25. WEST SIDE OF HOUSE (DRIVEWAY SIDE) TO HAVE ROOF GUTTERS CONNECTED TO LEACHING CATCH BASIN.

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )

P5138

ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE
11/28/23

NOT FOR CONSTRUCTION

ISSUED FOR:
NHDES APPROVAL

ISSUE DATE:
NOVEMBER 28, 2023

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | INITIAL SUBMISSION | EDW | 10/27/23 |
| 1 | NHDES SUBMISSION | EDW | 11/28/23 |

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5138SITE.dwg

SCALE:
(22"x34") 1" = 20'
(11"x17") 1" = 40'

OWNER:
120-0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

APPLICANT:
120-0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

PROJECT:
JOHN & MICHELLE MORRIS RESIDENCE
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
STORMWATER MANAGEMENT & GRADING PLAN

SHEET NUMBER:
C - 3

## EROSION CONTROL NOTES

1. SEE DETAIL SHEET D-1.

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )

P5138


ALTUS ENGINEERING

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ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

10/27/23

NOT FOR CONSTRUCTION

ISSUED FOR:
CONSERVATION COMM. REVIEW

ISSUE DATE:
OCTOBER 27, 2023

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | INITIAL SUBMISSION | EDW | 10/27/23 |

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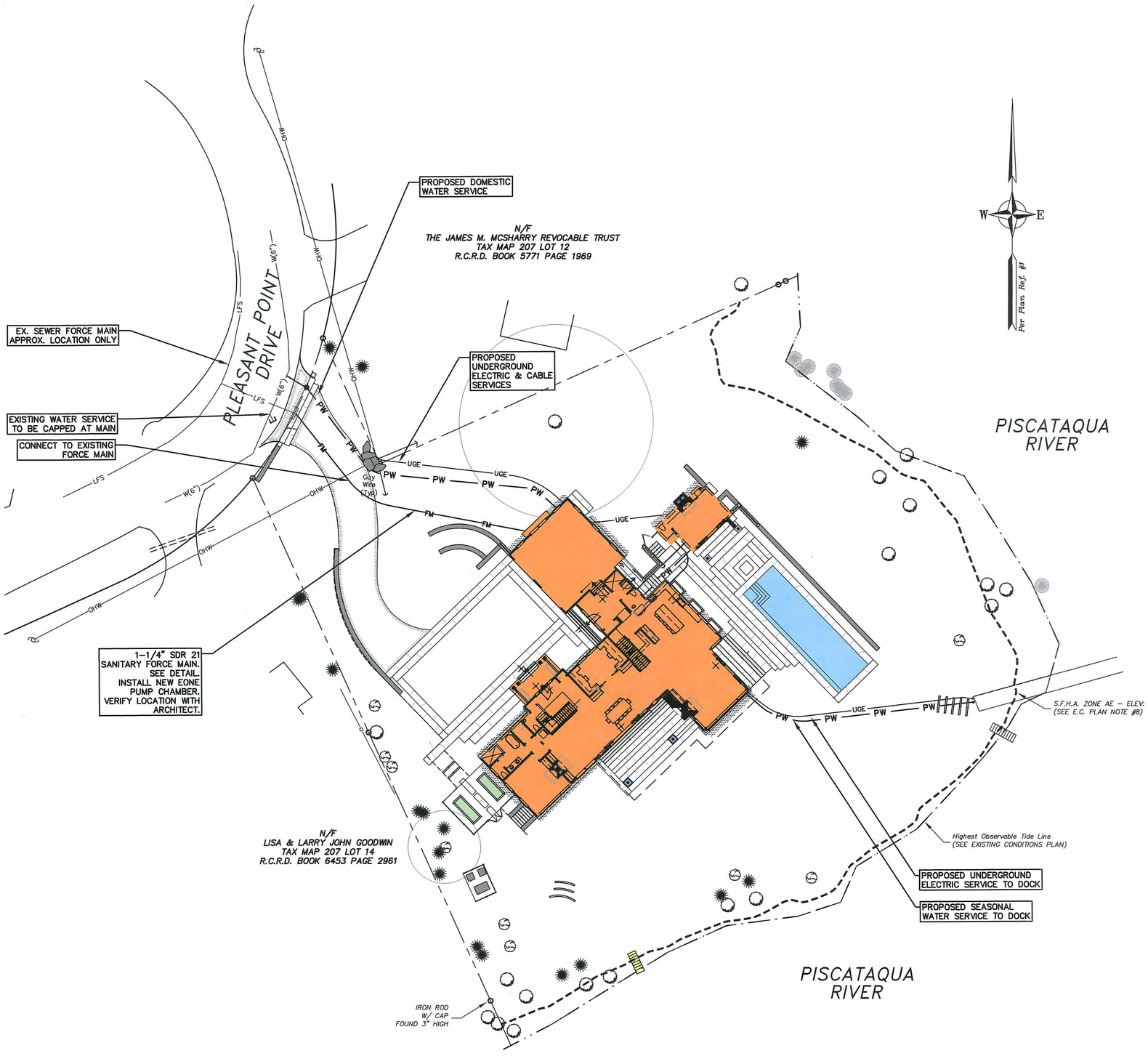
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
EROSION CONTROL PLAN

SHEET NUMBER:
C - 4




## UTILITY NOTES

1. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE. CATCH BASINS, MANHOLES, WATER GATES, ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY PROVIDERS AND GOVERNMENTAL AGENCIES. AS SUCH, THEY ARE NOT INCLUSIVE AS OTHER UTILITIES AND UNDERGROUND STRUCTURES THAT ARE NOT SHOWN ON THE PLANS MAY EXIST. THE ENGINEER, SURVEYOR AND OWNER ACCEPT NO RESPONSIBILITY FOR POTENTIAL INACCURACIES IN THE PLAN AND/OR UNFORESEEN CONDITIONS. THE CONTRACTOR SHALL NOTIFY, IN WRITING, SAID AGENCIES, UTILITY PROVIDERS, CITY OF PORTSMOUTH DPW AND OWNER'S AUTHORIZED REPRESENTATIVE AND CALL DIG SAFE AT 1 (800) DIG–SAFE AT LEAST SEVENTY–TWO (72) HOURS PRIOR TO ANY EXCAVATION WORK.
2. PRIOR TO CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING AND PROPOSED STORMWATER AND UTILITY LINES. CONFLICTS SHALL BE ANTICIPATED AND ALL EXISTING LINES TO BE RETAINED SHALL BE PROTECTED. ANY DAMAGE DONE TO EXISTING UTILITIES SHALL BE REPAIRED AND, IF NECESSARY, EXISTING UTILITIES SHALL BE RELOCATED AT NO EXTRA COST TO THE OWNER. ALL CONFLICTS SHALL BE RESOLVED WITH THE INVOLVEMENT OF THE ENGINEER, DPW AND APPROPRIATE UTILITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE POSTING OF ALL BONDS AND PAYMENT OF ALL TAP, TIE–IN AND CONNECTION FEES.
4. ALL ROAD/LANE CLOSURES OR OTHER TRAFFIC INTERRUPTIONS SHALL BE COORDINATED WITH THE PORTSMOUTH POLICE DEPARTMENT AND DPW AT LEAST TWO WEEKS PRIOR TO COMMENCING RELATED CONSTRUCTION.
5. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH AND NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRENCHING, BEDDING, BACKFILL & COMPACTION FOR ALL UTILITY TRENCHING IN ADDITION TO ALL CONDUIT INSTALLATION AND COORDINATION OF ALL REQUIRED INSPECTIONS.
7. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL CONFORM TO FEDERAL OSHA AND CITY REGULATIONS.
8. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE ARCHITECT, CONTRACTOR, APPROPRIATE UTILITY COMPANIES AND THE PORTSMOUTH DPW.
9. WATER: PORTSMOUTH DPW WATER DIVISION, JIM TOW, (603) 427–1530.
10. SEWER: PORTSMOUTH DPW SEWER DIVISION, JIM TOW, (603) 427–1530.
11. TELECOMMUNICATIONS: CONSOLIDATED, JOE CONSIDINE, (603) 427–5525.
12. CABLE: COMCAST, MIKE COLLINS, (603) 679–5695, EXT. 1037.
13. ELECTRICAL: EVERSOURCE, MICHAEL BUSBY, (603) 332–4227, EXT. 5555334. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL, 48–HOUR MINIMUM NOTICE REQUIRED.
14. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.
15. ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL BE CONSTRUCTED AND TESTED PER PORTSMOUTH DPW STANDARDS AND SPECIFICATIONS. ALL OTHER UTILITIES SHALL BE TO THE STANDARDS AND SPECIFICATIONS OF THE RESPECTIVE UTILITY PROVIDERS.
16. WHERE WATER LINES CROSS, RUN ADJACENT TO OR ARE WITHIN 5' OF STORM DRAINAGE PIPES OR STRUCTURES, 2"–THICK CLOSED CELL RIGID BOARD INSULATION SHALL BE INSTALLED FOR FROST PROTECTION.
17. CONTRACTOR SHALL PROVIDE DPW WITH DETAILS OF TEMPORARY & PERMANENT GROUNDWATER DEWATERING DESIGN IF NECESSARY.
18. THE APPLICANT OR ASSIGNS SHALL AGREE TO PAY FOR THE SERVICES OF A THIRD–PARTY OVERSIGHT ENGINEER, TO BE SELECTED BY THE CITY, TO MONITOR THE INSTALLATION OF UTILITIES INCLUDING SEWER, WATER AND DRAINAGE
19. RESIDENTIAL HOUSES SHALL BE EQUIPPED WITH NFPA 13D–COMPLIANT SPRINKLER SYSTEMS IF THEIR FRONT DOORS ARE LOCATED GREATER THAN 50' FROM THE EDGE OF ROADWAY PAVEMENT.
20. ALL MEANS, METHODS, MATERIALS AND INSTALLATION OF NEW SEWER LATERALS SHALL BE APPROVED AND WITNESSED BY PORTSMOUTH DPW PRIOR TO BACKFILLING.

ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE –
10/27/23

NOT FOR CONSTRUCTION

ISSUED FOR:
**CONSERVATION COMM. REVIEW**

ISSUE DATE:
**OCTOBER 27, 2023**

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | INITIAL SUBMISSION | EDW | 10/27/23 |

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5138SITE.dwg

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APPLICANT:
120–0 WILD ROSE LANE, LLC
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NEWBURYPORT, MA 01950

PROJECT:
# JOHN & MICHELLE MORRIS RESIDENCE
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
## UTILITIES PLAN

SHEET NUMBER:
# C - 5

P5138

# Morris Residence

60 Pleasant Point Drive
Portsmouth, NH

General Notes:

1. Existing conditions and topographic data are from a site plan of land dated 8 February 2021; prepared by Altus Engineering, INC., 133 Court Street, Portsmouth, NH 03801 - Tel: (603) 433.2335

2. Existing conditions supplemented from data collected by: Matthew Cunningham Landscape Design LLC, 411 Main Street, Stoneham, MA 02108 / 366 Fore Street, Portland, ME 04101 - Tel: (617) 905.2246

3. True and current conditions may differ from those indicated on the plan. Contractor shall verify true conditions in the field prior to construction and notify landscape designer of significant discrepancies.

4. Contractor shall verify location of any existing utilities and services and provide protection during construction. Contractor shall directly coordinate with DIG Safe. Utilities damaged during construction shall be repaired at contractor's expense.

5. Contractor shall contact and inform client and landscape designer to any unforeseen conditions which may affect the intended design as set forth in the drawings.

6. Contractor shall secure any necessary permits required for the work from any state or local agencies, departments, utility companies or other authorities having jurisdiction and affected by the work.

7. All work shall be in in accordance with the New Hampshire State Building Code.

8. Contractor shall leave site clean and orderly during all phases of the construction process. Remove from the site all excess materials, soils, debris, and equipment. Store materials only in an approved location.

9. Do not scale drawings.

10. All angles are assumed to be 90 degrees unless otherwise stated.


MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC
matthew-cunningham.com

411 Main Street, Stoneham, MA 02180
366 Fore Street, Portland, ME 04101
617.905.2246 p | 617.321.4014 f


REVISIONS:

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SCALE: 1"= 20'-0" DATE: 25 October 2023

0' 10' 20' 40'

SHEET TITLE:

## Illustrative Master Plan

SHEET NUMBER:

L0.0

NOT FOR CONSTRUCTION

## PLANTING SCHEDULE

| ID | Latin Name | Common Name | Scheduled Size |
|---|---|---|---|
| **TREES** | | | |
| AGA | Amelanchier x grandiflora 'Autumn Brilliance' | Autumn Brillaince Serviceberry | 10-12' B&B |
| CC | Cercis canadensis | Redbud | 4-4.5" cal. B&B |
| COG | Chamaecyparis obtusa 'Gracilis' | Gracillis Hinoki Falsecypress | 10-12' B&B |
| CK | Cornus kousa | Kousa Dogwood | 8-10' B&B |
| CVW | Crataegus viridis 'Winter King' | Winter King Hawthorne | 4-4.5" cal. B&B |
| HD | Hamamelis x intermedia 'Diane' | Diane Witchhazel | 3-4' ht. B&B |
| IO | Ilex opaca | American Holly | 10-12' B&B |
| JV | Juniperus virginiana | Eastern Red Cedar | 8-10' B&B |
| PA2 | Picea abies | Norway Spruce | 10-12' ht. B&B |
| PA | Picea abies | Norway Spruce | 10-12' ht. B&B |
| PO | Piecea orientalis | Oriental Spruce | 10-12' ht. B&B |
| TP | Thuja plicata 'Green Giant' | Green Giant Arborvitae | 10-12' ht. B&B |
| | | | |
| **SHRUBS** | | | |
| AE | Aesculus parviflora | Bottlebrush Buckeye | 5-6' ht. B&B |
| AAB | Aronia arbutifolia 'Brilliantissima' | Red Chokeberry | #7 cont. |
| CL | Clethra alnifolia | Summersweet | 3-4' ht. B&B |
| CP | Comptonia peregrina | Sweetfern | #3 cont. |
| FMA | Fothergilla x intermedia 'Mount Airy' | Mount Airy Fothergilla | 3-4' ht. B&B |
| HPE | Hydrangea anomala petiolaris | Climbing Hydrangea | #3 cont. |
| HAA | Hydrangea arborescens 'Annabelle' | Annabelle Hydrangea | #5 cont. |
| HLL | Hydrangea paniculata 'Little Lime' | Little Lime Hydrangea | 2.5-3' ht. B&B |
| HQA | Hydrangea quercifolia 'Alice' | Alice Oakleaf Hydrangea | 3-3.5' ht. B&B |
| HQP | Hydrangea quercifolia 'Pee Wee' | Pee Wee Oakleaf Hydrangea | 2-2.5' ht. B&B |
| HS | Hydrangea serrata 'Bluebird' | Bluebird Lacecap Hydrangea | #5 cont. |
| IGS | Ilex glabra 'Shamrock' | Dwarf Inkberry | 3.5-4' ht. B&B |
| IVR | Ilex verticillata 'Red Sprite' | Red Sprite Winterberry | 2-3' ht. B&B |
| IVS | Ilex verticillata 'Southern Gentleman' | Southern Gentleman Winterberry | #2 cont. |
| LB | Lindera benzoin | Spicebush | 3-4' ht. B&B |
| MG | Myrica gale | Sweetgale | #3 cont. |
| MP | Myrica pensylvanica | Northern Bayberry | 3-3.5' ht. B&B |
| PM | Prunus maritima | Beach Plum | 3-4' ht. B&B |
| RCW | Rhododendron 'Cunningham's White' | Cunningham's White Rhododendron | 2.5-3' ht. B&B |
| RCA | Rhododendron catawbiense 'Album' | White Catawba Rhododendron | 3-4' ht. B&B |
| RM | Rhododendron maximum | Rosebay Rhododendron | 5-6' ht. B&B |
| WR | Viburnum nudum 'Winterthur' | Winterthur Viburnum | 4-5' ht. B&B |
| | | | |
| **PERENNIALS** | | | |
| ARA | Actaea racemosa | Snakeroot | #1 cont. |
| AMO | Alchemilla mollis | Lady's Mantle | #1 cont. |
| ADL | Astilbe 'Delft Lace' | Delft Lace Astilbe | #1 cont. |
| ABV | Astilbe 'Bridal Veil' | Bidal Veil Astilbe | #1 cont. |
| CPN | Carex pensylvanica | Oak Sedge | #1 cont. |
| DPU | Dennstaedia punctiloba | Hay-Scented Fern | #1 cont. |
| GRZ | Geranium 'Rozanne' | Rozanne Cranesbill | #1 cont. |
| LIP | Lavandula intermedia 'Phenomenal' | Phenomenal Lavender | #1 cont. |
| MST | Matteuccia struthiopteris | Ostrich Fern | #1 cont. |
| NWL | Nepeta x faassenii 'Walker's Low' | Walker's Low Catmint | #1 cont. |
| PLF | Paeonia lactiflora 'Festiva Maxima' | Festiva Maxima Peony | #2 cont. |
| PLS | Paeonia lactiflora 'Sarah Bernhardt' | Sarah Bernhardt Peony | #2 cont. |
| PAH | Pennisetum alopecuroides 'Hameln' | Dwarf Fountain Grass | #2 cont. |
| PAT | Perovskia atriplicifolia | Russian Sage | #2 cont. |
| SSC | Schizachyrium scoparium 'Carousel' | Carousel Little Bluestem | #2 cont. |
| SH | Sporobolus heterolepsis | Prairie Dropseed | #2 cont. |

## RESTORATION PLANT LIST

| | |
|---|---|
| **SHRUBS** | |
| **Scientific Name** | **Common Name** |
| Rosa virginiana | Virginia Rose |
| Prunus maritima | Beach Plum |
| Ilex glabra | Inkberry |
| Myrica pensylvanica | Bayberry |
| Viburnum dentatum | Arrowwood Viburnum |
| Comptonia peregrina | Sweetfern |
| Arctosaphylos uva-ursi | Bearberry |
| | |
| **GRASSES (SEED)** | |
| **Scientific Name** | **Common Name** |
| Panicum amarum | Atlantic Coastal Panic Grass |
| Panicum virgatum | Switch Grass |
| Eragrostis spectabilis | Purple Love Grass |
| Juncus gerardii | Salt Meadow Rush |
| Sporobolus heterolepis | Prarie Dropseed |
| Ammophila breviligulata | American Beachgrass |
| Bouteloua gracilis | Blue Gramma |
| Schizachyrium scoparium | Little Bluestem |
| Festuca rubra | Red Fescue |
| | |
| **PLUGS AND CONTAINERS** | |
| **Scientific Name** | **Common Name** |
| Amorpha canescens | Lead Plant |
| Amsonia Spp. | Blue Star |
| Aquilegia canadensis | Eastern Columbine |
| Asclepias tuberosa | Butterfly Milkweed |
| Baptisia australis | Blue False Indigo |
| Eurybia spectabilis | Eastern Showy Aster |
| Heuchera americana | American Alumroot |
| Liatris aspera | Button Blazing Star |
| Penstemon digitalis | Bear-Tongue |
| Solidago sempervirens | Seaside Goldenrod |
| Waldsteinia fragarioides | Barren Strawberry |
| | |

**NOTES:**

1. LANDSCAPE ARCHITECT TO SUBSTITUTE PLANTS WITH PLANT OF COMPARABLE SIZE AND SPECIES AT TIME OF INSTALLATION.

2. RESTORATION PLANT PALETTE IS NOT FINALIZED BUT WILL ONLY INCLUDE PLANTS FROM THIS LIST. ALL PLANTS LISTED ARE NATIVE.

**PLANTING LEGEND:**

- PROPERTY LINE / LIMIT OF WORK
- BUILDING SETBACK
- L.O.W. APPROXIMATE LIMIT OF WORK
- LAWN
- PLANT BED
- EXISTING DECIDUOUS TREE TO REMAIN AND BE PROTECTED
- EXISTING EVERGREEN TREE TO REMAIN AND BE PROTECTED
- XX PROPOSED DECIDUOUS TREE PLANTING
- XX PROPOSED EVERGREEN TREE PLANTING
- XX PROPOSED SHRUB PLANTING
- XX PROPOSED PERENNIAL PLANTING

# Morris Residence

60 Pleasant Point Drive
Portsmouth, NH

General Notes:

1. Existing conditions and topographic data are from a site plan of land dated 8 February 2021; prepared by Altus Engineering, INC., 133 Court Street, Portsmouth, NH 03801 - Tel: (603) 433.2335

2. Existing conditions supplemented from data collected by: Matthew Cunningham Landscape Design LLC, 411 Main Street, Stoneham, MA 02108 / 366 Fore Street, Portland, ME 04101 - Tel: (617) 905.2246

Planting Notes:

1. The contractor shall supply all plant material in quantities sufficient to complete the planting shown on all drawings.

2. All plant material shall conform to the guidelines established by "The American Standard for Nursery Stock" published by *The American Association of Nurserymen*, latest edition.

3. All plant material shall be warrantied for 1 year after substantial completion.

4. All plants shall be balled and burlap unless otherwise noted on the plant list/ schedule.

5. All plants shall be approved by Landscape Designer prior to their installation at the site.

6. Contractor shall stake all plant locations in the field. Obtain approval of Landscape Designer before starting plant installations.

7. Plants to be transplanted shall be flagged and exact planting locations staked in the field.

8. All areas disturbed by construction shall be restored to a pre-construction state unless otherwise noted by landscape architect or plans.


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REVISIONS:

| #: | DATE: | DESCRIPTION: |
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SCALE: 1"= 20'-0" DATE: 25 October 2023

0' 10' 20' 40'

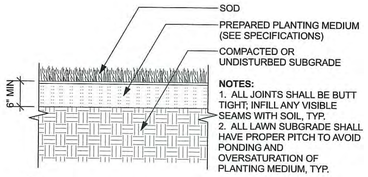
SHEET TITLE:

## Planting Plan

SHEET NUMBER:

# L0.2

NOT FOR CONSTRUCTION

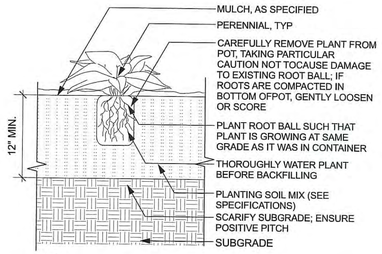



1 MICRO CLOVER SOD
Scale: NTS

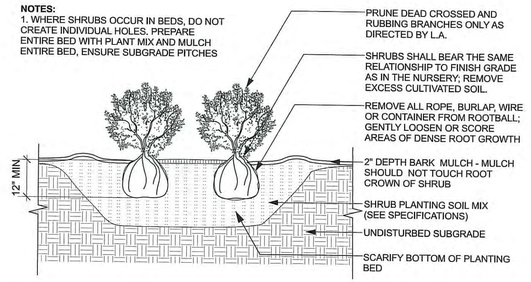
| SODCO MICRO CLOVER BLEND | |
|---|---|
| | |
| % | PRODUCT |
| | |
| 97.00% | BLACK BEAUTY TURF ** |
| 3.00% | WHITE CLOVER |
| | |
| | **SEE BLACK BEAUTY TURF BELOW |

| ** BLACK BEAUTY TURF | |
|---|---|
| | |
| % | PRODUCT |
| | |
| 29.72% | GOLCONDA TALL FESCUE |
| 19.88% | MONTANA TALL FESCUE |
| 19.74% | DORADO TALL FESCUE |
| 11.72% | DEEPBLUE KENTUCKY BLUEGRASS |
| 7.91% | PROSPERITY KENTUCKY BLUEGRASS |
| 4.97% | FRONTIER PERENNIAL RYEGRASS |
| 4.92% | SINGULAR PERENNIAL RYEGRASS |
| 1.14% | INERT MATTER |
| | |

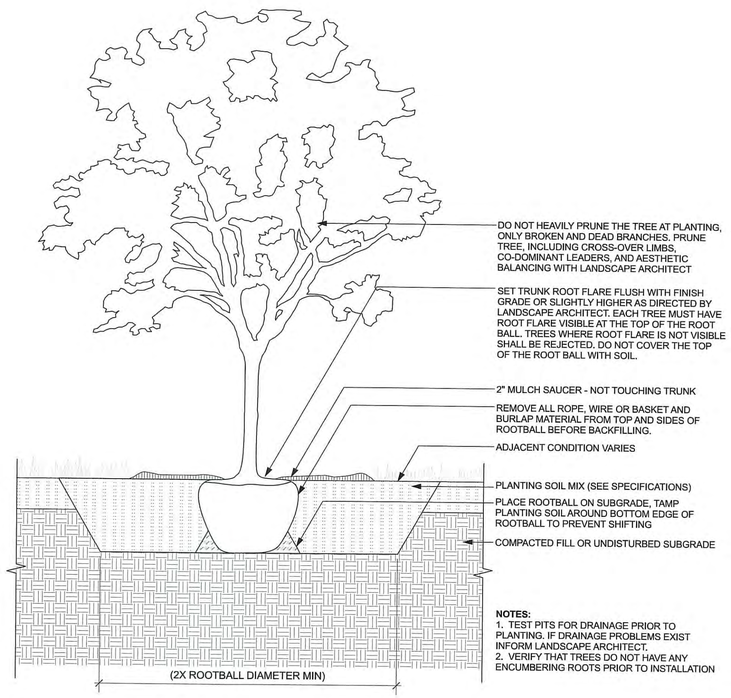
2 SODCO MICRO CLOVER
Scale: NTS




3 PERENNIAL PLANTING
Scale: NTS




4 SHRUB PLANTING
Scale: NTS



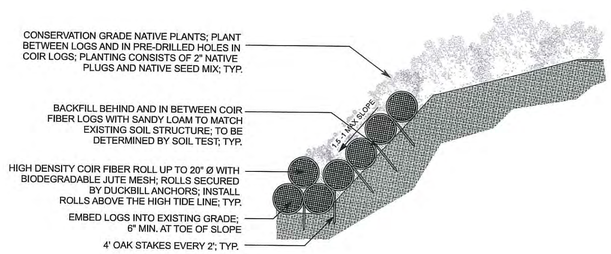

5 TREE PLANTING
Scale: NTS

**NOTES:**

**1. COASTAL BANK TO BE PREPARED IN ADVANCE BY MANAGING INVASIVE PLANT SPECIES AND CLEARING ANY DEBRIS SO THAT COIR LOGS WILL COME IN DIRECT CONTACT WITH SOILS; SEE LAND MANAGEMENT PLAN FOR DETAILS ON METHOD OF EXISTING INVASIVE SPECIES REMOVAL**

**2. LINEAR FOOTAGE OF COIR FIBER ROLLS TO BE VERIFIED IN THE FIELD**

**3. LIMIT OF WORK IS INTENDED TO BE LANDWARD OF THE HOTL**




6 Coir Fiber Rolls on Coastal Bank Edge
Scale: NTS

# Morris Residence

60 Pleasant Point Drive
Portsmouth, NH

General Notes:

1. Existing conditions and topographic data are from a site plan of land dated 8 February 2021; prepared by Altus Engineering, INC., 133 Court Street, Portsmouth, NH 03801 - Tel: (603) 433.2335

2. Existing conditions supplemented from data collected by: Matthew Cunningham Landscape Design LLC, 411 Main Street, Stoneham, MA 02108 / 366 Fore Street, Portland, ME 04101 - Tel: (617) 905.2246

Planting Notes:

1. The contractor shall supply all plant material in quantities sufficient to complete the planting shown on all drawings.

2. All plant material shall conform to the guidelines established by "The American Standard for Nursery Stock" published by *The American Association of Nurserymen*, latest edition.

3. All plant material shall be warrantied for 1 year after substantial completion.

4. All plants shall be balled and burlap unless otherwise noted on the plant list/ schedule.

5. All plants shall be approved by Landscape Designer prior to their installation at the site.

6. Contractor shall stake all plant locations in the field. Obtain approval of Landscape Designer before starting plant installations.

7. Plants to be transplanted shall be flagged and exact planting locations staked in the field.

8. All areas disturbed by construction shall be restored to a pre-construction state unless otherwise noted by landscape architect or plans.

MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC
matthew-cunningham.com
411 Main Street, Stoneham, MA 02180
366 Fore Street, Portland, ME 04101
617.905.2246 p | 617.321.4014 f

REVISIONS:

| #: | DATE: | DESCRIPTION: |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SCALE: AS SHOWN DATE: 25 October 2023

SHEET TITLE:

Planting Details

SHEET NUMBER:

L0.3

NOT FOR CONSTRUCTION

## NHDES VEGETATION MANAGEMENT SUMMARY

TAX MAP 207, LOT 13
OWNER: 120-0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

ZONING DISTRICT: SRB (SINGLE RESIDENCE B)

PERMITTED USES: SINGLE FAMILY DWELLING STRUCTURE PERMITTED.

DIMENSIONAL REQUIREMENTS:

| | REQUIRED | EXISTING | PROPOSED |
|---|---|---|---|
| MIN. LOT AREA: | 15,000 S.F. | ±46,840 SF (1.08 AC.) | ±46,840 SF |
| MIN. FRONTAGE: | 100' | ±57' | ± 57' |
| MIN. DEPTH: | 100' | ±150' | ±150' |
| FRONT SETBACK: | 30' | ±136' | ± 93' |
| SIDE SETBACK: | 10' | ± 51' | ± 33' |
| REAR SETBACK: | 30' | ± 31' | ± 67' |
| WETLAND BUFFER: | 100' | ± 80' (RESIDENCE) | 100'+(RES.) |
| NO-CUT BUFFER: | 25' | 0' (LAWN) | 0' |

WATERFRONT BUFFER (0 - 100'):
TOTAL AREA 34,527 SF
EXISTING GROUND COVER, TREES, SHRUBS 6,575 SF
PROPOSED GROUND COVER, TREES, SHRUBS 11,000 SF - SEE LANDSCAPE PLAN

WOODLAND BUFFER REQUIREMENTS (50 - 150'):
NATURAL WOODLAND (25% MIN.) 5,770 SF (TOTAL AREA 23,078 SF X 25%)
EXISTING GROUND COVER, TREES, SHRUBS 455 SF OR 2.0%
PROPOSED GROUND COVER, TREES, SHRUBS 4,260 SF OR 18.5%

## EXISTING CONDITIONS NOTES (SHORELAND & WETLAND APPLICATIONS)

1. DESIGN INTENT - THIS PLAN IS INTENDED TO DEPICT THE AREAS OF IMPACT WITHIN THE WETLAND & SHORELAND BUFFERS TO REMOVE EXISTING OUTDATED HOUSE; CONSTRUCT NEW RESIDENCE, CONSTRUCT NEW PATIOS, POOL AND DRIVEWAY CONNECTION ALONG WITH NEW UNDERGROUND UTILITIES & EXTENSIVE LANDSCAPING.
2. THE BASE PLAN USED HERE WAS DEVELOPED FROM "EXISTING CONDITIONS PLAN FOR PROPERTY AT 60 PLEASANT POINT DRIVE, PORTSMOUTH, N.H.", DATED FEBRUARY 4, 2021, BY EASTERLY SURVEYING, INC.
3. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
4. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
5. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE TOWN OF NEW CASTLE & NHDOT'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
6. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS AND TOPOGRAPHY IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER & SURVEYOR.
7. WETLANDS WERE DELINEATED BY JOSEPH W. NOEL, CERTIFIED WETLAND SCIENTIST #086 ON DECEMBER 11, 2020.
8. EXISTING IMPERVIOUS AREAS WITHIN THE 250' SHORELAND BUFFER ARE AS FOLLOWS: EX. RESIDENCE/DECK (2970 SF) + EX. PAVED DRIVE (5100 SF) + STONE WALKS/WALLS (224 SF) + POOL/PATIO (1,630 SF) + EX. STAIRS (50 SF) + CONCRETE PADS (290 SF) + EX. DOCK (160 SF) = 10,424 SF TOTAL (±22.3% OF THE PARCEL)
9. PROPOSED IMPERVIOUS AREAS WITHIN THE 250' SHORELAND BUFFER ARE AS FOLLOWS: PROP. HOUSE/DECK (4,740 SF) + PROP. CABANA (360 SF) + PROP. PAVED DRIVE (2570 SF) + PROP. STEPS (465 SF) + PROP. PATIOS (555 SF) + PROP. POOL (800 SF) + PROP. WALLS (405 SF) + HVAC & EM. GENERATOR CONC. PADS & MISC. (78 SF) + STAIRS (85 SF) + DOCK (160 SF) = 10,218 SF TOTAL (±21.8% OF THE PARCEL)

## CONSERVATION COMMISSION RECOMMENDATIONS:

1. IN ACCORDANCE WITH SECTION 10.1018.40 OF THE ZONING ORDINANCE, APPLICANT SHALL INSTALL PERMANENT WETLAND BOUNDARY MARKERS ALONG THE 25' VEGETATIVE BUFFER DURING PROJECT CONSTRUCTION. THESE CAN BE PURCHASED THROUGH THE CITY OF PORTSMOUTH PLANNING AND SUSTAINABILITY DEPARTMENT.
2. APPLICANT SHALL PROVIDE MONTHLY INVASIVE MANAGEMENT AND PLANTING UPDATES TO THE PLANNING AND SUSTAINABILITY DEPARTMENT ONCE REMOVAL BEGINS AND UNTIL THE END OF THE RESTORATION PROCESS (SEE MANAGEMENT CALENDAR FOR TREATMENT AND PLANTING). THESE UPDATES SHALL BE A REPORT SUMMARIZING THE ACTIVITIES PERFORMED, THE SUCCESS RATES, ANY PROPOSED PLAN CHANGES, AND ANY UPCOMING ACTIVITIES INVOLVING THE 25' VEGETATIVE BUFFER ON SITE. IF PLANTS HAVE NOT ACHIEVED AN 80% SUCCESS RATE OR GREATER AFTER ONE YEAR, APPLICANTS WILL REPLANT AND REPORT BACK TO THE PLANNING AND SUSTAINABILITY DEPARTMENT ONE YEAR AFTER PLANTING IS COMPLETE AND EACH SUBSEQUENT YEAR UNTIL AN 80% PLANTING SUCCESS RATE HAS BEEN ACHIEVED.

ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/28/23

NOT FOR CONSTRUCTION

ISSUED FOR: NHDES APPROVAL

ISSUE DATE: NOVEMBER 28, 2023

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | DISCUSSION | EDW | 11/28/23 |

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5138SITE-8-30-2023

SCALE:
(22"x34") 1" = 20'
(11"x17") 1" = 40'

OWNER:
120-0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

APPLICANT:
120-0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

PROJECT:
JOHN & MICHELLE MORRIS RESIDENCE
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
NHDES WETLANDS & SHORELAND PERMIT APPLICATION PLAN

SHEET NUMBER:
1 OF 1

P5138

PROPOSED PERVIOUS SURFACES:

| | |
|---|---|
| 50 – 100' PATIOS AT POOL: | 820 SF |
| REAR PATIO: | 480 SF |
| WALKS: | 52 SF |
| GARAGE EXIT: | 40 SF |
| TOTAL: | 1,392 SF |
| 100 – 250' DRIVE (PAVERS): | 1,625 SF |

PROPOSED IMPERVIOUS:

| | |
|---|---|
| 0 – 50' DOCK: | 160 SF |
| GRANITE STAIRS | 35 SF |
| WOOD STAIRS | 50 SF |
| TOTAL: | 245 SF |
| 50 – 100' POOL: | 800 SF |
| PATIOS/WALKS: | 1,173 SF |
| RESIDENCE: | 2,790 SF |
| CABANA | 360 SF |
| TOTAL: | 5,123 SF |
| TOTAL IMPERVIOUS PROPOSED: (IN THE 100–FOOT BUFFER) | 5,368 SF |

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )

P5138

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

## CONDITIONAL USE PERMIT NOTES

1. ZONING SECTION 10.1016 – CONDITIONAL USE PERMIT REQUIRED FOR EARTH DISTURBANCE IN THE 100' CITY WETLAND BUFFER.
2. PROJECT PARCEL: MAP 207 LOT 13, 46,840 S.F.± (1.08 ACRES±) TO HIGHEST OBSERVABLE TIDE LINE (HOTL).
3. WETLAND AREA ON LOT: 0 S.F. (0 ACRES)
4. 100' WETLAND BUFFER ANALYSIS (EXISTING CONDITIONS):
   LAWN/LANDSCAPING: ±22,553 S.F.
   BRUSH/TREES: ± 6,575 S.F.
   IMPERVIOUS: ± 5,399 S.F.
   TOTAL BUFFER: ±34,527 S.F. (±0.79 ACRES)

   100' WETLAND BUFFER ANALYSIS (PROPOSED CONDITIONS):
   LAWN/LANDSCAPING: ±16,662 S.F.
   BRUSH/TREES: ±11,105 S.F.
   PERVIOUS SURFACES: ±1,392 S.F.
   IMPERVIOUS: ±5,368 S.F.
   TOTAL BUFFER: ±34,527 S.F. (±0.79 ACRES)
5. AREA OF 100' WETLAND BUFFER IMPACT:
   ONSITE: ±31,300 S.F.
   OFFSITE: ± 20 S.F. (REPLACE PORTION OF STEPS BELOW HOTL)
   TOTAL: ±31,320 S.F. (±0.56 ACRES)
6. AREA OF TREE/BRUSH REMOVAL IN 100' WETLAND BUFFER:
   0–25': ± 0 S.F.
   25'–50': ± 0 S.F.
   50'–100': ±40 S.F. (REMOVE 1 TREE)
   TOTAL: ±40 S.F. (DOES NOT INCLUDE INVASIVES)
7. EXISTING IMPERVIOUS SURFACES IN 50–FOOT BUFFER: 868 S.F.
   PROPOSED IMPERVIOUS SURFACES IN 50–FOOT BUFFER: 245 S.F.
8. PROPOSED WETLAND IMPACT: 20 S.F. (REPLACE STAIRS)
9. WETLANDS (HOTL) WERE DELINEATED BY JOSEPH W. NOEL, NH CERTIFIED WETLANDS SCIENTIST #086, ON DECEMBER 11, 2020.
10. CONSTRUCTION ACTIVITIES SHALL BE MANAGED IN STRICT ACCORDANCE WITH NH RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES. NO INVASIVE SPECIES SHALL BE INSTALLED ON THE PROJECT SITE FOR ANY REASON.
11. AREAS WHERE EXISTING INVASIVE SPECIES ARE TO BE REMOVED & ROOTS TREATED ARE NOT INCLUDED IN AREAS OF DISTURBANCE BECAUSE THERE IS NO DISTURBANCE TO THE EXISTING GRADES.

## CONSERVATION COMMISSION RECOMMENDATIONS:

1. IN ACCORDANCE WITH SECTION 10.1018.40 OF THE ZONING ORDINANCE, APPLICANT SHALL INSTALL PERMANENT WETLAND BOUNDARY MARKERS ALONG THE 25' VEGETATIVE BUFFER DURING PROJECT CONSTRUCTION. THESE CAN BE PURCHASED THROUGH THE CITY OF PORTSMOUTH PLANNING AND SUSTAINABILITY DEPARTMENT.
2. APPLICANT SHALL PROVIDE MONTHLY INVASIVE MANAGEMENT AND PLANTING UPDATES TO THE PLANNING AND SUSTAINABILITY DEPARTMENT ONCE REMOVAL BEGINS AND UNTIL THE END OF THE RESTORATION PROCESS (SEE MANAGEMENT CALENDAR FOR TREATMENT AND PLANTING). THESE UPDATES SHALL BE A REPORT SUMMARIZING THE ACTIVITIES PERFORMED, THE SUCCESS RATES, ANY PROPOSED PLAN CHANGES, AND ANY UPCOMING ACTIVITIES INVOLVING THE 25' VEGETATIVE BUFFER ON SITE. IF PLANTS HAVE NOT ACHIEVED AN 80% SUCCESS RATE OR GREATER AFTER ONE YEAR, APPLICANTS WILL REPLANT AND REPORT BACK TO THE PLANNING AND SUSTAINABILITY DEPARTMENT ONE YEAR AFTER PLANTING IS COMPLETE AND EACH SUBSEQUENT YEAR UNTIL AN 80% PLANTING SUCCESS RATE HAS BEEN ACHIEVED.

## WETLANDS IMPACT TABLE

| | |
|---|---|
| DIRECT WETLANDS IMPACTS | = 20 SF (REPLACE STEPS) |
| 100-FT WETLANDS BUFFER IMPACTS | = 31,300 SF |
| EXISTING IMPERVIOUS AREA IN 100-FT WETLANDS BUFFER | = 5,399 SF |
| PROPOSED IMPERVIOUS AREA IN 100-FT WETLANDS BUFFER | = 5,368 SF |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ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

11/28/23

NOT FOR CONSTRUCTION

ISSUED FOR:
CONSERVATION COMM. REVIEW

ISSUE DATE:
NOVEMBER 28, 2023

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | INITIAL SUBMISSION | EDW | 10/27/23 |
| 1 | ADD CON. COMM. REC. | EDW | 11/28/23 |

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5138SITE.dwg

SCALE:
(22"x34") 1" = 20'
(11"x17") 1" = 40'

OWNER:
120–0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

APPLICANT:
120–0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

PROJECT:
JOHN & MICHELLE MORRIS RESIDENCE
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
CONDITIONAL USE PERMIT PLAN

SHEET NUMBER:
1 OF 1

# SEDIMENT AND EROSION CONTROL NOTES

## PROJECT NAME AND LOCATION

60 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE
TAX MAP 207 LOT 13

LATITUDE: 43.06883° N
LONGITUDE: −70.74364° W

OWNER/APPLICANT:
120−0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

## DESCRIPTION

The project consists of the redevelopment of a single−family residence and associated site improvements.

## DISTURBED AREA

The total area to be disturbed for the development is ±45,700 S.F. (±1.05 acres).

## PROJECT PHASING

The project will be completed in one phase.

## NAME OF RECEIVING WATER

The site drains to Piscataqua River.

## SEQUENCE OF MAJOR ACTIVITIES

1. Install temporary erosion control measures including perimeter controls, stabilized construction entrance and inlet sediment filters as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
2. Delineate limits of disturbance.
3. Remove designated trees, stumps and brush, strip loam and stockpile.
4. Demolish existing site features, building, utilities, pavement, etc. as shown on Demolition Plan.
5. Blast, hammer and remove ledge.
6. Construct building foundations.
7. Rough grade site including placement of borrow materials.
8. Construct new buildings and associated improvements.
9. Construct drainage structures, culverts, utilities & pavement base course materials.
10. Install paving and sidewalks.
11. Loam (6" min.) and seed on all disturbed areas not paved or otherwise stabilized.
12. Install landscaping.
13. When all construction activity is complete and site is stabilized, remove all temporary erosion control measures and any sediment that has been trapped by these devices.

## TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 − 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, perimeter controls shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area and permanent measures are established, perimeter controls shall be removed.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through appropriate perimeter controls. All storm drain inlets shall be provided with inlet protection measures.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

## INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time.
2. All control measures shall be inspected at least once each week and following any storm event of 0.25 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built−up sediment shall be removed from perimeter barriers when it has reached one−third the height of the barrier or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
8. An area shall be considered stable if one of the following has occurred:
   a. Base coarse gravels have been installed in areas to be paved;
   b. A minimum of 85% vegetated growth as been established;
   c. A minimum of 3 inches of non−erosive material such as stone of riprap has been installed;
   − or −
   d. Erosion control blankets have been properly installed.
9. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing − In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
   a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
   b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

2. Guidelines for Winter Mulch Application −

| Type | Rate per 1,000 s.f. | Use and Comments |
|---|---|---|
| Hay or Straw | 70 to 90 lbs. | Must be dry and free from mold. May be used with plantings. |
| Wood Chips or Bark Mulch | 460 to 920 lbs. | Used mostly with trees and shrubs. |
| Jute and Fibrous Matting (Erosion Blanket | As per manufacturer Specifications | Used in slope areas, water courses and other Control areas. |
| Crushed Stone 1/4" to 1−1/2" dia. | Spread more than 1/2" thick | Effective in controlling wind and water erosion. |
| Erosion Control Mix | 2" thick (min) | * The organic matter content is between 80 and 100%, dry weight basis.<br>* Particle size by weight is 100% passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen.<br>*The organic portion needs to be fibrous and elongated.<br>*Large portions of silts, clays or fine sands are not acceptable in the mix.<br>* Soluble salts content is less than 4.0 mmhos/cm.<br>*The pH should fall between 5.0 and 8.0. |

3. Maintenance − All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. PERMANENT SEEDING −

1. Bedding − stones larger than ½", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.
2. Fertilizer − lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and organic fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:

   Agricultural Limestone @ 100 lbs. per 1,000 s.f.
   10−20−20 organic fertilizer @ 12 lbs. per 1,000 s.f.

3. Seed Mixture (for lawns**): SEE LANDSCAPE ARCHITECT'S PLANS & DETAILS.

## WINTER CONSTRUCTION NOTES

1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;
2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

# BEST MANAGEMENT PRACTICES FOR BLASTING

REFERENCE: NHDES WD−19−05

PURPOSE: ALL ACTIVITIES RELATED TO BLASTING SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.

LOADING PRACTICES: THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:

(a) DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.

(b) EXPLOSIVE PRODUCTS SHALL BE MANAGED ON−SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF−SITE DISPOSAL.

(c) SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF−SITE DISPOSAL.

(d) LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.

(e) LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.

(f) EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.

EXPLOSIVE SELECTION: THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:

(a) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.

(b) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.

PREVENTION OF MISFIRES: APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.

MUCK PILE MANAGEMENT: MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:

(a) REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.

(b) MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.

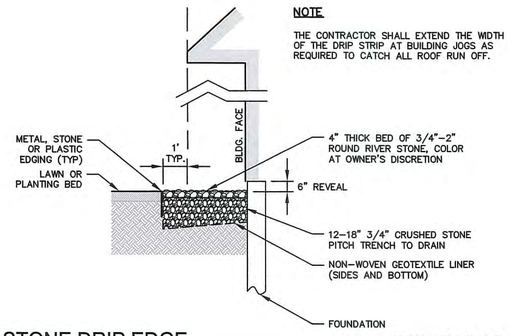
SPILL PREVENTION MEASURES AND SPILL MITIGATION: SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:

(a) THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE:
1. STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE.
2. SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY.
3. LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY.
4. INSPECT STORAGE AREAS WEEKLY.
5. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS.
6. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS.
7. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.

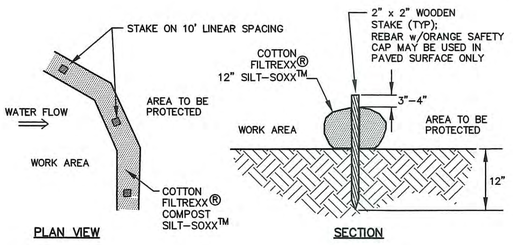
(b) THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
1. EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED.
2. PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS.
3. HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS.
4. USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES.
5. PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.

(c) THE TRAINING OF ON−SITE EMPLOYEES AND THE ON−SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.

(d) FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT WILL COMPLY WITH THE REGULATIONS OF NHDES [NOTE THESE REQUIREMENTS ARE SUMMARIZED IN WD−DWGB−22−6: 'BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT' OR ITS SUCCESSOR DOCUMENT].

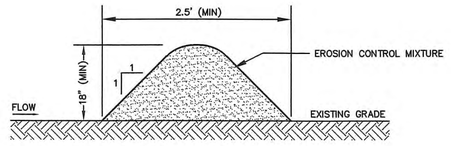



STONE DRIP EDGE — NOT TO SCALE




NOTES:
1. SILTSOXX MAY BY USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. ALL SOCK MATERIAL TO BE COTTON AND MEET FILTREXX SPECIFICATIONS.
3. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY SILTSOXX SHALL BE DISPOSED OF PROPERLY.

TUBULAR SEDIMENT BARRIER — NOT TO SCALE




NOTES

1. ORGANIC FILTER BERMS MAY BE UTILIZED IN LIEU OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. THE EROSION CONTROL MIXTURE USED IN FILTER BERMS SHALL BE A WELL−GRADED MIX OF PARTICLE SIZES THAT MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, AND/OR ACCEPTABLE MANUFACTURED PRODUCTS AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH. EROSION CONTROL MIXTURE SHALL MEET THE FOLLOWING STANDARDS:
   a) THE ORGANIC CONTENT SHALL BE 80−100% OF DRY WEIGHT.
   b) PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN, AND 70−85% PASSING A 0.75" SCREEN.
   c) THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
   d) LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
   e) SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
   f) THE pH SHALL BE BETWEEN 5.0 AND 8.0.
3. ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
4. ON SLOPES LESS THAN 5%, OR AT THE BOTTOM OF SLOPES NO STEEPER THAN 3:1 AND UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE) AND A MINIMUM OF 36" WIDE. ON LONGER AND/OR STEEPER SLOPES, THE BERM SHALL BE TALLER AND WIDER TO ACCOMMODATE THE POTENTIAL FOR ADDITIONAL RUNOFF (MAXIMUM HEIGHT SHALL NOT EXCEED 2').
5. FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
6. SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER BERMS WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE BERM.
7. ORGANIC FILTER BERMS MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED PROVIDED ANY SEDIMENT DEPOSITS TRAPPED BY THEM ARE REMOVED AND DISPOSED OF PROPERLY.
8. FILTER BERMS ARE PROHIBITED AT THE BASE OF SLOPES STEEPER THAN 8% OR WHERE THERE IS FLOWING WATER WITHOUT THE SUPPORT OF ADDITIONAL MEASURES SUCH AS SILTFENCE.

ORGANIC FILTER BERM — NOT TO SCALE

P5138

ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/28/23

NOT FOR CONSTRUCTION

ISSUED FOR: NHDES APPROVAL

ISSUE DATE: NOVEMBER 28, 2023

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | INITIAL SUBMISSION | EDW | 10/27/23 |
| 1 | NHDES SUBMISSION | EDW | 11/28/23 |

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5138SITE.dwg

SCALE:
(22"x34") NOT TO SCALE
(11"x17") NOT TO SCALE

OWNER:
120−0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

APPLICANT:
120−0 WILD ROSE LANE, LLC
209 WATER STREET
NEWBURYPORT, MA 01950

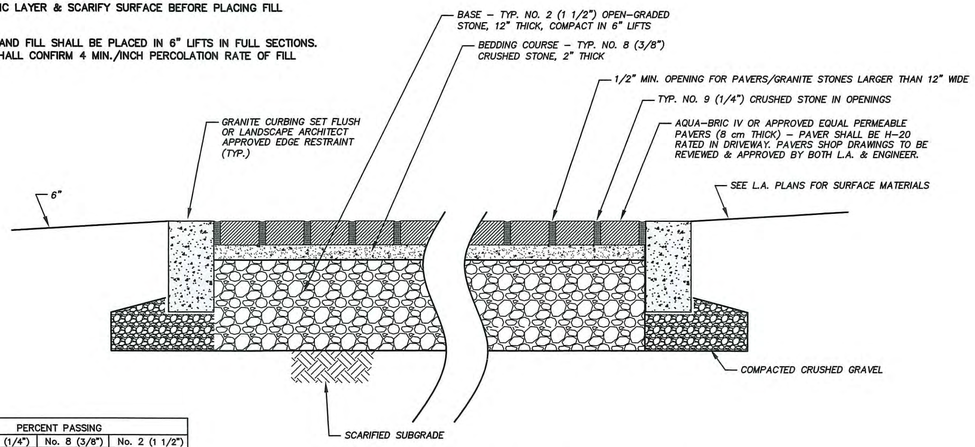
PROJECT:
JOHN & MICHELLE MORRIS RESIDENCE
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
EROSION CONTROL NOTES & DETAILS

SHEET NUMBER:
D - 1

## NOTES

1. ENGINEER TO OBSERVE SUBGRADE PREPARATION & INSTALLATION OF ALL SELECT MATERIALS TO ENSURE COMPLIANCE WITH DESIGN INTENT.
2. REMOVE ORGANIC LAYER & SCARIFY SURFACE BEFORE PLACING FILL MATERIALS.
3. NHDOT 304.1 SAND FILL SHALL BE PLACED IN 6" LIFTS IN FULL SECTIONS. CONTRACTOR SHALL CONFIRM 4 MIN./INCH PERCOLATION RATE OF FILL MATERIALS.




| SIEVE SIZE | PERCENT PASSING | | |
|---|---|---|---|
| | No. 9 (1/4") | No. 8 (3/8") | No. 2 (1 1/2") |
| 3 in | – | – | 100 |
| 2 1/2 in | – | – | 90 – 100 |
| 2 in | – | – | 35 – 70 |
| 1 1/2 in | – | – | 0 – 15 |
| 3/4 in | – | – | 0 – 5 |
| 1/2 in | 100 | 100 | – |
| 3/8 in | 90 – 100 | 85 – 100 | – |
| No. 4 | 20 – 55 | 10 – 30 | – |
| No. 8 | 5 – 30 | 0 – 10 | – |
| No. 16 | 0 – 10 | 0 – 5 | – |
| No. 50 | 0 – 5 | – | – |

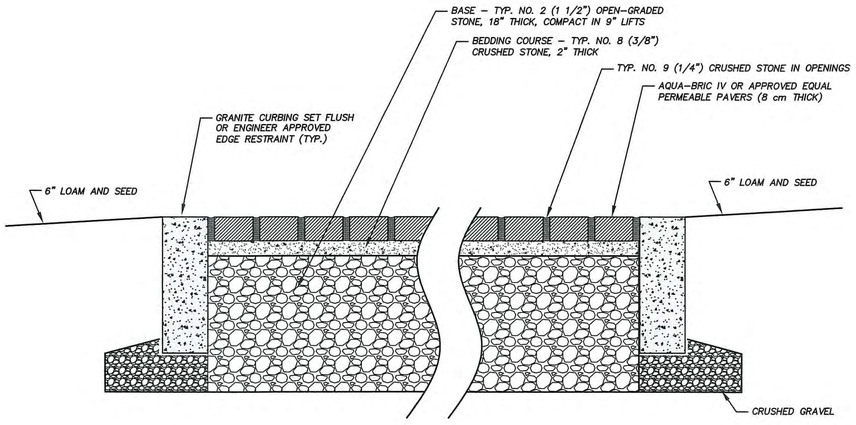
**PERMEABLE PAVER CLEANING AND MAINENANCE**

Function – Pavers are designed to capture rainwater runoff containing suspended solids, nutrients and pollutants. These systems require periodic maintenance to insure infiltration and storage capacity.

Maintenance – Permeable pavers should be observed periodically during rain events for proper water infiltration into the system and inspected at least once per year to verify water flow and exfiltration. Sediment and debris should be removed from the joint/void opening to increase infiltration through light vacumming on a semi–annual basis.

## PERMEABLE DRIVEWAY PAVERS & PATIO DETAIL

NOT TO SCALE




| SIEVE SIZE | PERCENT PASSING | | |
|---|---|---|---|
| | No. 9 (1/4") | No. 8 (3/8") | No. 2 (1 1/2") |
| 3 in | – | – | 100 |
| 2 1/2 in | – | – | 90 – 100 |
| 2 in | – | – | 35 – 70 |
| 1 1/2 in | – | – | 0 – 15 |
| 3/4 in | – | – | 0 – 5 |
| 1/2 in | 100 | 100 | – |
| 3/8 in | 90 – 100 | 85 – 100 | – |
| No. 4 | 20 – 55 | 10 – 30 | – |
| No. 8 | 5 – 30 | 0 – 10 | – |
| No. 16 | 0 – 10 | 0 – 5 | – |
| No. 50 | 0 – 5 | – | – |

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Function – Pavers are designed to capture rainwater runoff containing suspended solids, nutrients and pollutants. These systems require periodic maintenance to insure infiltration and storage capacity.

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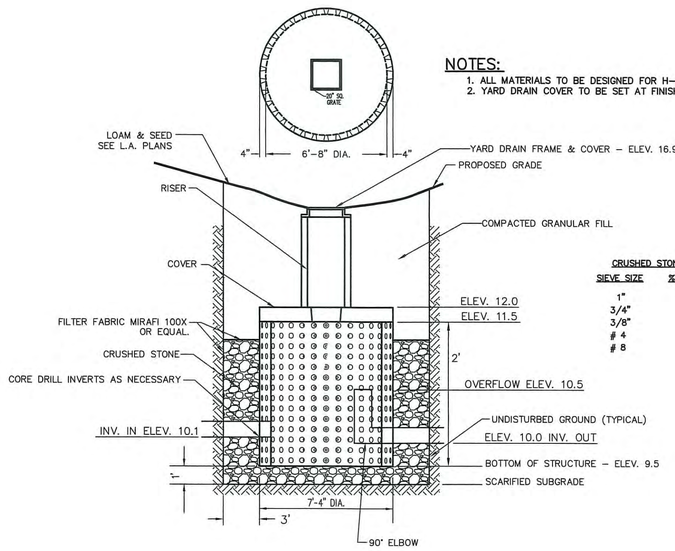
## PERMEABLE PAVERS DETAIL (DRIVEWAY)

NOT TO SCALE




**NOTES:**

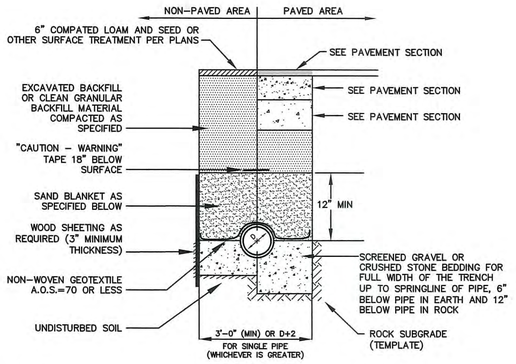
1. ALL MATERIALS TO BE DESIGNED FOR H–20 LOADING WHERE SUBJECT TO VEHICLE LOADING.
2. YARD DRAIN COVER TO BE SET AT FINISH GRADE.

**CRUSHED STONE BEDDING**

| SIEVE SIZE | % FINER BY WEIGHT |
|---|---|
| 1" | 100 |
| 3/4" | 90 – 100 |
| 3/8" | 20 – 55 |
| # 4 | 0 – 10 |
| # 8 | 0 – 5 |

## LEACHING YARD DRAIN DETAIL

NOT TO SCALE




**NOTES**

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
2. INSULATE GRAVITY SEWER AND FORCEMAINS WHERE THERE IS LESS THAN 5'–0" OF COVER WITH 2" THICK CLOSED CELL RIGID BOARD INSULATION, 18" ON EACH SIDE OF PIPE.
3. MAINTAIN 12" MINIMUM HORIZONTAL SEPARATION AND WIDEN TRENCH ACCORDINGLY IF MULTIPLE PIPES ARE IN TRENCH.

**SAND BLANKET/BARRIER**

| SIEVE SIZE | % FINER BY WEIGHT |
|---|---|
| 1/2" | 90 – 100 |
| 200 | 0 – 15 |

**SCREENED GRAVEL OR CRUSHED STONE BEDDING***

| SIEVE SIZE | % PASSING BY WEIGHT |
|---|---|
| 1" | 100 |
| 3/4" | 90 – 100 |
| 3/8" | 20 – 55 |
| # 4 | 0 – 10 |
| # 8 | 0 – 5 |

* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

## DRAINAGE TRENCH

NOT TO SCALE


ALTUS ENGINEERING

133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com


STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – 11/28/23

NOT FOR CONSTRUCTION

ISSUED FOR:
**CONSERVATION COMM. REVIEW**

ISSUE DATE:
**NOVEMBER 28, 2023**

REVISIONS

| NO. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | INITIAL SUBMISSION | EDW | 10/27/23 |
| 1 | NHDES SUBMISSION | EDW | 11/28/23 |

DRAWN BY: RLH
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PROJECT:
JOHN & MICHELLE MORRIS RESIDENCE
TAX MAP 207, LOT 13
60 PLEASANT POINT DRIVE
PORTSMOUTH, NH

TITLE:
DETAIL SHEET

SHEET NUMBER:
D - 2

P5138

# Findings of Fact | Site Plan Review
## City of Portsmouth Planning Board

Date: December 4, 2023
Property Address: 1155 Sagamore Avenue
Application #: LU 23-178
Decision: □ Approve □ Deny □ Approve with Conditions

Findings of Fact:

Per RSA 676:3, I: The local land use board shall issue a final written decision which either approves or disapproves an application for a local permit and make a copy of the decision available to the applicant. The decision shall include specific written findings of fact that support the decision. Failure of the board to make specific written findings of fact supporting a disapproval shall be grounds for automatic reversal and remand by the superior court upon appeal, in accordance with the time periods set forth in RSA 677:5 or RSA 677:15, unless the court determines that there are other factors warranting the disapproval. If the application is not approved, the board shall provide the applicant with written reasons for the disapproval. If the application is approved with conditions, the board shall include in the written decision a detailed description of all conditions necessary to obtain final approval.

Site Plan Regulations Section 2.9 Evaluation Criteria - in order to grant site plan review approval, the TAC and the Planning Board shall find that the application satisfies evaluation criteria pursuant to NH State Law and listed herein. In making a finding, the TAC and the Planning Board shall consider all standards provided in Articles 3 through 11 of these regulations.

| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| 1 | Compliance with all City Ordinances and Codes and these regulations. Applicable standards: | Meets<br>Does Not Meet | Applicable standards: No Variances Required. Project complies with all Ordinance requirements including parking, setbacks, open space, building coverage, lot area per dwelling unit, height, and frontage. |
| 2 | Provision for the safe development, change or expansion of use of the site. | Meets<br>Does Not Meet | TAC reviewed the site layout, and recommended approval. Plans show all utility connections and drainage infrastructure needed. Driveway exists. |
| 3 | Adequate erosion control and stormwater management practices and other mitigative measures, if needed, to prevent adverse effects on downstream water quality and flooding of the property or that of another. | Meets<br>Does Not Meet | Rain Garden to minimize storm water peak discharge (Sheet C3) and provide stormwater treatment. Erosion controls during construction as necessary (D1). Long Term Maintenance Plan provided. |
| 4 | Adequate protection for the | | No groundwater withdrawal (water supply |

DRAFT

| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| | quality of groundwater. | Meets<br>Does Not Meet | is city). No nearby production wells. Rain Garden provides treatment. |
| 5 | Adequate and reliable water supply sources. | Meets<br>Does Not Meet | Water supply is Public -City. Supply confirmed by TAC review. All plumbing fixtures will be low / water conserving. |
| 6 | Adequate and reliable sewage disposal facilities, lines, and connections. | Meets<br>Does Not Meet | Sewer connection is Public - City. Was set up for this connection and will be reviewed by DPW. |
| 7 | Absence of undesirable and preventable elements of pollution such as smoke, soot, particulates, odor, wastewater, stormwater, sedimentation or any other discharge into the environment which might prove harmful to persons, structures, or adjacent properties. | Meets<br>Does Not Meet | Property will not have any fuel consuming devices. No Natural Gas, No Home Heating Oil. All appliances will be Energy Star certified. Air or Geo-thermal heat pump proposed. All air exchange via energy recovery ventilators. Filtered dryer vents are the only other exhaust points. |
| 8 | Adequate provision for fire safety, prevention and control. | Meets<br>Does Not Meet | Full NFPA 13 wet sprinkler system construction. Adequate FD access. |
| 9 | Adequate protection of natural features such as, but not limited to, wetlands. | Meets<br>Does Not Meet | Urban site, no wetlands or buffers. |
| 10 | Adequate protection of historical features on the site. | Meets<br>Does Not Meet | No Historical features present. Existing building is non-contributing. |
| 11 | Adequate management of the volume and flow of traffic on the site and adequate traffic controls to protect public safety and prevent traffic congestion. | Meets<br>Does Not Meet | The residential use is a low volume trip generator. |
| 12 | Adequate traffic controls and traffic management measures to prevent an unacceptable increase in safety hazards and traffic congestion off-site. | Meets<br>Does Not Meet | Access is to a state highway. |
| 13 | Adequate insulation from external noise sources. | Meets<br>Does Not Meet | No adjacent high noise generators are present. |

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| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| 14 | Existing municipal solid waste disposal, police, emergency medical, and other municipal services and facilities adequate to handle any new demands on infrastructure or services created by the project. | Meets<br>Does Not Meet | Trash collection will be city curbside, as allowed. TAC Review included Fire and Police Departments. All concerns addressed in design. |
| 15 | Provision of usable and functional open spaces of adequate proportions, including needed recreational facilities that can reasonably be provided on the site | Meets<br>Does Not Meet | Light and air remains as the site conforms to setbacks and open space requirements. Open space provided. |
| 16 | Adequate layout and coordination of on-site accessways and sidewalks in relationship to off-site existing or planned streets, accessways, bicycle paths, and sidewalks. | Meets<br>Does Not Meet | Existing sidewalk (easement previously granted) connects site to surrounding environs. |
| 17 | Demonstration that the land indicated on plans submitted with the application shall be of such character that it can be used for building purposes without danger to health. | Meets<br>Does Not Meet | Land is suitable for the intended purpose, Existing Lot. Currently used as an urban building site. Plans follow ordinance and guidelines; see TAC approval. |
| 18 | Adequate quantities, type or arrangement of landscaping and open space for the provision of visual, noise and air pollution buffers. | Meets<br>Does Not Meet | Professionally prepared landscape design provided. |
| 19 | Compliance with applicable City approved design standards. | Meets<br>Does Not Meet | Approved by the Technical Advisory Committee |
| | Other Board Findings: | | |

DRAFT

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

29 November 2023

Rick Chellman, Planning Board Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

**RE: Request for Site Plan Approval at 1155 Sagamore Road, Tax Map 224, Lot 18**

Dear Mr. Chellman and Planning Board Members:

On behalf of Build America, we are pleased to submit the attached plan set for **Site Plan Approval** for the above-mentioned project and request that we be placed on the agenda for your **December 21, 2023,** Meeting. The project is the demolition of the existing building and proposed new construction of a 4-unit residential condominium with the associated and required site improvements.

The site has an existing multi-use building with various uses over time, including commercial uses. Currently parking is in the front yard. The building, pavement, and other features will be removed, and the proposed 4-unit residential Condominium building placed on the property. Parking will be located in the side yard, and in garage spaces in individual units.

Site grades will be adjusted to accommodate the new site layout, but generally the flow directions match the existing. Drainage will be directed to the proposed Rain Garden. New utility connections are proposed, including elimination of the overhead electric service in favor of underground servicing.

The project received Technical Advisory Committee approval recommendation at the November 7, 2023, meeting, subject to the following conditions, with our response in **bold** text:

*1)* Provide a more detailed grading plan. **Detailed grading has been added to Sheet C3.**
*2)* Provide more information on how drainage will be entering the rain garden. **See the flow arrows added to Sheet C3.**
*3)* Water lines running under units will be installed in sleeves. **See note on Sheet C4.**
*4)* There will be one domestic water line servicing the building. Update line size that will be running down the front appropriately. **See revisions on Sheet C4.**
*5)* Provide drawings/details for the duplex pump system and the alarm system need to be provided and approved. **See Detail I on Sheet D2 and Detail M on Sheet D3.**
*6)* Provide cross-section of rain garden including soil layers of test pits. **See Sheets C3 and Sheet D3.**
*7)* Provide an easement deed detailing the water valve and metering access and leak detection easement. **See Note 9 on Sheet C4.**

To be submitted to the Planning **Board:**

*1)* An elevation view of the proposed structures. **See the supplemental material in the submission package.**
*2)* A cross-section view of the proposed rain garden. **See Sheet D3.**
*3)* A green building checklist. **See the supplemental material in the submission package.**
*4)* Coordinate with NHDOT on Sagamore Avenue sight lines for the northern section of the site. **See Note on Sheet C2.**
*5)* Remove Note #31 from the Utility Plan about third party requirements. **Done (Sheet C4).**

The following plans are included in our submission:

- Cover Sheet – This shows the Development Team, Legend, Site Location, and Site Zoning.
- Existing Conditions & Demolition Plan C1 – This plan shows the existing property boundaries and existing site conditions and notes the demolition of the existing structure and associated features.
- Site Plan C2 – This plan shows the site development in detail with the associated zoning development standards and circulation / layout.
- Landscape Plan L1 & L2 – These plans show the proposed site landscaping and planting details.
- Grading and Erosion Control Plan C3 – This plan shows proposed site grading. The site primarily flow to the west. Impervious surfaces will be directed to a proposed rain garden for treatment and attenuation.
- Utility Plan C4 – This plan shows proposed site utilities. The project will connect to the city's low pressure sewer system in an existing connection constructed for the purpose and brought to the property line.
- Driveway Profile Plan C5 - This plan shows the proposed driveway profile. The connection to the state highway is unchanged from the current geometry at the point of connection.
- Erosion Control Notes and Details D1 and D2 – D3 – These plans shows site details.

Also please find attached the following submission items:

Tax Map – Ortho Map – USGS
Site Plan Application Checklist
Tri Generation Calculations
E-one sewer capacity Report
Green Building Statement
Site Drainage Analysis
Building Plans

We look forward to an in-person presentation and the Planning Board's review of this submission. We request approval of the proposed development project.

Sincerely,

John R. Chagnon, PE

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# Tax Map

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

JOB NUMBER: 5010314.417.01
SCALE: 1" = 150'
SUBMITTED: 2023-08-25

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# Aerial Orthography

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

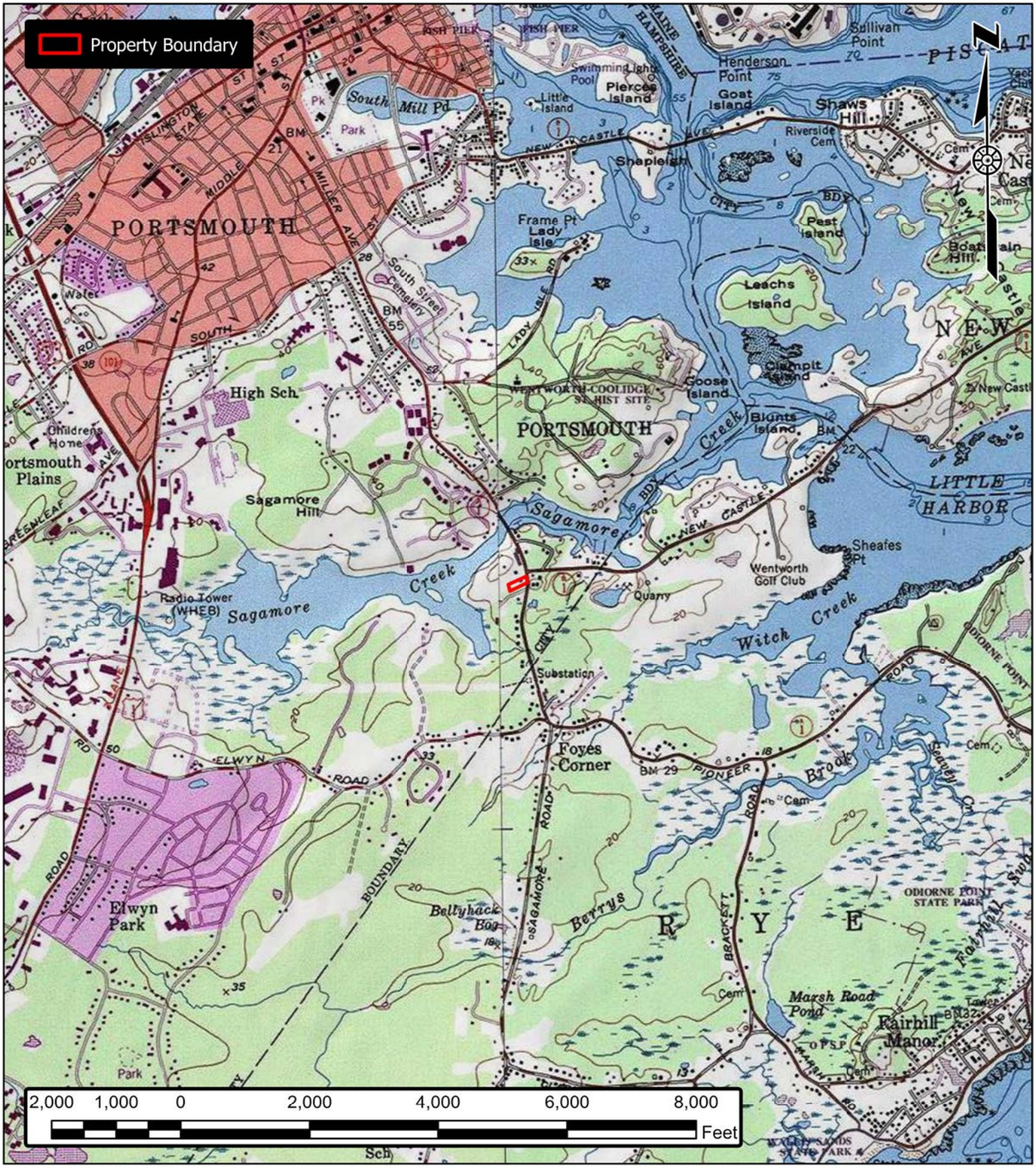
JOB NUMBER: 5010314.417.01
SCALE: 1" = 50'
SUBMITTED: 2023-08-25

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# USGS Map

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

JOB NUMBER: 5010314.417.01
SCALE: 1" = 2000'
SUBMITTED: 2023-08-25



# City of Portsmouth, New Hampshire

## *Site Plan Application Checklist*

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

**Applicant Responsibilities (Section 2.5.2):** Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: Build America Date Submitted: 10-23-23

Application # (in City's online permitting): TBD

Site Address: 1155 Sagamore Avenue Map: 224 Lot: 18

| Application Requirements | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)** | Online (OL) | N/A |
| ☐ | All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)** | OL | N/A |

| Site Plan Review Application Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Statement that lists and describes "green" building components and systems. **(2.5.3.1B)** | TBD | |
| ☐ | Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)** | ARCHITECTURAL PLANS | N/A |
| ☐ | Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)** | SHEET C1 (C1) | N/A |

| Site Plan Review Application Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)** | COVER SHEET (CS) | N/A |
| ☐ | Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)** | C1 | N/A |
| ☐ | Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)** | CS | N/A |
| ☐ | List of reference plans. **(2.5.3.1H)** | C1 | N/A |
| ☐ | List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)** | CS | N/A |

| Site Plan Specifications | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)** | Required on all plan sheets | N/A |
| ☐ | Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)** | Required on all plan sheets | N/A |
| ☐ | GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)** | C1 | N/A |
| ☐ | Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)** | Required on all plan sheets | N/A |
| ☐ | Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)** | N/A | N/A |
| ☐ | Title (name of development project), north point, scale, legend. **(2.5.4.2A)** | CS | N/A |
| ☐ | Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)** | EACH SHEET | N/A |
| ☐ | Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)** | Required on all plan sheets | N/A |
| ☐ | Source and date of data displayed on the plan. **(2.5.4.2D)** | C1 | N/A |

| Site Plan Specifications – Required Exhibits and Data | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | **1. Existing Conditions: (2.5.4.3A)**<br>• Surveyed plan of site showing existing natural and built features;<br>• Existing building footprints and gross floor area;<br>• Existing parking areas and number of parking spaces provided;<br>• Zoning district boundaries;<br>• Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre;<br>• Existing impervious and disturbed areas;<br>• Limits and type of existing vegetation;<br>• Wetland delineation, wetland function and value assessment (including vernal pools);<br>• SFHA, 100-year flood elevation line and BFE data, as required. | C1 | |
| ☐ | **2. Buildings and Structures: (2.5.4.3B)**<br>• Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;<br>• Elevations: Height, massing, placement, materials, lighting, façade treatments;<br>• Total Floor Area;<br>• Number of Usable Floors;<br>• Gross floor area by floor and use. | SHEET C2 (C2) | |
| ☐ | **3. Access and Circulation: (2.5.4.3C)**<br>• Location/width of access ways within site;<br>• Location of curbing, right of ways, edge of pavement and sidewalks;<br>• Location, type, size and design of traffic signing (pavement markings);<br>• Names/layout of existing abutting streets;<br>• Driveway curb cuts for abutting prop. and public roads;<br>• If subdivision; Names of all roads, right of way lines and easements noted;<br>• AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC). | C2 | |
| ☐ | **4. Parking and Loading: (2.5.4.3D)**<br>• Location of off street parking/loading areas, landscaped areas/buffers;<br>• Parking Calculations (# required and the # provided). | C2 | |
| ☐ | **5. Water Infrastructure: (2.5.4.3E)**<br>• Size, type and location of water mains, shut-offs, hydrants & Engineering data;<br>• Location of wells and monitoring wells (include protective radii). | SHEET C4 (C4) | |
| ☐ | **6. Sewer Infrastructure: (2.5.4.3F)**<br>• Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period. | C4 | |

| | | | |
|---|---|---|---|
| ☐ | **7. Utilities: (2.5.4.3G)**<br>• The size, type and location of all above & below ground utilities;<br>• Size type and location of generator pads, transformers and other fixtures. | C4 | |
| ☐ | **8. Solid Waste Facilities: (2.5.4.3H)** | | |
| | • The size, type and location of solid waste facilities. | C2 CITY PICK UP | |
| ☐ | **9. Storm water Management: (2.5.4.3I)**<br>• The location, elevation and layout of all storm-water drainage.<br>• The location of onsite snow storage areas and/or proposed off-site snow removal provisions.<br>• Location and containment measures for any salt storage facilities<br>• Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures. | SHEET C3 (C3) | |
| ☐ | **10. Outdoor Lighting: (2.5.4.3J)**<br>• Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan. | NO PARKING LOT LIGHTING | |
| ☐ | **11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)** | N/A | |
| ☐ | **12. Landscaping: (2.5.4.3K)**<br>• Identify all undisturbed area, existing vegetation and that which is to be retained;<br>• Location of any irrigation system and water source. | LANDSCAPE PLAN L-1 | |
| ☐ | **13. Contours and Elevation: (2.5.4.3L)**<br>• Existing/Proposed contours (2 foot minimum) and finished grade elevations. | C3 | |
| ☐ | **14. Open Space: (2.5.4.3M)**<br>• Type, extent and location of all existing/proposed open space. | C2 | |
| ☐ | **15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)** | N/A | |
| ☐ | **16. Character/Civic District (All following information shall be included): (2.5.4.3P)**<br>• Applicable Building Height (10.5A21.20 & 10.5A43.30);<br>• Applicable Special Requirements (10.5A21.30);<br>• Proposed building form/type (10.5A43);<br>• Proposed community space (10.5A46). | N/A | |
| ☐ | **17. Special Flood Hazard Areas (2.5.4.3Q)**<br>• The proposed development is consistent with the need to minimize flood damage;<br>• All public utilities and facilities are located and construction to minimize or eliminate flood damage;<br>• Adequate drainage is provided so as to reduce exposure to flood hazards. | N/A | |

| Other Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)** | SUPPLENTAL MATERIAL | |
| ☐ | Indicate where Low Impact Development Design practices have been incorporated. **(7.1)** | C3 | |
| ☐ | Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)** | N/A | |
| ☐ | Stormwater Management and Erosion Control Plan. **(7.4)** | C3 & SHEET D1 | |
| ☐ | Inspection and Maintenance Plan **(7.6.5)** | DRAINAGE ANALYSIS | |

| Final Site Plan Approval Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | All local approvals, permits, easements and licenses required, including but not limited to:<br>• Waivers;<br>• Driveway permits;<br>• Special exceptions;<br>• Variances granted;<br>• Easements;<br>• Licenses.<br>**(2.5.3.2A)** | C5 | |
| ☐ | Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to:<br>• Calculations relating to stormwater runoff;<br>• Information on composition and quantity of water demand and wastewater generated;<br>• Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls;<br>• Estimates of traffic generation and counts pre- and post-construction;<br>• Estimates of noise generation;<br>• A Stormwater Management and Erosion Control Plan;<br>• Endangered species and archaeological / historical studies;<br>• Wetland and water body (coastal and inland) delineations;<br>• Environmental impact studies.<br>**(2.5.3.2B)** | SUPPLEMENTAL MATERIAL | |
| ☐ | A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site.<br>**(2.5.3.2D)** | TBD | |

| Final Site Plan Approval Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)** | C5 | |
| ☐ | A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)** | C2 | N/A |
| ☐ | For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)** | N/A | |
| ☐ | Plan sheets submitted for recording shall include the following notes:<br>a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds."<br>b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)** | C2 | N/A |

**Applicant's Signature:** __ _____ **Date:** 10-23-23 _____

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

22 October, 2023

**Trip Generation**
**Proposed Residential Development**
**1155 Sagamore Avenue**
**Portsmouth, NH**

On behalf of Build America, LLC, we hereby submit this Trip Generation in support of the applicant's filing with the NHDOT and the Portsmouth Technical Advisory Committee for Site Plan approval. The Applicant / Developer seeks to construct a 4-unit residential Condominium at the site, which is currently occupied with a two-unit residential duplex.

The base trip generation for the proposed 4-unit development is based on a review of the Institute of Transportation Engineers (ITE), *Trip Generation* Manual, 11th Edition. The land use code (LUC) that best resembles the proposed use is LUC 270 – Residential Planned Unit Development. Using that description, the proposed use the site generates the following peak hour trips:

Weekday AM Peak Hour of Generator 0.58 Trips per Dwelling Unit:
4 units X 0.58 Trip Ends per Dwelling Unit = 3 trips
**3 Trips (23% entering; 77% exiting)**

Weekday PM Peak Hour of Generator 0.72 Trips per Dwelling Unit:
4 units X 0.72 Trip Ends per Dwelling Unit = 3 trips
**3 Trips (64% entering; 36% exiting)**

The added trip generation from the site is not excessive, will not impact the adjacent street network, and can be accommodated without any changes to the roadway network. Please feel free to call if you have any questions or comments about this application.

Sincerely,

John R. Chagnon, PE
Ambit Engineering, Inc. – Haley Ward

# Land Use: 270
# Residential Planned Unit Development

## Description

A residential planned unit development (PUD), for the purposes of trip generation, is defined as containing any combination of residential land uses. These developments might also contain supporting services such as limited retail and recreational facilities.

## Additional Data

***Caution—The description of a PUD is general in nature because these developments vary by density and type of dwelling. It is therefore recommended that when information on the number and type of dwellings is known, trip generation should be calculated on the basis of the known type of dwellings rather than on the basis of Land Use 270. Data for this land use are provided as general information and would be applicable only when the number of dwellings is known.***

The sites were surveyed in the 1980s, and the 1990s, and the 2000s in Minnesota, South Dakota, and Virginia.

## Source Numbers

111, 119, 165, 169, 357

# Residential Planned Unit Development (270)

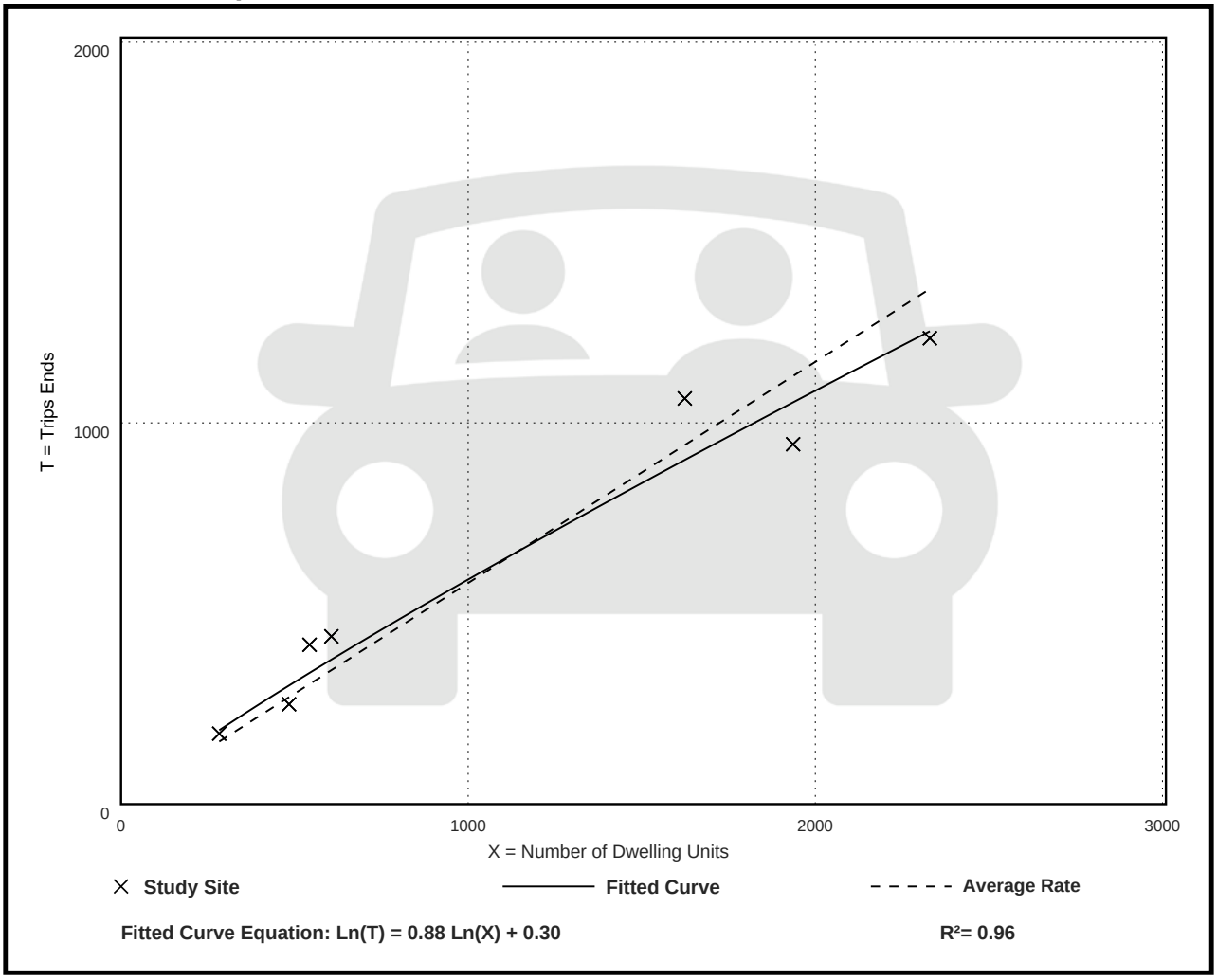
**Vehicle Trip Ends vs: Dwelling Units**
**On a: Weekday,**
**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**
Number of Studies: 7
Avg. Num. of Dwelling Units: 1115
Directional Distribution: 23% entering, 77% exiting

## Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.58 | 0.49 - 0.77 | 0.10 |

## Data Plot and Equation




**Fitted Curve Equation: Ln(T) = 0.88 Ln(X) + 0.30**

**$R^2$= 0.96**

# Residential Planned Unit Development (270)

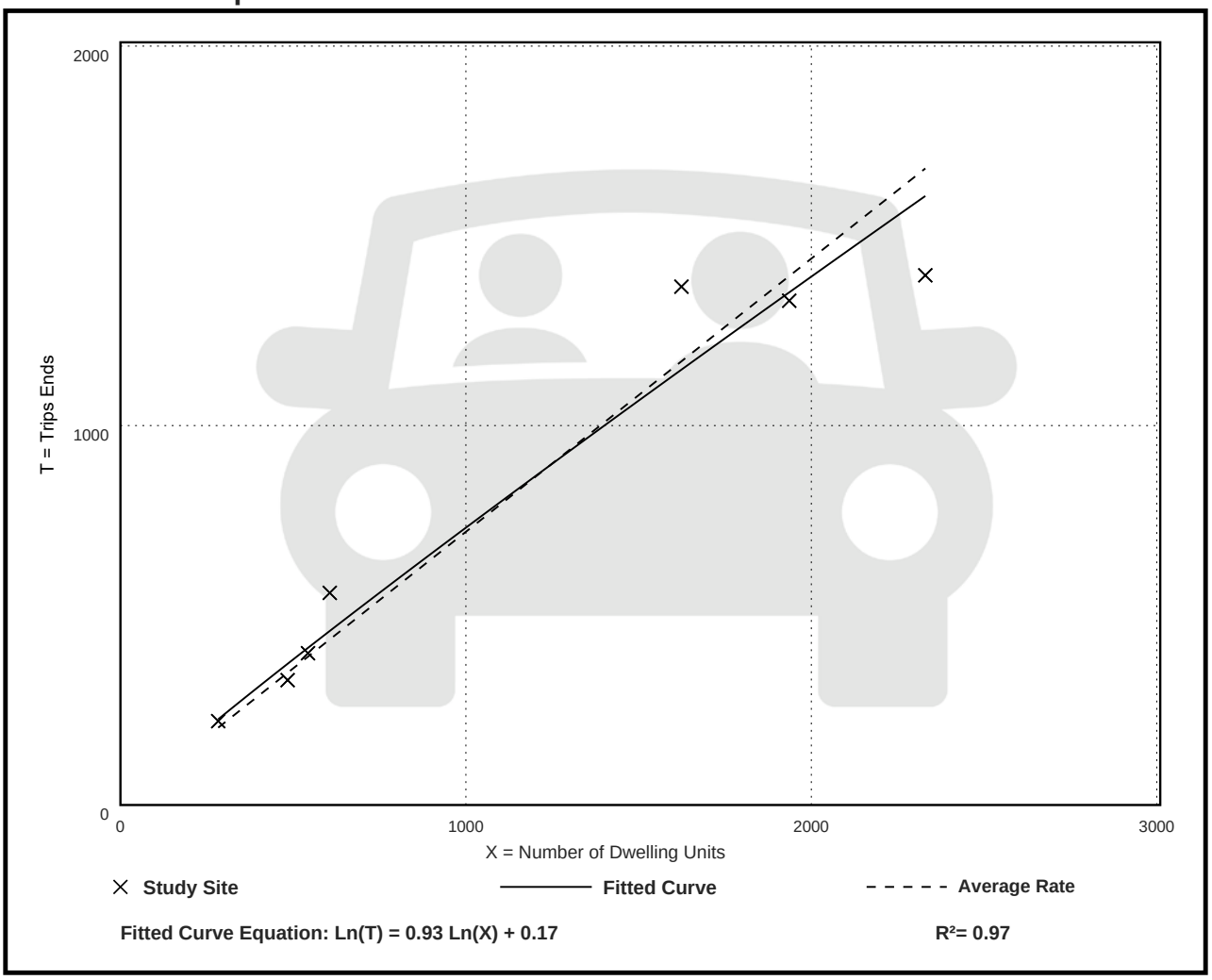
**Vehicle Trip Ends vs: Dwelling Units**
**On a: Weekday,**
**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**
Number of Studies: 7
Avg. Num. of Dwelling Units: 1115
Directional Distribution: 64% entering, 36% exiting

## Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.72 | 0.60 - 0.92 | 0.11 |

## Data Plot and Equation




**Fitted Curve Equation: Ln(T) = 0.93 Ln(X) + 0.17**

**$R^2$= 0.97**

Environment One Corporation

# Pressure Sewer Preliminary

# Cost and Design Analysis

# For

# 1155 Sagamore Road, Portsmouth, NH


**Prepared For:**
**John Chagnon**
**200 Griffin Rd Unit 3**
**Portsmouth NH 03801**
**Tel: 603.430.9282**
**Fax:**
**Prepared By: D.Coppola**

**October 5, 2023**

# 1155 Sagamore Road, Portsmouth, NH

**Prepared by :** D.Coppola **On:** October 5, 2023

**Notes :**
Zone 1 is showing indivual pumps at each unit, Zone 2 is if this was a duplex for all units

**<<<<< E N D  O F  N O T E S >>>>>**

PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS

Prepared By:
D.Coppola

1155 Sagamore Road, Portsmouth, NH

October 5, 2023

| Zone Number | Connects to Zone | Number of Pumps in Zone | Accum Pumps in Zone | Gals/day per Pump | Max Flow Per Pump (gpm) | Max Sim Ops | Max Flow (GPM) | Pipe Size (inches) | Max Velocity (FPS) | Length of Main this Zone | Friction Loss Factor (ft/100 ft) | Friction Loss This Zone | Accum Fric Loss (feet) | Max Main Elevation | Minimum Pump Elevation | Static Head (feet) | Total Dynamic Head (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| This spreadsheet was calculated using pipe diameters for: | | | | | SDR11HDPE | | | | | Friction loss calculations were based on a Constant for inside roughness "C" of: | | | | | | | 150 |
| 1.00 | 1.00 | 4 | 4 | 330 | 11.00 | 3 | 33.00 | 1.50 | 5.58 | 147.00 | 7.47 | 10.98 | 10.98 | 10.00 | 0.00 | 10.00 | 20.98 |
| 2.00 | 2.00 | 2 | 2 | 1320 | 11.00 | 2 | 22.00 | 1.50 | 3.72 | 147.00 | 3.53 | 5.18 | 5.18 | 10.00 | 0.00 | 10.00 | 15.18 |



Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.

\\CWMDFS02\Home - Remote\dcoppola\My Documents\EONE\New Hampshire\Portsmouth\1111 Sagamore\1155 Sagamore RD Design.EOne

PRELIMINARY PRESSURE SEWER - ACCUMULATED RETENTION TIME (HR)

Prepared By:
D.Coppola

1155 Sagamore Road, Portsmouth, NH

October 5, 2023

| Zone Number | Connects to Zone | Accumulated Total of Pumps this Zone | Pipe Size (inches) | Gallons per 100 lineal feet | Length of Zone | Capacity of Zone | Average Daily Flow | Average Fluid Changes per Day | Average Retention Time (Hr) | Accumulated Retention Time (Hr) |
|---|---|---|---|---|---|---|---|---|---|---|
| This spreadsheet was calculated using pipe diameters for: | | | SDR11HDPE | | | | | Gals per Day per Dwelling | | 200 |
| 1.00 | 1.00 | 4 | 1.50 | 9.85 | 147.00 | 14.48 | 1,320 | 91.14 | 0.26 | 0.26 |
| 2.00 | 2.00 | 2 | 1.50 | 9.85 | 147.00 | 14.48 | 2,640 | 182.27 | 0.13 | 0.13 |



Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One

***"Green" Building Statement, 1155 Sagamore Ave., Portsmouth***

***Location and Transportation***

***Walkable Destinations:*** 1155 Sagamore is two miles from Wentworth-By-The-Sea, two miles from downtown Portsmouth, and less than one mile to the Rye border and the Atlantic Grill.

***Bicycles:*** This area is a frequently used bicycle traffic route to beaches, downtown amenities, other points north and south and other popular locations. Hanging bicycle storage is provided within each garage space.

***Ride sharing:*** Although this location is not serviced directly by public transportation, it enjoys easy access and is a quickly identifiable address for cabs or shared transportation services.

***Site***

***Stormwater:*** Stormwater will be collected and treated in a proposed Rain Garden before discharge from the property. This Rain Garden provides advanced stormwater treatment where no treatment is currently provided.

***Reuse***: This site requires demolition of an outdated and underutilized structure. The new 4-unit townhouse structure will better utilize this location with a modern design, defined parking areas, non-polluting HVAC systems, and elimination of an existing multi-unit septic disposal system.

***Landscaping:*** A professionally produced landscaping plan includes shrubbery, grass, and a multitude of trees that currently do not exist. An irrigation system to maintain grass and plantings is included.

***Zoning:*** This project meets requirements in the MRO zone where it is located. No variances have been requested.

***Utilities and fire protection***

***Water:*** All new water-saving plumbing fixtures will be installed as per the current plumbing code. Frost-free outside water taps are included at each living unit.

***Sewer*****:** The existing septic system is being replaced by a common E-one grinder/ejector system connected to the public sewer.

***Electric:*** Eversource has indicated they will be installing a new transformer to service this property. All connections from the pole to this transformer and transformer to the electric meter bank will be underground. The current electric service is overhead. The transformer will be partially screened with landscaping.

***Fire Protection:*** A fire suppression system governed by requirements of NFPA 13 will be installed in each townhouse. Additionally, full foundation to ridge firewalls will be installed between living units.

***Gas or heating oil:*** None.

***Energy:***

***Heating and Air Conditioning:*** HVAC will be via either air-source or ground-source (geothermal) heat pump. No natural gas, propane gas or heating oil facilities are included in this design. No exhaust flues are required, nor greenhouse gases emitted. Further, the potential for carbon monoxide poisoning from a malfunctioning heating system is eliminated.

***Insulation:*** The heated envelope will be insulated with spray-foam insulation to maximize insulation R-values, minimize air penetration and minimize acoustic noise from outdoors and between living units.

***Lighting:*** LED lighting will be used throughout.

***Kitchen Appliances:*** All kitchen appliances will be energy-star certified.

***Fenestration:*** Very substantial windows and doors are state-of-the-art and shall have a U-value below .30, meeting or exceeding energy-star requirements.

***DRAINAGE ANALYSIS***

# PROPOSED BUILDING REPLACEMENT

1155 SAGAMORE AVENUE
PORTSMOUTH, NH

PREPARED FOR
BUILD AMERICA

16 OCTOBER 2023

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

200 Griffin Road, Unit 3
Portsmouth, NH 03801
Phone: 603.430.9282; Fax: 603.436.2315
E-mail: jchagnon@haleyward.com
(Ambit Job Number 5010314.417.01)

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***ATTACHMENTS***


Map of Existing Subcatchments

Map of Proposed Subcatchments


***APPENDIX***


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# EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed building replacement and associated utilities and parking at 1155 Sagamore Avenue in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 224 as Lot 18. The project proposes to replace an existing building with a 4-unit condominium. The total size of the lot is 30,264 square-feet (0.695 acres). The size of the total drainage area is 38,239 square-feet (0.878 acres).

The development will provide for the construction of a 4-unit condominium, with associated landscaping, utilities, and driveways. The new buildings will be serviced by public water and sewer. The development has the potential to increase stormwater runoff to adjacent properties, and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no increase in peak runoff from the site as a result of this project.

The hydrologic modeling utilized for this analysis uses the "Extreme Precipitation" values for rainfall from The Northeast Regional Climate Center (Cornell University), with a 15% increase to comply with local ordinance.

## INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, planning board, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 224 as Lot 18. Bounding the site to north is a single-family residence. Bounding the site to east is Sagamore Avenue. Bounding the site to south is a condominium complex. Bounding the site to the west is a City owned conservation land. The property is situated in the Single Residence A (SRA) District. A vicinity map is included in the Appendix to this report. The proposed building replacement will demolish an existing building and associated driveway.

This report includes information about the existing site necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre-development and post-development watersheds, subcatchment areas and calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management and treatment structures and methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

## METHODOLOGY

"Extreme Precipitation" values from The Northeast Regional Climate Center (Cornell University) have been used for modeling purposes. These values have been used in this analysis, with a 15% addition to comply with local ordinances.

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for Small Watersheds" methods. This report uses the HydroCAD version 10.20 program,

written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. Rainfall data and runoff curve numbers are taken from "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire."

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.

The storm events used for the calculations in this report are the 2-year, 10-year, 25-year, and 50-year (24-hour) storms. Watershed basin boundaries have been delineated using topographic maps prepared by Haley Ward and field observations to confirm.

## SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire the site is made up of one soil type:

| Soil Symbol | Soil Name and Slopes |
|---|---|
| **140B** | Chatfield-Hollis-Canton complex (0-8% slopes), rocky |

**Chatfield-Hollis-Canton complex** is well drained with a stated depth to restrictive feature of 20-41 inches. Test pits were dug on the site, with no restrictive layer to at least 56", and no observed water table. The soil is described as fine, sandy loam, granular, friable, fill.

The physical characteristics of the site consist of flat (0-8%) grades that generally slope downward from the south to the north of the lot. Elevations on the site range from 30 to 35 feet above sea level. The existing site is developed and includes an existing building located in the center of the lot, with an asphalt driveway. Vegetation around the developed portion of the lot consists of established grasses, shrubs, and trees.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0286F (effective date January 29, 2021), the project site is

located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix.

## PRE-DEVELOPMENT DRAINAGE

In the pre-development condition, the site has been analyzed as three watershed basins (E1, E2 and E3) based on localized topography and discharge location. Subcatchment E1 contains the east third of the lot and drains to the northeast (Sagamore Avenue). Subcatchment E2 contains the most of the lot, is centered to the west and drains north. Subcatchment E3 contains a portion of the southwest corner of the lot and drains to the southwest. Subcatchments E1, E2, and E3 drain to discharge points DP1, DP2, and DP3 respectively.

***Table 1: Pre-Development Watershed Basin Summary***

| Watershed Basin ID | Basin Area (SF) | Tc (MIN) | CN | 10-Year Runoff (CFS) | 50-Year Runoff (CFS) | To Design Point |
|---|---|---|---|---|---|---|
| **E1** | 15,008 | 5.8 | 76 | 1.21 | 2.22 | DP1 |
| **E2** | 19,569 | 5.2 | 74 | 1.50 | 2.82 | DP2 |
| **E3** | 3,661 | 5.0 | 67 | 0.22 | 0.45 | DP3 |

## POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as three subcatchment basins, (P1, P2, and P3). Subcatchments P1, P2, and P3 approximate the locations of E1, E2, and E3 respectively and drain to the same discharge points. Subcatchment P2 is detained and treated through a rain garden before being discharged to DP2.

***Table 2: Post-Development Watershed Basin Summary***

| Watershed Basin ID | Basin Area (SF) | Tc (MIN) | CN | 10-Year Runoff (CFS) | 50-Year Runoff (CFS) | Design Point |
|---|---|---|---|---|---|---|
| **P1** | 13,988 | 6.2 | 74 | 1.05 | 1.97 | DP1 |
| **P2** | 21,066 | 5.0 | 80 | 1.94 | 3.42 | DP2 |
| **P3** | 3,185 | 5.0 | 67 | 0.19 | 0.39 | DP3 |

The overall impervious coverage of the subcatchment areas analyzed in this report **increases** from 9,365 s.f. (24.5%) in the pre-development condition to 13,460 s.f. (35.1%) in the post-development condition. The project proposes the construction of a rain garden on site, providing treatment and reducing the peak flow discharge from the site.
Table 3 shows a summary of the comparison between pre-developed flows and post-developed flows for each design point. The comparison shows the reduced flows as a result of the rain garden.

***Table 3: Pre-Development to Post-Development Comparison***

| | Q2 (CFS) | | Q10 (CFS) | | Q50 (CFS) | | |
|---|---|---|---|---|---|---|---|
| **Design Point** | **Pre** | **Post** | **Pre** | **Post** | **Pre** | **Post** | **Description** |
| **DP1** | 0.59 | 0.49 | 1.21 | 1.05 | 2.22 | 1.97 | Sagamore Ave. |
| **DP2** | 0.71 | 0.64 | 1.50 | 1.46 | 2.82 | 2.64 | North of Lot |
| **DP3** | 0.09 | 0.07 | 0.22 | 0.19 | 0.45 | 0.39 | Southeast of Lot |

Note that all post-development peak discharges are either equivalent or less than the existing peak discharges.

## OFFSITE INFRASTRUCTURE CAPACITY

There is no Town infrastructure utilized in this project in regard to storm drainage. All retention and routing to the final destination of the stormwater is done on-site, therefore no impact to city infrastructure is anticipated.

## EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is moderate due to the presence of soils that are highly erodible. During construction, the major potential for erosion is wind and stormwater runoff. The contractor will be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire." Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

- Silt Soxx (or approved alternative) located at the toe of disturbed slopes
- Stabilized construction entrance at access point to the site
- Temporary mulching and seeding for disturbed areas
- Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by permanent seeding, landscaping, and surfacing the access drives and parking areas with asphalt paving and other areas with impervious walkways.

## CONCLUSION

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the rain garden, the post-development runoff rates are reduced to below the pre-development runoff rates. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project.

## REFERENCES

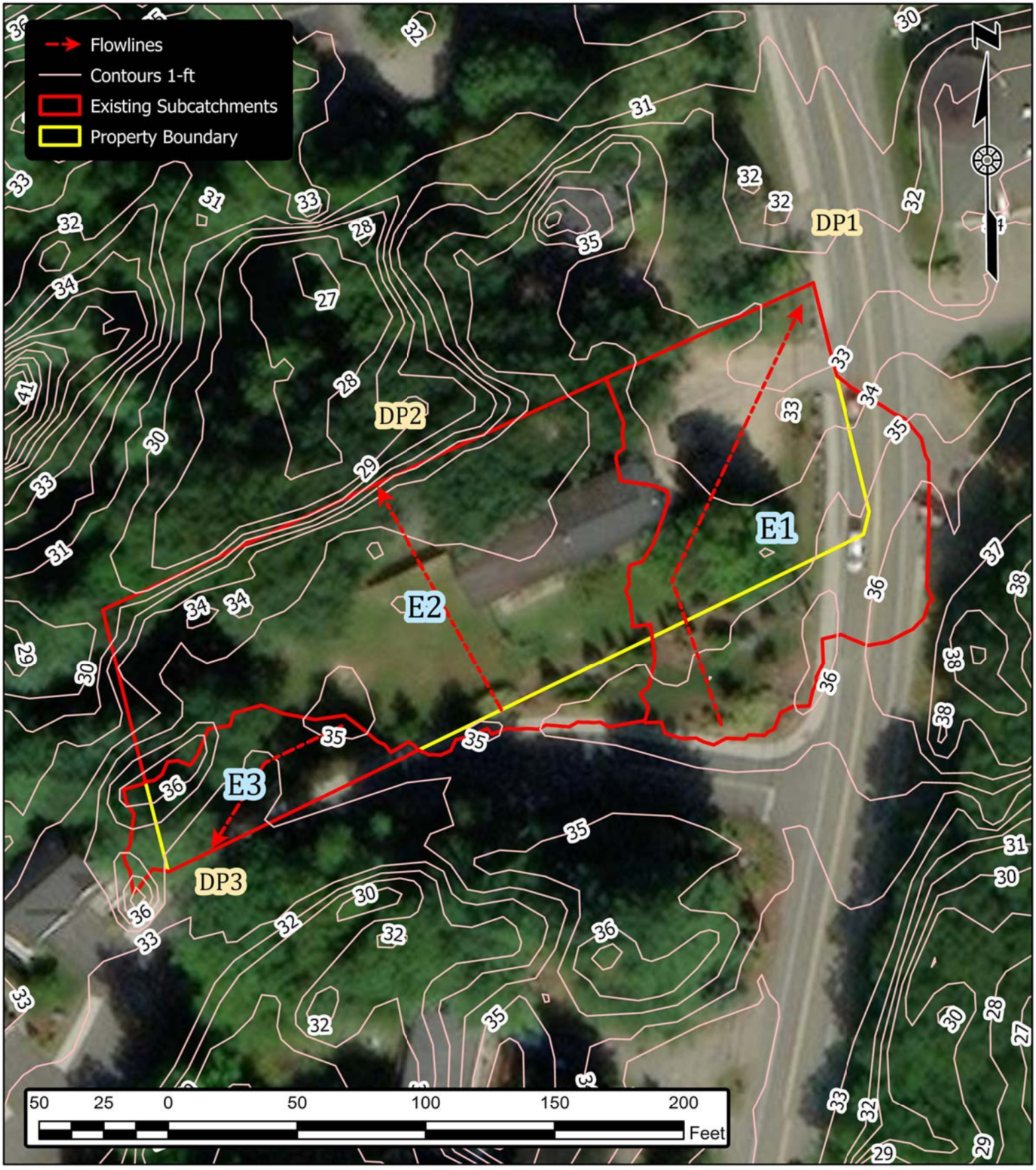
1. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).
2. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.
3. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.20* copyright 2013.

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# Existing Subcatchments

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

JOB NUMBER: 5010314.417.01
SCALE: 1" = 50'
SUBMITTED: 2023-10-24

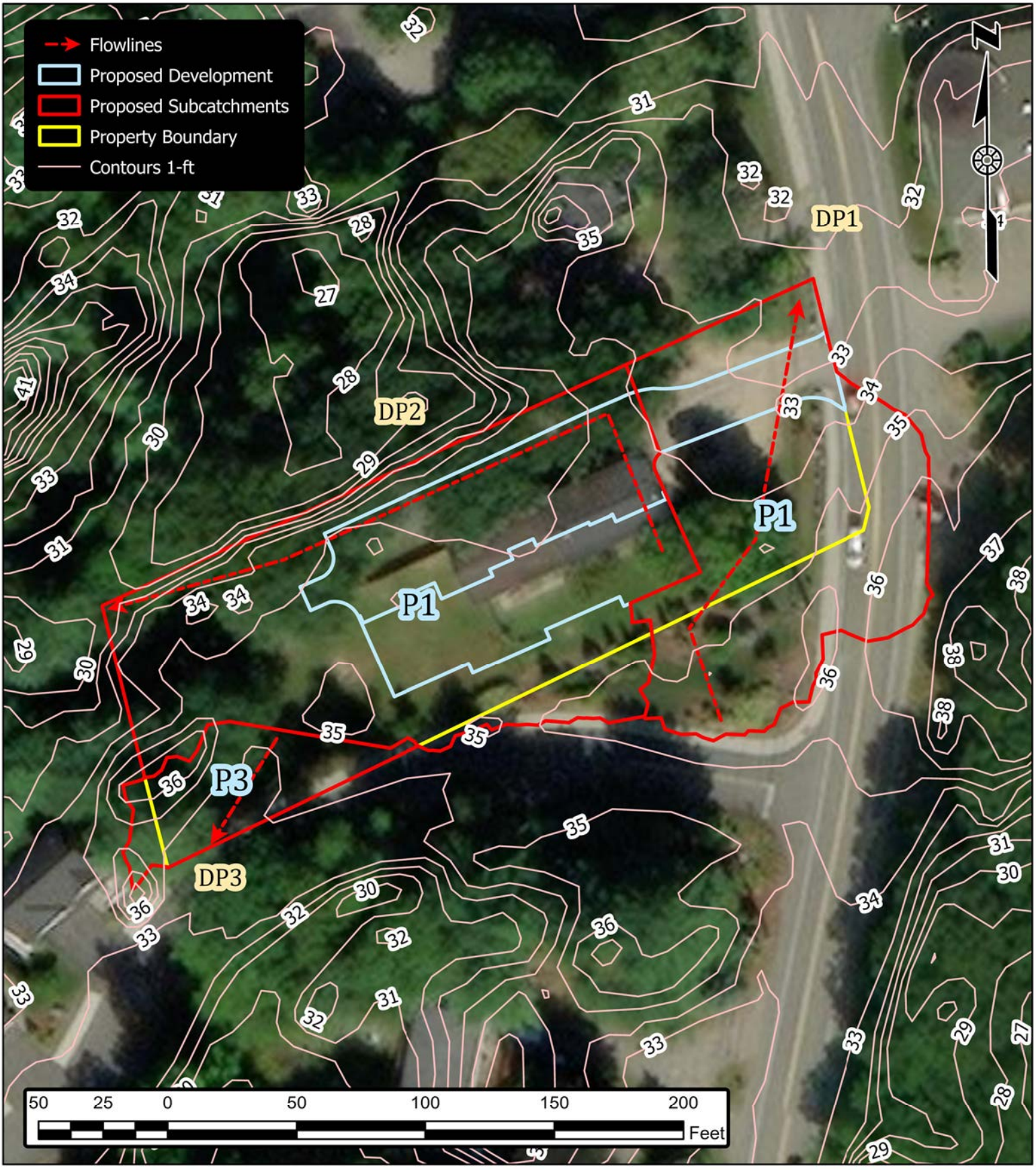


AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# Proposed Subcatchments

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

JOB NUMBER: 5010314.417.01
SCALE: 1" = 50'
SUBMITTED: 2023-10-24



# APPENDIX A

# VICINITY (TAX) MAP

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# Tax Map

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

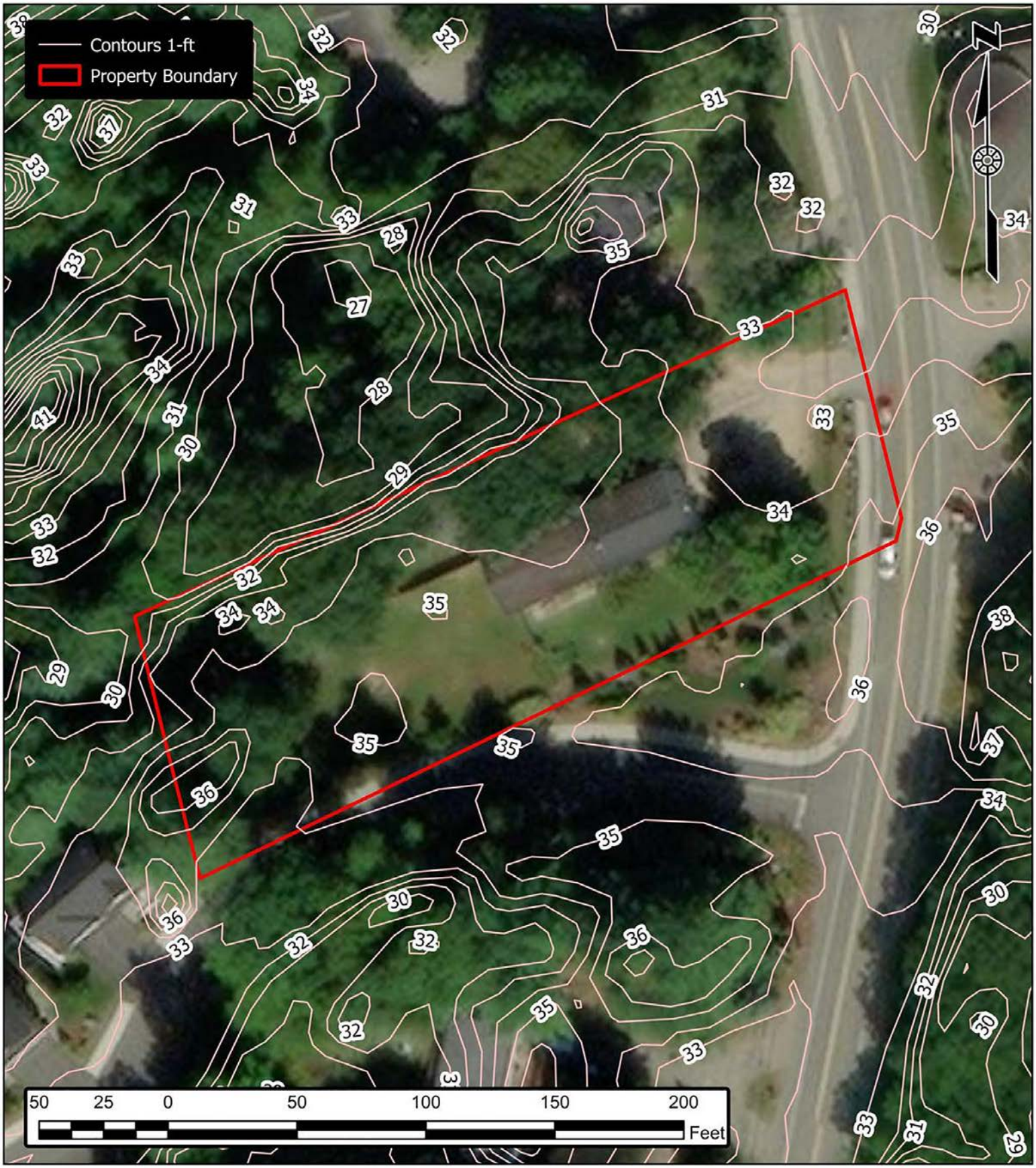
JOB NUMBER: 5010314.417.01
SCALE: 1" = 150'
SUBMITTED: 2023-08-25

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# Aerial Orthography

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

JOB NUMBER: 5010314.417.01
SCALE: 1" = 50'
SUBMITTED: 2023-08-25

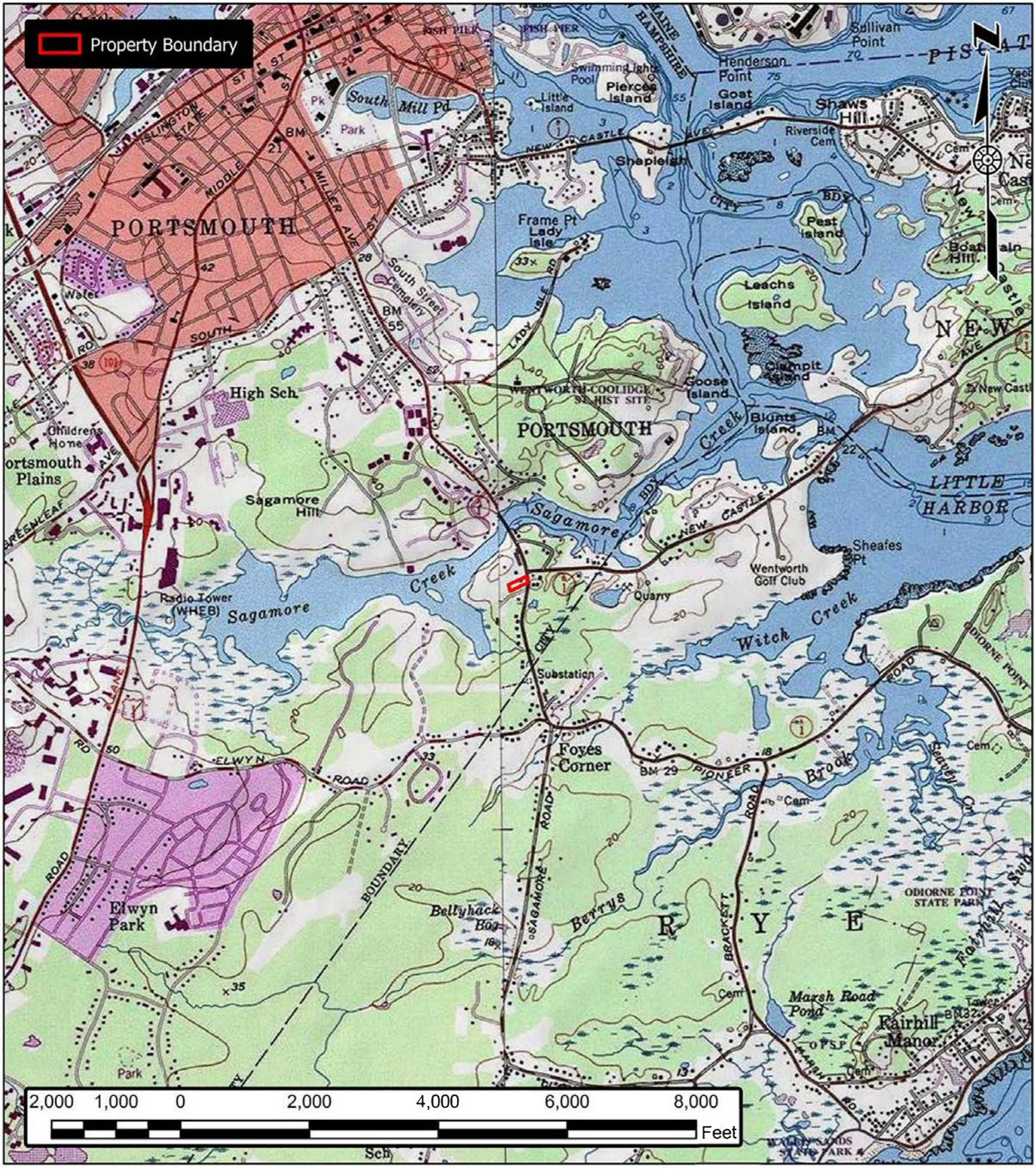


AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

# USGS Map

BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH

JOB NUMBER: 5010314.417.01
SCALE: 1" = 2000'
SUBMITTED: 2023-08-25



# APPENDIX B

# TABLES, CHARTS, ETC.

# Extreme Precipitation Tables

## Northeast Regional Climate Center

***Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.***

| Metadata for Point | |
|---|---|
| **Smoothing** | Yes |
| **State** | |
| **Location** | |
| **Latitude** | 43.052 degrees North |
| **Longitude** | 70.748 degrees West |
| **Elevation** | 10 feet |
| **Date/Time** | Fri Aug 25 2023 11:03:42 GMT-0400 (Eastern Daylight Time) |

## Extreme Precipitation Estimates

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1yr** | 0.26 | 0.40 | 0.50 | 0.65 | 0.82 | 1.04 | **1yr** | 0.70 | 0.98 | 1.21 | 1.56 | 2.03 | 2.67 | 2.94 | **1yr** | 2.36 | 2.82 | 3.24 | 3.96 | 4.57 | **1yr** |
| **2yr** | 0.32 | 0.50 | 0.62 | 0.82 | 1.03 | 1.30 | **2yr** | 0.89 | 1.18 | 1.52 | 1.94 | 2.49 | 3.22 | 3.58 | **2yr** | 2.85 | 3.45 | 3.95 | 4.70 | 5.35 | **2yr** |
| **5yr** | 0.37 | 0.58 | 0.73 | 0.98 | 1.25 | 1.61 | **5yr** | 1.08 | 1.47 | 1.89 | 2.44 | 3.15 | 4.08 | 4.60 | **5yr** | 3.61 | 4.42 | 5.07 | 5.96 | 6.73 | **5yr** |
| **10yr** | 0.41 | 0.65 | 0.82 | 1.12 | 1.46 | 1.90 | **10yr** | 1.26 | 1.73 | 2.24 | 2.91 | 3.76 | 4.88 | 5.55 | **10yr** | 4.32 | 5.34 | 6.12 | 7.14 | 8.01 | **10yr** |
| **25yr** | 0.48 | 0.77 | 0.97 | 1.34 | 1.78 | 2.35 | **25yr** | 1.54 | 2.15 | 2.79 | 3.65 | 4.76 | 6.19 | 7.13 | **25yr** | 5.48 | 6.85 | 7.85 | 9.07 | 10.09 | **25yr** |
| **50yr** | 0.54 | 0.87 | 1.11 | 1.55 | 2.09 | 2.78 | **50yr** | 1.80 | 2.54 | 3.31 | 4.35 | 5.69 | 7.42 | 8.62 | **50yr** | 6.56 | 8.29 | 9.48 | 10.87 | 12.02 | **50yr** |
| **100yr** | 0.60 | 0.98 | 1.26 | 1.79 | 2.44 | 3.28 | **100yr** | 2.10 | 3.00 | 3.93 | 5.19 | 6.80 | 8.88 | 10.42 | **100yr** | 7.86 | 10.02 | 11.46 | 13.03 | 14.33 | **100yr** |
| **200yr** | 0.68 | 1.11 | 1.44 | 2.07 | 2.85 | 3.87 | **200yr** | 2.46 | 3.54 | 4.66 | 6.17 | 8.12 | 10.65 | 12.60 | **200yr** | 9.42 | 12.11 | 13.85 | 15.63 | 17.08 | **200yr** |
| **500yr** | 0.81 | 1.33 | 1.73 | 2.51 | 3.52 | 4.81 | **500yr** | 3.03 | 4.42 | 5.82 | 7.76 | 10.28 | 13.53 | 16.20 | **500yr** | 11.97 | 15.58 | 17.81 | 19.89 | 21.57 | **500yr** |

## Lower Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1yr** | 0.23 | 0.36 | 0.44 | 0.59 | 0.72 | 0.88 | **1yr** | 0.62 | 0.86 | 0.93 | 1.34 | 1.69 | 2.26 | 2.50 | **1yr** | 2.00 | 2.41 | 2.88 | 3.21 | 3.94 | **1yr** |
| **2yr** | 0.31 | 0.49 | 0.60 | 0.81 | 1.00 | 1.19 | **2yr** | 0.86 | 1.16 | 1.37 | 1.81 | 2.33 | 3.07 | 3.47 | **2yr** | 2.72 | 3.33 | 3.84 | 4.56 | 5.11 | **2yr** |
| **5yr** | 0.35 | 0.54 | 0.67 | 0.92 | 1.17 | 1.40 | **5yr** | 1.01 | 1.37 | 1.61 | 2.11 | 2.72 | 3.80 | 4.20 | **5yr** | 3.36 | 4.04 | 4.74 | 5.56 | 6.26 | **5yr** |
| **10yr** | 0.39 | 0.59 | 0.74 | 1.03 | 1.33 | 1.60 | **10yr** | 1.15 | 1.57 | 1.80 | 2.38 | 3.05 | 4.38 | 4.88 | **10yr** | 3.88 | 4.69 | 5.47 | 6.44 | 7.22 | **10yr** |
| **25yr** | 0.44 | 0.67 | 0.83 | 1.19 | 1.56 | 1.90 | **25yr** | 1.35 | 1.86 | 2.10 | 2.74 | 3.52 | 4.78 | 5.91 | **25yr** | 4.23 | 5.68 | 6.69 | 7.83 | 8.72 | **25yr** |
| **50yr** | 0.48 | 0.73 | 0.91 | 1.31 | 1.77 | 2.17 | **50yr** | 1.53 | 2.12 | 2.35 | 3.05 | 3.91 | 5.41 | 6.82 | **50yr** | 4.79 | 6.56 | 7.77 | 9.10 | 10.06 | **50yr** |
| **100yr** | 0.54 | 0.81 | 1.02 | 1.47 | 2.02 | 2.47 | **100yr** | 1.74 | 2.41 | 2.63 | 3.39 | 4.31 | 6.10 | 7.87 | **100yr** | 5.40 | 7.57 | 9.04 | 10.58 | 11.63 | **100yr** |
| **200yr** | 0.59 | 0.89 | 1.13 | 1.64 | 2.28 | 2.81 | **200yr** | 1.97 | 2.75 | 2.94 | 3.74 | 4.74 | 6.86 | 9.09 | **200yr** | 6.07 | 8.74 | 10.50 | 12.32 | 13.45 | **200yr** |
| **500yr** | 0.69 | 1.02 | 1.31 | 1.91 | 2.72 | 3.36 | **500yr** | 2.34 | 3.29 | 3.42 | 4.26 | 5.39 | 8.01 | 10.98 | **500yr** | 7.09 | 10.56 | 12.80 | 15.09 | 16.30 | **500yr** |

## Upper Confidence Limits

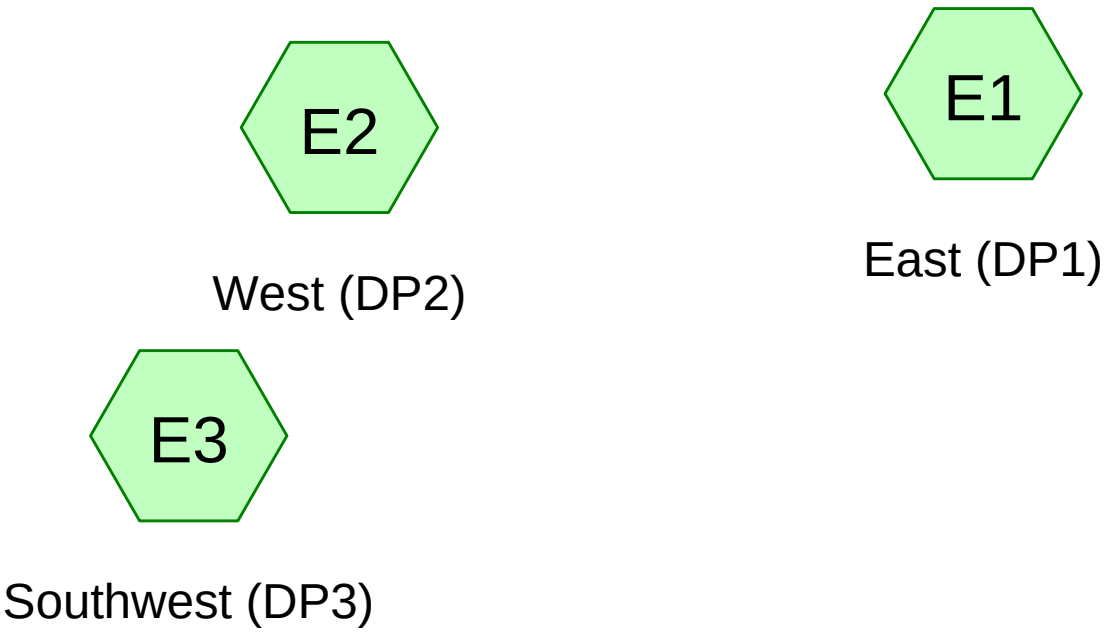
| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1yr** | 0.29 | 0.44 | 0.54 | 0.72 | 0.89 | 1.09 | **1yr** | 0.77 | 1.06 | 1.26 | 1.74 | 2.20 | 2.98 | 3.18 | **1yr** | 2.64 | 3.06 | 3.59 | 4.38 | 5.05 | **1yr** |
| **2yr** | 0.34 | 0.52 | 0.64 | 0.87 | 1.07 | 1.27 | **2yr** | 0.92 | 1.24 | 1.48 | 1.96 | 2.52 | 3.43 | 3.72 | **2yr** | 3.03 | 3.58 | 4.11 | 4.86 | 5.64 | **2yr** |
| **5yr** | 0.40 | 0.62 | 0.77 | 1.05 | 1.34 | 1.63 | **5yr** | 1.16 | 1.59 | 1.89 | 2.54 | 3.26 | 4.36 | 4.98 | **5yr** | 3.85 | 4.79 | 5.40 | 6.40 | 7.18 | **5yr** |
| **10yr** | 0.47 | 0.72 | 0.89 | 1.25 | 1.62 | 1.99 | **10yr** | 1.39 | 1.94 | 2.29 | 3.11 | 3.97 | 5.36 | 6.23 | **10yr** | 4.74 | 5.99 | 6.85 | 7.87 | 8.79 | **10yr** |
| **25yr** | 0.58 | 0.88 | 1.10 | 1.57 | 2.06 | 2.59 | **25yr** | 1.78 | 2.53 | 2.97 | 4.08 | 5.18 | 7.75 | 8.38 | **25yr** | 6.86 | 8.05 | 9.20 | 10.38 | 11.45 | **25yr** |
| **50yr** | 0.68 | 1.03 | 1.28 | 1.84 | 2.48 | 3.15 | **50yr** | 2.14 | 3.08 | 3.61 | 5.02 | 6.36 | 9.69 | 10.50 | **50yr** | 8.57 | 10.10 | 11.51 | 12.78 | 14.01 | **50yr** |
| **100yr** | 0.80 | 1.20 | 1.51 | 2.18 | 2.99 | 3.84 | **100yr** | 2.58 | 3.76 | 4.40 | 6.19 | 7.83 | 12.11 | 13.16 | **100yr** | 10.71 | 12.65 | 14.40 | 15.76 | 17.15 | **100yr** |
| **200yr** | 0.93 | 1.41 | 1.78 | 2.58 | 3.60 | 4.70 | **200yr** | 3.10 | 4.59 | 5.37 | 7.63 | 9.63 | 15.17 | 16.51 | **200yr** | 13.43 | 15.87 | 18.04 | 19.43 | 20.98 | **200yr** |
| **500yr** | 1.16 | 1.73 | 2.22 | 3.23 | 4.59 | 6.11 | **500yr** | 3.96 | 5.97 | 6.97 | 10.10 | 12.71 | 20.46 | 22.28 | **500yr** | 18.11 | 21.43 | 24.31 | 25.62 | 27.41 | **500yr** |

Powered by ACIS Northeast Regional Climate Center

# APPENDIX C

# HYDROCAD DRAINAGE

# ANALYSIS CALCULATIONS




Subcat Reach Pond Link

**Routing Diagram for Existing Conditions David T 2023-08-25**
Prepared by Haley Ward, Printed 8/25/2023
HydroCAD® 10.20-3f s/n 00801 © 2023 HydroCAD Software Solutions LLC

## Project Notes

Defined 5 rainfall events from extreme_precip_tables_output IDF

## Rainfall Events Listing (selected events)

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-yr | Type III 24-hr | | Default | 24.00 | 1 | 3.70 | 2 |
| 2 | 10-yr | Type III 24-hr | | Default | 24.00 | 1 | 5.61 | 2 |
| 3 | 25-yr | Type III 24-hr | | Default | 24.00 | 1 | 7.12 | 2 |
| 4 | 50-yr | Type III 24-hr | | Default | 24.00 | 1 | 8.53 | 2 |

## Area Listing (selected nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.453 | 61 | >75% Grass cover, Good, HSG B (E1, E2, E3) |
| 0.151 | 80 | >75% Grass cover, Good, HSG D (E1, E2, E3) |
| 0.015 | 96 | Gravel surface, HSG B (E2) |
| 0.150 | 98 | Paved parking, HSG B (E1, E2, E3) |
| 0.064 | 98 | Roofs, HSG B (E1, E2, E3) |
| 0.033 | 55 | Woods, Good, HSG B (E1, E2, E3) |
| 0.011 | 77 | Woods, Good, HSG D (E1, E2, E3) |
| **0.878** | **74** | **TOTAL AREA** |

## Soil Listing (selected nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.716 | HSG B | E1, E2, E3 |
| 0.000 | HSG C | |
| 0.162 | HSG D | E1, E2, E3 |
| 0.000 | Other | |
| **0.878** | | **TOTAL AREA** |

## Ground Covers (selected nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.000 | 0.453 | 0.000 | 0.151 | 0.000 | 0.605 | >75% Grass cover, Good | E1, E2, E3 |
| 0.000 | 0.015 | 0.000 | 0.000 | 0.000 | 0.015 | Gravel surface | E2 |
| 0.000 | 0.150 | 0.000 | 0.000 | 0.000 | 0.150 | Paved parking | E1, E2, E3 |
| 0.000 | 0.064 | 0.000 | 0.000 | 0.000 | 0.064 | Roofs | E1, E2, E3 |
| 0.000 | 0.033 | 0.000 | 0.011 | 0.000 | 0.043 | Woods, Good | E1, E2, E3 |
| **0.000** | **0.716** | **0.000** | **0.162** | **0.000** | **0.878** | **TOTAL AREA** | |

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1: East (DP1)** Runoff Area=15,008 sf 31.55% Impervious Runoff Depth>1.51"
Flow Length=266' Slope=0.0455 '/' Tc=5.8 min CN=76 Runoff=0.59 cfs 0.043 af

**Subcatchment E2: West (DP2)** Runoff Area=19,569 sf 22.64% Impervious Runoff Depth>1.38"
Flow Length=200' Slope=0.0411 '/' Tc=5.2 min CN=74 Runoff=0.71 cfs 0.052 af

**Subcatchment E3: Southwest (DP3)** Runoff Area=3,661 sf 5.00% Impervious Runoff Depth>0.96"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.09 cfs 0.007 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.102 af Average Runoff Depth = 1.39"**
**75.55% Pervious = 0.663 ac 24.45% Impervious = 0.215 ac**

## Summary for Subcatchment E1: East (DP1)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

| Area (sf) | CN | Description |
|---|---|---|
| 7,528 | 61 | >75% Grass cover, Good, HSG B |
| 2,510 | 80 | >75% Grass cover, Good, HSG D |
| 4,638 | 98 | Paved parking, HSG B |
| 97 | 98 | Roofs, HSG B |
| 176 | 55 | Woods, Good, HSG B |
| 59 | 77 | Woods, Good, HSG D |
| 15,008 | 76 | Weighted Average |
| 10,273 | | 68.45% Pervious Area |
| 4,735 | | 31.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 266 | 0.0455 | 0.76 | | **Lag/CN Method,** |

## Summary for Subcatchment E2: West (DP2)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.052 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

| Area (sf) | CN | Description |
|---|---|---|
| 10,039 | 61 | >75% Grass cover, Good, HSG B |
| 3,346 | 80 | >75% Grass cover, Good, HSG D |
| 1,732 | 98 | Paved parking, HSG B |
| 2,698 | 98 | Roofs, HSG B |
| 821 | 55 | Woods, Good, HSG B |
| 274 | 77 | Woods, Good, HSG D |
| 659 | 96 | Gravel surface, HSG B |
| 19,569 | 74 | Weighted Average |
| 15,139 | | 77.36% Pervious Area |
| 4,430 | | 22.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.2 | 200 | 0.0411 | 0.65 | | **Lag/CN Method,** |

## Summary for Subcatchment E3: Southwest (DP3)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

| Area (sf) | CN | Description |
|---|---|---|
| 2,186 | 61 | >75% Grass cover, Good, HSG B |
| 729 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,661 | 67 | Weighted Average |
| 3,478 | | 95.00% Pervious Area |
| 183 | | 5.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1: East (DP1)** Runoff Area=15,008 sf 31.55% Impervious Runoff Depth>3.04"
Flow Length=266' Slope=0.0455 '/' Tc=5.8 min CN=76 Runoff=1.21 cfs 0.087 af

**Subcatchment E2: West (DP2)** Runoff Area=19,569 sf 22.64% Impervious Runoff Depth>2.86"
Flow Length=200' Slope=0.0411 '/' Tc=5.2 min CN=74 Runoff=1.50 cfs 0.107 af

**Subcatchment E3: Southwest (DP3)** Runoff Area=3,661 sf 5.00% Impervious Runoff Depth>2.24"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.22 cfs 0.016 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.210 af Average Runoff Depth = 2.87"**
**75.55% Pervious = 0.663 ac 24.45% Impervious = 0.215 ac**

## Summary for Subcatchment E1: East (DP1)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.087 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 7,528 | 61 | >75% Grass cover, Good, HSG B |
| 2,510 | 80 | >75% Grass cover, Good, HSG D |
| 4,638 | 98 | Paved parking, HSG B |
| 97 | 98 | Roofs, HSG B |
| 176 | 55 | Woods, Good, HSG B |
| 59 | 77 | Woods, Good, HSG D |
| 15,008 | 76 | Weighted Average |
| 10,273 | | 68.45% Pervious Area |
| 4,735 | | 31.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 266 | 0.0455 | 0.76 | | **Lag/CN Method,** |

## Summary for Subcatchment E2: West (DP2)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.50 cfs @ 12.08 hrs, Volume= 0.107 af, Depth> 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 10,039 | 61 | >75% Grass cover, Good, HSG B |
| 3,346 | 80 | >75% Grass cover, Good, HSG D |
| 1,732 | 98 | Paved parking, HSG B |
| 2,698 | 98 | Roofs, HSG B |
| 821 | 55 | Woods, Good, HSG B |
| 274 | 77 | Woods, Good, HSG D |
| 659 | 96 | Gravel surface, HSG B |
| 19,569 | 74 | Weighted Average |
| 15,139 | | 77.36% Pervious Area |
| 4,430 | | 22.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.2 | 200 | 0.0411 | 0.65 | | **Lag/CN Method,** |

## Summary for Subcatchment E3: Southwest (DP3)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.016 af, Depth> 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 2,186 | 61 | >75% Grass cover, Good, HSG B |
| 729 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,661 | 67 | Weighted Average |
| 3,478 | | 95.00% Pervious Area |
| 183 | | 5.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1: East (DP1)** Runoff Area=15,008 sf 31.55% Impervious Runoff Depth>4.36"
Flow Length=266' Slope=0.0455 '/' Tc=5.8 min CN=76 Runoff=1.73 cfs 0.125 af

**Subcatchment E2: West (DP2)** Runoff Area=19,569 sf 22.64% Impervious Runoff Depth>4.14"
Flow Length=200' Slope=0.0411 '/' Tc=5.2 min CN=74 Runoff=2.17 cfs 0.155 af

**Subcatchment E3: Southwest (DP3)** Runoff Area=3,661 sf 5.00% Impervious Runoff Depth>3.40"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.33 cfs 0.024 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.304 af Average Runoff Depth = 4.16"**
**75.55% Pervious = 0.663 ac 24.45% Impervious = 0.215 ac**

## Summary for Subcatchment E1: East (DP1)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.73 cfs @ 12.09 hrs, Volume= 0.125 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.12"

| Area (sf) | CN | Description |
|---|---|---|
| 7,528 | 61 | >75% Grass cover, Good, HSG B |
| 2,510 | 80 | >75% Grass cover, Good, HSG D |
| 4,638 | 98 | Paved parking, HSG B |
| 97 | 98 | Roofs, HSG B |
| 176 | 55 | Woods, Good, HSG B |
| 59 | 77 | Woods, Good, HSG D |
| 15,008 | 76 | Weighted Average |
| 10,273 | | 68.45% Pervious Area |
| 4,735 | | 31.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 266 | 0.0455 | 0.76 | | **Lag/CN Method,** |

## Summary for Subcatchment E2: West (DP2)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.17 cfs @ 12.08 hrs, Volume= 0.155 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.12"

| Area (sf) | CN | Description |
|---|---|---|
| 10,039 | 61 | >75% Grass cover, Good, HSG B |
| 3,346 | 80 | >75% Grass cover, Good, HSG D |
| 1,732 | 98 | Paved parking, HSG B |
| 2,698 | 98 | Roofs, HSG B |
| 821 | 55 | Woods, Good, HSG B |
| 274 | 77 | Woods, Good, HSG D |
| 659 | 96 | Gravel surface, HSG B |
| 19,569 | 74 | Weighted Average |
| 15,139 | | 77.36% Pervious Area |
| 4,430 | | 22.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.2 | 200 | 0.0411 | 0.65 | | **Lag/CN Method,** |

## Summary for Subcatchment E3: Southwest (DP3)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.12"

| Area (sf) | CN | Description |
|---|---|---|
| 2,186 | 61 | >75% Grass cover, Good, HSG B |
| 729 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,661 | 67 | Weighted Average |
| 3,478 | | 95.00% Pervious Area |
| 183 | | 5.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1: East (DP1)** Runoff Area=15,008 sf 31.55% Impervious Runoff Depth>5.64"
Flow Length=266' Slope=0.0455 '/' Tc=5.8 min CN=76 Runoff=2.22 cfs 0.162 af

**Subcatchment E2: West (DP2)** Runoff Area=19,569 sf 22.64% Impervious Runoff Depth>5.40"
Flow Length=200' Slope=0.0411 '/' Tc=5.2 min CN=74 Runoff=2.82 cfs 0.202 af

**Subcatchment E3: Southwest (DP3)** Runoff Area=3,661 sf 5.00% Impervious Runoff Depth>4.56"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.45 cfs 0.032 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.396 af Average Runoff Depth = 5.41"**
**75.55% Pervious = 0.663 ac 24.45% Impervious = 0.215 ac**

## Summary for Subcatchment E1: East (DP1)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.22 cfs @ 12.09 hrs, Volume= 0.162 af, Depth> 5.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 7,528 | 61 | >75% Grass cover, Good, HSG B |
| 2,510 | 80 | >75% Grass cover, Good, HSG D |
| 4,638 | 98 | Paved parking, HSG B |
| 97 | 98 | Roofs, HSG B |
| 176 | 55 | Woods, Good, HSG B |
| 59 | 77 | Woods, Good, HSG D |
| 15,008 | 76 | Weighted Average |
| 10,273 | | 68.45% Pervious Area |
| 4,735 | | 31.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 266 | 0.0455 | 0.76 | | **Lag/CN Method,** |

## Summary for Subcatchment E2: West (DP2)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.82 cfs @ 12.08 hrs, Volume= 0.202 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 10,039 | 61 | >75% Grass cover, Good, HSG B |
| 3,346 | 80 | >75% Grass cover, Good, HSG D |
| 1,732 | 98 | Paved parking, HSG B |
| 2,698 | 98 | Roofs, HSG B |
| 821 | 55 | Woods, Good, HSG B |
| 274 | 77 | Woods, Good, HSG D |
| 659 | 96 | Gravel surface, HSG B |
| 19,569 | 74 | Weighted Average |
| 15,139 | | 77.36% Pervious Area |
| 4,430 | | 22.64% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.2 | 200 | 0.0411 | 0.65 | | **Lag/CN Method,** |

## Summary for Subcatchment E3: Southwest (DP3)

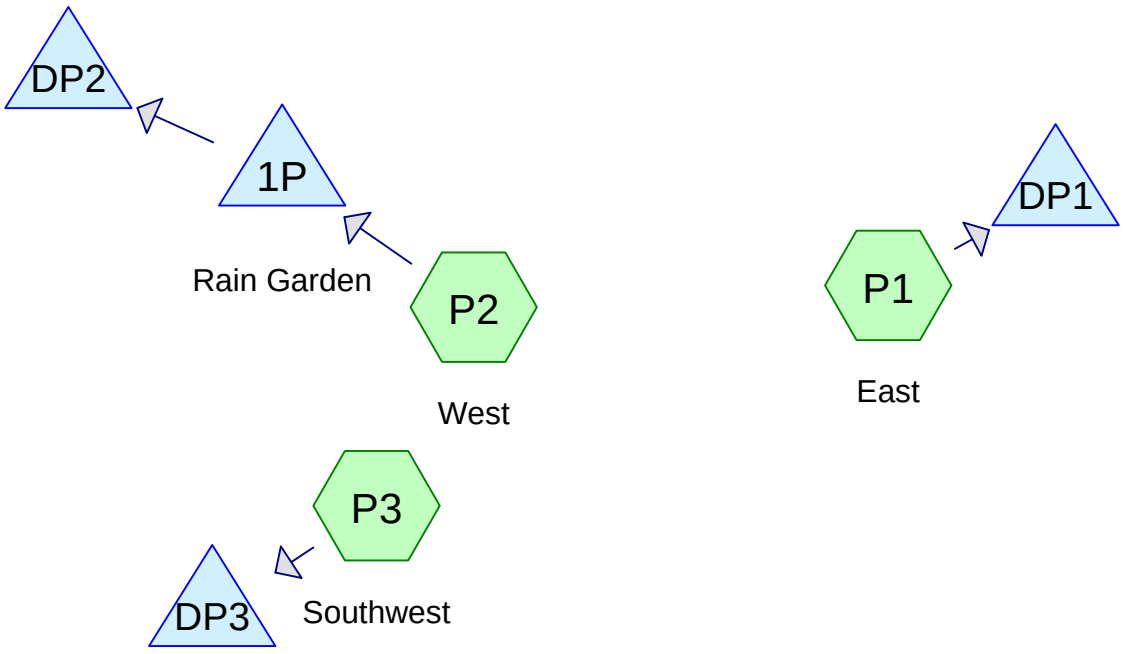
[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.032 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 2,186 | 61 | >75% Grass cover, Good, HSG B |
| 729 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,661 | 67 | Weighted Average |
| 3,478 | | 95.00% Pervious Area |
| 183 | | 5.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |




Subcat Reach Pond Link

**Routing Diagram for Proposed Conditions David T 2023-08-25**
Prepared by Haley Ward, Printed 10/24/2023
HydroCAD® 10.20-3f s/n 00801 © 2023 HydroCAD Software Solutions LLC

## Project Notes

Defined 5 rainfall events from extreme_precip_tables_output IDF

## Rainfall Events Listing (selected events)

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-yr | Type III 24-hr | | Default | 24.00 | 1 | 3.70 | 2 |
| 2 | 10-yr | Type III 24-hr | | Default | 24.00 | 1 | 5.61 | 2 |
| 3 | 25-yr | Type III 24-hr | | Default | 24.00 | 1 | 7.12 | 2 |
| 4 | 50-yr | Type III 24-hr | | Default | 24.00 | 1 | 8.53 | 2 |

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.399 | 61 | >75% Grass cover, Good, HSG B (P1, P2, P3) |
| 0.133 | 80 | >75% Grass cover, Good, HSG D (P1, P2, P3) |
| 0.214 | 98 | Paved parking, HSG B (P1, P2, P3) |
| 0.095 | 98 | Roofs, HSG B (P2, P3) |
| 0.028 | 55 | Woods, Good, HSG B (P1, P2, P3) |
| 0.009 | 77 | Woods, Good, HSG D (P1, P2, P3) |
| **0.878** | **77** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.736 | HSG B | P1, P2, P3 |
| 0.000 | HSG C | |
| 0.142 | HSG D | P1, P2, P3 |
| 0.000 | Other | |
| **0.878** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.000 | 0.399 | 0.000 | 0.133 | 0.000 | 0.533 | >75% Grass cover, Good | P1, P2, P3 |
| 0.000 | 0.214 | 0.000 | 0.000 | 0.000 | 0.214 | Paved parking | P1, P2, P3 |
| 0.000 | 0.095 | 0.000 | 0.000 | 0.000 | 0.095 | Roofs | P2, P3 |
| 0.000 | 0.028 | 0.000 | 0.009 | 0.000 | 0.037 | Woods, Good | P1, P2, P3 |
| **0.000** | **0.736** | **0.000** | **0.142** | **0.000** | **0.878** | **TOTAL AREA** | |

## Pipe Listing (all nodes)

| Line# | Node Number | In-Invert (feet) | Out-Invert (feet) | Length (feet) | Slope (ft/ft) | n | Width (inches) | Diam/Height (inches) | Inside-Fill (inches) | Node Name |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1P | 31.00 | 30.00 | 11.0 | 0.0909 | 0.013 | 0.0 | 12.0 | 0.0 | |

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1: East** Runoff Area=13,988 sf 25.93% Impervious Runoff Depth>1.38"
Flow Length=266' Slope=0.0455 '/' Tc=6.2 min CN=74 Runoff=0.49 cfs 0.037 af

**Subcatchment P2: West** Runoff Area=21,066 sf 45.71% Impervious Runoff Depth>1.80"
Flow Length=200' Slope=0.0411 '/' Tc=5.0 min CN=80 Runoff=1.02 cfs 0.072 af

**Subcatchment P3: Southwest** Runoff Area=3,185 sf 5.75% Impervious Runoff Depth>0.96"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.07 cfs 0.006 af

**Pond 1P: Rain Garden** Peak Elev=31.47' Storage=865 cf Inflow=1.02 cfs 0.072 af
Outflow=0.64 cfs 0.061 af

**Pond DP1:** Inflow=0.49 cfs 0.037 af
Primary=0.49 cfs 0.037 af

**Pond DP2:** Inflow=0.64 cfs 0.061 af
Primary=0.64 cfs 0.061 af

**Pond DP3:** Inflow=0.07 cfs 0.006 af
Primary=0.07 cfs 0.006 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.115 af Average Runoff Depth = 1.57"**
**64.86% Pervious = 0.569 ac 35.14% Impervious = 0.309 ac**

## Summary for Subcatchment P1: East

Runoff = 0.49 cfs @ 12.10 hrs, Volume= 0.037 af, Depth> 1.38"
Routed to Pond DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

| Area (sf) | CN | Description |
|---|---|---|
| 7,627 | 61 | >75% Grass cover, Good, HSG B |
| 2,542 | 80 | >75% Grass cover, Good, HSG D |
| 3,627 | 98 | Paved parking, HSG B |
| 144 | 55 | Woods, Good, HSG B |
| 48 | 77 | Woods, Good, HSG D |
| 13,988 | 74 | Weighted Average |
| 10,361 | | 74.07% Pervious Area |
| 3,627 | | 25.93% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 266 | 0.0455 | 0.72 | | **Lag/CN Method,** |

## Summary for Subcatchment P2: West

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.02 cfs @ 12.08 hrs, Volume= 0.072 af, Depth> 1.80"
Routed to Pond 1P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

| Area (sf) | CN | Description |
|---|---|---|
| 7,946 | 61 | >75% Grass cover, Good, HSG B |
| 2,648 | 80 | >75% Grass cover, Good, HSG D |
| 5,499 | 98 | Paved parking, HSG B |
| 4,130 | 98 | Roofs, HSG B |
| 632 | 55 | Woods, Good, HSG B |
| 211 | 77 | Woods, Good, HSG D |
| 21,066 | 80 | Weighted Average |
| 11,437 | | 54.29% Pervious Area |
| 9,629 | | 45.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 200 | 0.0411 | 0.77 | | **Lag/CN Method,** |
| 4.3 | 200 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Subcatchment P3: Southwest

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 0.96"
Routed to Pond DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

| Area (sf) | CN | Description |
|---|---|---|
| 1,829 | 61 | >75% Grass cover, Good, HSG B |
| 610 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,185 | 67 | Weighted Average |
| 3,002 | | 94.25% Pervious Area |
| 183 | | 5.75% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Pond 1P: Rain Garden

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 1.80" for 2-yr event
Inflow = 1.02 cfs @ 12.08 hrs, Volume= 0.072 af
Outflow = 0.64 cfs @ 12.19 hrs, Volume= 0.061 af, Atten= 37%, Lag= 6.6 min
Primary = 0.64 cfs @ 12.19 hrs, Volume= 0.061 af
Routed to Pond DP2 :

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 31.47' @ 12.19 hrs Surf.Area= 918 sf Storage= 865 cf

Plug-Flow detention time= 107.2 min calculated for 0.061 af (84% of inflow)
Center-of-Mass det. time= 39.1 min ( 873.3 - 834.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 28.00' | 2,657 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 28.00 | 775 | 0.0 | 0 | 0 |
| 31.00 | 775 | 20.0 | 465 | 465 |
| 32.00 | 1,079 | 100.0 | 927 | 1,392 |
| 33.00 | 1,450 | 100.0 | 1,265 | 2,657 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 31.00' | **12.0" Round Culvert**<br>L= 11.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 31.00' / 30.00' S= 0.0909 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2 | Device 1 | 31.00' | **Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**<br>Elev. (feet) 31.00 32.30 32.30 33.00<br>Width (feet) 0.60 0.60 4.00 4.00 |

**Primary OutFlow** Max=0.63 cfs @ 12.19 hrs HW=31.47' (Free Discharge)
↑**1=Culvert** (Passes 0.63 cfs of 0.85 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 0.63 cfs @ 2.24 fps)

## Summary for Pond DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.321 ac, 25.93% Impervious, Inflow Depth > 1.38" for 2-yr event
Inflow = 0.49 cfs @ 12.10 hrs, Volume= 0.037 af
Primary = 0.49 cfs @ 12.10 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 1.51" for 2-yr event
Inflow = 0.64 cfs @ 12.19 hrs, Volume= 0.061 af
Primary = 0.64 cfs @ 12.19 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.073 ac, 5.75% Impervious, Inflow Depth > 0.96" for 2-yr event
Inflow = 0.07 cfs @ 12.09 hrs, Volume= 0.006 af
Primary = 0.07 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1: East** Runoff Area=13,988 sf 25.93% Impervious Runoff Depth>2.86"
Flow Length=266' Slope=0.0455 '/' Tc=6.2 min CN=74 Runoff=1.05 cfs 0.076 af

**Subcatchment P2: West** Runoff Area=21,066 sf 45.71% Impervious Runoff Depth>3.43"
Flow Length=200' Slope=0.0411 '/' Tc=5.0 min CN=80 Runoff=1.94 cfs 0.138 af

**Subcatchment P3: Southwest** Runoff Area=3,185 sf 5.75% Impervious Runoff Depth>2.24"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.19 cfs 0.014 af

**Pond 1P: Rain Garden** Peak Elev=31.82' Storage=1,202 cf Inflow=1.94 cfs 0.138 af
Outflow=1.46 cfs 0.126 af

**Pond DP1:** Inflow=1.05 cfs 0.076 af
Primary=1.05 cfs 0.076 af

**Pond DP2:** Inflow=1.46 cfs 0.126 af
Primary=1.46 cfs 0.126 af

**Pond DP3:** Inflow=0.19 cfs 0.014 af
Primary=0.19 cfs 0.014 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.228 af Average Runoff Depth = 3.12"**
**64.86% Pervious = 0.569 ac 35.14% Impervious = 0.309 ac**

## Summary for Subcatchment P1: East

Runoff = 1.05 cfs @ 12.10 hrs, Volume= 0.076 af, Depth> 2.86"
Routed to Pond DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 7,627 | 61 | >75% Grass cover, Good, HSG B |
| 2,542 | 80 | >75% Grass cover, Good, HSG D |
| 3,627 | 98 | Paved parking, HSG B |
| 144 | 55 | Woods, Good, HSG B |
| 48 | 77 | Woods, Good, HSG D |
| 13,988 | 74 | Weighted Average |
| 10,361 | | 74.07% Pervious Area |
| 3,627 | | 25.93% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 266 | 0.0455 | 0.72 | | **Lag/CN Method,** |

## Summary for Subcatchment P2: West

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.94 cfs @ 12.08 hrs, Volume= 0.138 af, Depth> 3.43"
Routed to Pond 1P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 7,946 | 61 | >75% Grass cover, Good, HSG B |
| 2,648 | 80 | >75% Grass cover, Good, HSG D |
| 5,499 | 98 | Paved parking, HSG B |
| 4,130 | 98 | Roofs, HSG B |
| 632 | 55 | Woods, Good, HSG B |
| 211 | 77 | Woods, Good, HSG D |
| 21,066 | 80 | Weighted Average |
| 11,437 | | 54.29% Pervious Area |
| 9,629 | | 45.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 200 | 0.0411 | 0.77 | | **Lag/CN Method,** |
| 4.3 | 200 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Subcatchment P3: Southwest

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.014 af, Depth> 2.24"
Routed to Pond DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 1,829 | 61 | >75% Grass cover, Good, HSG B |
| 610 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,185 | 67 | Weighted Average |
| 3,002 | | 94.25% Pervious Area |
| 183 | | 5.75% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Pond 1P: Rain Garden

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 3.43" for 10-yr event
Inflow = 1.94 cfs @ 12.08 hrs, Volume= 0.138 af
Outflow = 1.46 cfs @ 12.15 hrs, Volume= 0.126 af, Atten= 25%, Lag= 4.6 min
Primary = 1.46 cfs @ 12.15 hrs, Volume= 0.126 af
Routed to Pond DP2 :

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 31.82' @ 12.15 hrs Surf.Area= 1,024 sf Storage= 1,202 cf

Plug-Flow detention time= 70.1 min calculated for 0.126 af (91% of inflow)
Center-of-Mass det. time= 27.9 min ( 843.5 - 815.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 28.00' | 2,657 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 28.00 | 775 | 0.0 | 0 | 0 |
| 31.00 | 775 | 20.0 | 465 | 465 |
| 32.00 | 1,079 | 100.0 | 927 | 1,392 |
| 33.00 | 1,450 | 100.0 | 1,265 | 2,657 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 31.00' | **12.0" Round Culvert**<br>L= 11.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 31.00' / 30.00' S= 0.0909 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2 | Device 1 | 31.00' | **Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**<br>Elev. (feet) 31.00 32.30 32.30 33.00<br>Width (feet) 0.60 0.60 4.00 4.00 |

**Primary OutFlow** Max=1.45 cfs @ 12.15 hrs HW=31.82' (Free Discharge)
↑**1=Culvert** (Passes 1.45 cfs of 2.11 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 1.45 cfs @ 2.96 fps)

## Summary for Pond DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.321 ac, 25.93% Impervious, Inflow Depth > 2.86" for 10-yr event
Inflow = 1.05 cfs @ 12.10 hrs, Volume= 0.076 af
Primary = 1.05 cfs @ 12.10 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 3.13" for 10-yr event
Inflow = 1.46 cfs @ 12.15 hrs, Volume= 0.126 af
Primary = 1.46 cfs @ 12.15 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.073 ac, 5.75% Impervious, Inflow Depth > 2.24" for 10-yr event
Inflow = 0.19 cfs @ 12.08 hrs, Volume= 0.014 af
Primary = 0.19 cfs @ 12.08 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1: East** Runoff Area=13,988 sf 25.93% Impervious Runoff Depth>4.14"
Flow Length=266' Slope=0.0455 '/' Tc=6.2 min CN=74 Runoff=1.52 cfs 0.111 af

**Subcatchment P2: West** Runoff Area=21,066 sf 45.71% Impervious Runoff Depth>4.80"
Flow Length=200' Slope=0.0411 '/' Tc=5.0 min CN=80 Runoff=2.71 cfs 0.194 af

**Subcatchment P3: Southwest** Runoff Area=3,185 sf 5.75% Impervious Runoff Depth>3.40"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.29 cfs 0.021 af

**Pond 1P: Rain Garden** Peak Elev=32.03' Storage=1,429 cf Inflow=2.71 cfs 0.194 af
Outflow=2.07 cfs 0.181 af

**Pond DP1:** Inflow=1.52 cfs 0.111 af
Primary=1.52 cfs 0.111 af

**Pond DP2:** Inflow=2.07 cfs 0.181 af
Primary=2.07 cfs 0.181 af

**Pond DP3:** Inflow=0.29 cfs 0.021 af
Primary=0.29 cfs 0.021 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.325 af Average Runoff Depth = 4.44"**
**64.86% Pervious = 0.569 ac 35.14% Impervious = 0.309 ac**

## Summary for Subcatchment P1: East

Runoff = 1.52 cfs @ 12.09 hrs, Volume= 0.111 af, Depth> 4.14"
Routed to Pond DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.12"

| Area (sf) | CN | Description |
|---|---|---|
| 7,627 | 61 | >75% Grass cover, Good, HSG B |
| 2,542 | 80 | >75% Grass cover, Good, HSG D |
| 3,627 | 98 | Paved parking, HSG B |
| 144 | 55 | Woods, Good, HSG B |
| 48 | 77 | Woods, Good, HSG D |
| 13,988 | 74 | Weighted Average |
| 10,361 | | 74.07% Pervious Area |
| 3,627 | | 25.93% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 266 | 0.0455 | 0.72 | | **Lag/CN Method,** |

## Summary for Subcatchment P2: West

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.71 cfs @ 12.07 hrs, Volume= 0.194 af, Depth> 4.80"
Routed to Pond 1P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.12"

| Area (sf) | CN | Description |
|---|---|---|
| 7,946 | 61 | >75% Grass cover, Good, HSG B |
| 2,648 | 80 | >75% Grass cover, Good, HSG D |
| 5,499 | 98 | Paved parking, HSG B |
| 4,130 | 98 | Roofs, HSG B |
| 632 | 55 | Woods, Good, HSG B |
| 211 | 77 | Woods, Good, HSG D |
| 21,066 | 80 | Weighted Average |
| 11,437 | | 54.29% Pervious Area |
| 9,629 | | 45.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 200 | 0.0411 | 0.77 | | **Lag/CN Method,** |
| 4.3 | 200 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Subcatchment P3: Southwest

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.021 af, Depth> 3.40"
Routed to Pond DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.12"

| Area (sf) | CN | Description |
|---|---|---|
| 1,829 | 61 | >75% Grass cover, Good, HSG B |
| 610 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,185 | 67 | Weighted Average |
| 3,002 | | 94.25% Pervious Area |
| 183 | | 5.75% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Pond 1P: Rain Garden

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 4.80" for 25-yr event
Inflow = 2.71 cfs @ 12.07 hrs, Volume= 0.194 af
Outflow = 2.07 cfs @ 12.15 hrs, Volume= 0.181 af, Atten= 24%, Lag= 4.4 min
Primary = 2.07 cfs @ 12.15 hrs, Volume= 0.181 af
Routed to Pond DP2 :

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 32.03' @ 12.15 hrs Surf.Area= 1,092 sf Storage= 1,429 cf

Plug-Flow detention time= 57.6 min calculated for 0.181 af (94% of inflow)
Center-of-Mass det. time= 24.6 min ( 830.6 - 806.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 28.00' | 2,657 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 28.00 | 775 | 0.0 | 0 | 0 |
| 31.00 | 775 | 20.0 | 465 | 465 |
| 32.00 | 1,079 | 100.0 | 927 | 1,392 |
| 33.00 | 1,450 | 100.0 | 1,265 | 2,657 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 31.00' | **12.0" Round Culvert**<br>L= 11.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 31.00' / 30.00' S= 0.0909 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2 | Device 1 | 31.00' | **Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**<br>Elev. (feet) 31.00 32.30 32.30 33.00<br>Width (feet) 0.60 0.60 4.00 4.00 |

**Primary OutFlow** Max=2.06 cfs @ 12.15 hrs HW=32.03' (Free Discharge)
↑└**1=Culvert** (Passes 2.06 cfs of 2.76 cfs potential flow)
↑└**2=Custom Weir/Orifice** (Weir Controls 2.06 cfs @ 3.33 fps)

## Summary for Pond DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.321 ac, 25.93% Impervious, Inflow Depth > 4.14" for 25-yr event
Inflow = 1.52 cfs @ 12.09 hrs, Volume= 0.111 af
Primary = 1.52 cfs @ 12.09 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 4.50" for 25-yr event
Inflow = 2.07 cfs @ 12.15 hrs, Volume= 0.181 af
Primary = 2.07 cfs @ 12.15 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.073 ac, 5.75% Impervious, Inflow Depth > 3.40" for 25-yr event
Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.021 af
Primary = 0.29 cfs @ 12.08 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1: East** Runoff Area=13,988 sf 25.93% Impervious Runoff Depth>5.40"
Flow Length=266' Slope=0.0455 '/' Tc=6.2 min CN=74 Runoff=1.97 cfs 0.144 af

**Subcatchment P2: West** Runoff Area=21,066 sf 45.71% Impervious Runoff Depth>6.12"
Flow Length=200' Slope=0.0411 '/' Tc=5.0 min CN=80 Runoff=3.42 cfs 0.247 af

**Subcatchment P3: Southwest** Runoff Area=3,185 sf 5.75% Impervious Runoff Depth>4.56"
Flow Length=78' Slope=0.0533 '/' Tc=5.0 min CN=67 Runoff=0.39 cfs 0.028 af

**Pond 1P: Rain Garden** Peak Elev=32.22' Storage=1,635 cf Inflow=3.42 cfs 0.247 af
Outflow=2.64 cfs 0.234 af

**Pond DP1:** Inflow=1.97 cfs 0.144 af
Primary=1.97 cfs 0.144 af

**Pond DP2:** Inflow=2.64 cfs 0.234 af
Primary=2.64 cfs 0.234 af

**Pond DP3:** Inflow=0.39 cfs 0.028 af
Primary=0.39 cfs 0.028 af

**Total Runoff Area = 0.878 ac Runoff Volume = 0.419 af Average Runoff Depth = 5.73"**
**64.86% Pervious = 0.569 ac 35.14% Impervious = 0.309 ac**

## Summary for Subcatchment P1: East

Runoff = 1.97 cfs @ 12.09 hrs, Volume= 0.144 af, Depth> 5.40"
Routed to Pond DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 7,627 | 61 | >75% Grass cover, Good, HSG B |
| 2,542 | 80 | >75% Grass cover, Good, HSG D |
| 3,627 | 98 | Paved parking, HSG B |
| 144 | 55 | Woods, Good, HSG B |
| 48 | 77 | Woods, Good, HSG D |
| 13,988 | 74 | Weighted Average |
| 10,361 | | 74.07% Pervious Area |
| 3,627 | | 25.93% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 266 | 0.0455 | 0.72 | | **Lag/CN Method,** |

## Summary for Subcatchment P2: West

[49] Hint: Tc<2dt may require smaller dt

Runoff = 3.42 cfs @ 12.07 hrs, Volume= 0.247 af, Depth> 6.12"
Routed to Pond 1P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 7,946 | 61 | >75% Grass cover, Good, HSG B |
| 2,648 | 80 | >75% Grass cover, Good, HSG D |
| 5,499 | 98 | Paved parking, HSG B |
| 4,130 | 98 | Roofs, HSG B |
| 632 | 55 | Woods, Good, HSG B |
| 211 | 77 | Woods, Good, HSG D |
| 21,066 | 80 | Weighted Average |
| 11,437 | | 54.29% Pervious Area |
| 9,629 | | 45.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 200 | 0.0411 | 0.77 | | **Lag/CN Method,** |
| 4.3 | 200 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Subcatchment P3: Southwest

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.028 af, Depth> 4.56"
Routed to Pond DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 1,829 | 61 | >75% Grass cover, Good, HSG B |
| 610 | 80 | >75% Grass cover, Good, HSG D |
| 182 | 98 | Paved parking, HSG B |
| 1 | 98 | Roofs, HSG B |
| 422 | 55 | Woods, Good, HSG B |
| 141 | 77 | Woods, Good, HSG D |
| 3,185 | 67 | Weighted Average |
| 3,002 | | 94.25% Pervious Area |
| 183 | | 5.75% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.6 | 78 | 0.0533 | 0.50 | | **Lag/CN Method,** |
| 2.6 | 78 | Total, Increased to minimum Tc = 5.0 min | | | |

## Summary for Pond 1P: Rain Garden

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 6.12" for 50-yr event
Inflow = 3.42 cfs @ 12.07 hrs, Volume= 0.247 af
Outflow = 2.64 cfs @ 12.15 hrs, Volume= 0.234 af, Atten= 23%, Lag= 4.3 min
Primary = 2.64 cfs @ 12.15 hrs, Volume= 0.234 af
Routed to Pond DP2 :

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 32.22' @ 12.15 hrs Surf.Area= 1,160 sf Storage= 1,635 cf

Plug-Flow detention time= 49.2 min calculated for 0.234 af (95% of inflow)
Center-of-Mass det. time= 22.4 min ( 821.6 - 799.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 28.00' | 2,657 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 28.00 | 775 | 0.0 | 0 | 0 |
| 31.00 | 775 | 20.0 | 465 | 465 |
| 32.00 | 1,079 | 100.0 | 927 | 1,392 |
| 33.00 | 1,450 | 100.0 | 1,265 | 2,657 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 31.00' | **12.0" Round Culvert**<br>L= 11.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 31.00' / 30.00' S= 0.0909 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2 | Device 1 | 31.00' | **Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**<br>Elev. (feet) 31.00 32.30 32.30 33.00<br>Width (feet) 0.60 0.60 4.00 4.00 |

**Primary OutFlow** Max=2.62 cfs @ 12.15 hrs HW=32.21' (Free Discharge)
↑**1=Culvert** (Passes 2.62 cfs of 3.19 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 2.62 cfs @ 3.61 fps)

## Summary for Pond DP1:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.321 ac, 25.93% Impervious, Inflow Depth > 5.40" for 50-yr event
Inflow = 1.97 cfs @ 12.09 hrs, Volume= 0.144 af
Primary = 1.97 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP2:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.484 ac, 45.71% Impervious, Inflow Depth > 5.82" for 50-yr event
Inflow = 2.64 cfs @ 12.15 hrs, Volume= 0.234 af
Primary = 2.64 cfs @ 12.15 hrs, Volume= 0.234 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

## Summary for Pond DP3:

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.073 ac, 5.75% Impervious, Inflow Depth > 4.56" for 50-yr event
Inflow = 0.39 cfs @ 12.08 hrs, Volume= 0.028 af
Primary = 0.39 cfs @ 12.08 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

# APPENDIX D

# SOIL SURVEY INFORMATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Rockingham County, New Hampshire

August 25, 2023

# Custom Soil Resource Report
## Soil Map

Map Scale: 1:581 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 25, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 140B | Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky | 0.7 | 100.0% |
| **Totals for Area of Interest** | | **0.7** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Rockingham County, New Hampshire

## 140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

### Map Unit Setting

*National map unit symbol:* 2w82m
*Elevation:* 380 to 1,070 feet
*Mean annual precipitation:* 36 to 71 inches
*Mean annual air temperature:* 39 to 55 degrees F
*Frost-free period:* 145 to 240 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Chatfield, very stony, and similar soils:* 35 percent
*Canton, very stony, and similar soils:* 25 percent
*Hollis, very stony, and similar soils:* 25 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Chatfield, Very Stony

#### Setting

*Landform:* Ridges, hills
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Nose slope, side slope, crest
*Down-slope shape:* Convex
*Across-slope shape:* Linear, convex
*Parent material:* Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 2 inches:* fine sandy loam
*Bw - 2 to 30 inches:* gravelly fine sandy loam
*2R - 30 to 40 inches:* bedrock

#### Properties and qualities

*Slope:* 0 to 8 percent
*Surface area covered with cobbles, stones or boulders:* 1.6 percent
*Depth to restrictive feature:* 20 to 41 inches to lithic bedrock
*Drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Very low (0.00 to 0.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 4.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* B
*Ecological site:* F144AY034CT - Well Drained Till Uplands

*Hydric soil rating:* No

### Description of Canton, Very Stony

#### Setting

*Landform:* Ridges, moraines, hills
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Nose slope, side slope, crest
*Down-slope shape:* Convex, linear
*Across-slope shape:* Convex
*Parent material:* Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

#### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material
*A - 2 to 5 inches:* fine sandy loam
*Bw1 - 5 to 16 inches:* fine sandy loam
*Bw2 - 16 to 22 inches:* gravelly fine sandy loam
*2C - 22 to 67 inches:* gravelly loamy sand

#### Properties and qualities

*Slope:* 0 to 8 percent
*Surface area covered with cobbles, stones or boulders:* 1.6 percent
*Depth to restrictive feature:* 19 to 39 inches to strongly contrasting textural stratification
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.14 to 14.17 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 3.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* B
*Ecological site:* F144AY034CT - Well Drained Till Uplands
*Hydric soil rating:* No

### Description of Hollis, Very Stony

#### Setting

*Landform:* Ridges, hills
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Nose slope, side slope, crest
*Down-slope shape:* Convex
*Across-slope shape:* Linear, convex
*Parent material:* Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

#### Typical profile

*Oi - 0 to 2 inches:* slightly decomposed plant material
*A - 2 to 7 inches:* gravelly fine sandy loam
*Bw - 7 to 16 inches:* gravelly fine sandy loam

*2R - 16 to 26 inches:* bedrock

**Properties and qualities**

*Slope:* 0 to 8 percent
*Surface area covered with cobbles, stones or boulders:* 1.6 percent
*Depth to restrictive feature:* 8 to 23 inches to lithic bedrock
*Drainage class:* Somewhat excessively drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Very low (0.00 to 0.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)
*Available water supply, 0 to 60 inches:* Very low (about 2.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* D
*Ecological site:* F144AY033MA - Shallow Dry Till Uplands
*Hydric soil rating:* No

**Minor Components**

**Freetown**

*Percent of map unit:* 5 percent
*Landform:* Swamps, marshes, kettles, depressions, bogs
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

**Newfields, very stony**

*Percent of map unit:* 5 percent
*Landform:* Moraines, hills, ground moraines
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Base slope
*Down-slope shape:* Linear
*Across-slope shape:* Concave
*Hydric soil rating:* No

**Walpole, very stony**

*Percent of map unit:* 3 percent
*Landform:* Depressions, outwash terraces, outwash plains, depressions, deltas
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

**Rock outcrop**

*Percent of map unit:* 2 percent
*Landform:* Ridges, hills
*Hydric soil rating:* Unranked

# APPENDIX E

# FEMA FIRM MAP

# National Flood Hazard Layer FIRMette

FEMA

70°45'12"W 43°3'21"N

70°44'35"W 43°2'54"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

*Basemap Imagery Source: USGS National Map 2023*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/27/2023 at 1:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# APPENDIX F

# INSPECTION & LONG TERM MAINTENANCE PLAN

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

# *INSPECTION & LONG-TERM MAINTENANCE PLAN*
# *FOR*
# PROPOSED BUILDING REPLACEMENT

## 1155 SAGAMORE AVENUE
## PORTSMOUTH, NH

### *Introduction*

The intent of this plan is to provide Build America (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the Rain Garden and associated structures on the project site (collectively referred to as the "Stormwater Management System"). The contact information for the owner shall be kept current, and if there is a change of ownership of the property this plan must be transferred to the new owner.

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly and will help in maintaining a high quality of stormwater runoff to minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

### *Annual Report*

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the City of Portsmouth Public Works Department, as required.

#### *Inspection & Maintenance Checklist/Log*

The following pages contain the Stormwater Management System Inspection & Maintenance Requirements and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

## ***Stormwater Management System Components***

The Stormwater Management System is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, the design includes the following elements:

### *Non-Structural BMPs*

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project include but are not limited to:

- Temporary and Permanent mulching
- Temporary and Permanent grass cover
- Trees
- Shrubs and ground covers
- Miscellaneous landscape plantings
- Dust control
- Tree protection
- Topsoiling
- Sediment barriers
- Stabilized construction entrance
- Vegetated buffer area

### *Structural BMPs*

Structural BMPs are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to:

- Rain Garden
- Outlet Control Structures and Storm Drains

## ***Inspection and Maintenance Requirements***

The following summarizes the inspection and maintenance requirements for the various BMPs that may be found on this project.

1. **Grassed areas (until established):** After each rain event of 0.5" or more during a 24-hour period, inspect grassed areas for signs of disturbance, such as erosion. If damaged areas are discovered, immediately repair the damage. Repairs may include adding new topsoil, lime, seed, fertilizer and mulch.
2. **Plantings**: Planting and landscaping (trees, shrubs) shall be monitored bi-monthly during the first year to insure viability and vigorous growth. Replace dead or dying vegetation with new stock and make adjustments to the conditions that caused the dead or dying vegetation. During dryer times of the year, provide weekly watering or irrigation during the establishment period of the first year.

Make the necessary adjustments to ensure long-term health of the vegetated covers, i.e. provide more permanent mulch or compost or other means of protection.

3. **Vegetated buffer area:** Check for scour or sediment buildup in buffer area, at least annually. Replace any vegetation removed by scour or sediment buildup with similar vegetation.
4. **Rain Garden:** After installation of the rain garden, perform the following inspections on a monthly basis:

    **a.** Monitor for excessive or concentrated accumulations of debris, or excessive erosion below the various pipe inlets. Remove debris as required and replace or add inlet fabric strips or rip rap stones.
    **b.** Monitor the outflow for problems with erosion. Repair as required.
    **c.** After significant rainfalls, monitor rain garden surfaces for ponding of water. If water remains flooded over the surface 24 hours after a 1" rainfall, then investigate the cause, if not related to overflow blockage, then excavate and replace filter media.
    **d.** Monitor vegetation on rain garden and replace dead or dying vegetation as required.
    **e.** Monitor rain garden for rodent borrows and repair as required; remove persistent occupiers.
    **f.** Monitor side slopes of rain garden for damage or erosion—repair, as necessary.

5. **Outlet Control Structures and Storm Drains:** Monitor accumulation of debris in outlet control structures monthly or after significant rain events. Remove sediments when they accumulate within the yard drains and outlet pipe. During construction, maintain inlet protection until the site has been stabilized. Prior to the end of construction, inspect the drains and basins for accumulations and remove and clean by jet-vacuuming.

## ***Pollution Prevention***

The following pollution prevention activities shall be undertaken to minimize potential impacts on stormwater runoff quality. The Contractor is responsible for all activities during construction. The Owner is responsible thereafter.

### Spill Procedures

Any discharge of waste oil or other pollutant shall be reported immediately to the New Hampshire Department of Environmental Services (NHDES). The Contractor/Owner will be responsible for any incident of groundwater contamination resulting from the improper discharge of pollutants to the stormwater system, and may be required by NHDES to remediate incidents that may impact groundwater quality. If the property ownership is transferred, the new owner will be informed of the legal responsibilities associated with operation of the stormwater system, as indicated above.

### Sanitary Facilities

Sanitary facilities shall be provided during all phases of construction.

**Material Storage**

No on site trash facility is provided until homes are constructed. The contractors are required to remove trash from the site. Hazardous material storage is prohibited.

**Material Disposal**

All waste material, trash, sediment, and debris shall be removed from the site and disposed of in accordance with applicable local, state, and federal guidelines and regulations. Removed sediments shall be if necessary dewatered prior to disposal.

## ***Invasive Species***

Monitor the Stormwater Management System for signs of invasive species growth. If caught early, their eradication is much easier. The most likely places where invasions start is in wetter, disturbed soils or detention ponds. Species such as phragmites and purple loose-strife are common invaders in these wetter areas. If they are found, the owner shall refer to the fact-sheet created by the University of New Hampshire Cooperative Extension (or other source) or contact a wetlands scientist with experience in invasive species control to implement a plan of action for eradication. Measures that do not require the application of chemical herbicides should be the first line of defense.

*Figure 1: Lythrum salicaria, Purple Loosestrife. Photo by Liz West.*

*Figure 2: Phragmites australis. Photo by Le Loup Gris*

# RAIN GARDEN MAINTENANCE SHEET

| INSPECTION REQUIREMENTS | | |
|---|---|---|
| **ACTION TAKEN** | **FREQUENCY** | **MAINTENANCE REQUIREMENTS** |
| *-Inspect pond surface for the occurrence of sediment, trash, debris, or structural damage.* | Bi-Yearly and following major storm events | *-Remove sediments, trash, and debris, as necessary.*<br>*-Repair outlet structures and appurtenances, as necessary.* |
| *-Check to see if pond drains within 72 hours of rainfall.*<br>*-Check vegetation health.* | Annually | *-If system does not drain within 72 hours of a rainfall event, consult a qualified professional about restoration of function of the dry well.*<br>*-Vegetation should be maintained and pruned.*<br>*-Dead or diseased vegetation should be removed, as well as any invasive species.* |

| MAINTENANCE LOG | |
|---|---|
| **PROJECT NAME** | |
| **INSPECTOR NAME** | **INSPECTOR CONTACT INFO** |
| **DATE OF INSPECTION** | **REASON FOR INSPECTION**<br>☐LARGE STORM EVENT ☐PERIODIC CHECK-IN |
| **IS CORRECTIVE ACTION NEEDED?**<br>☐YES ☐NO | **DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE** |
| **DATE OF MAINTENANCE** | **PERFORMED BY** |
| **NOTES** | |

# CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

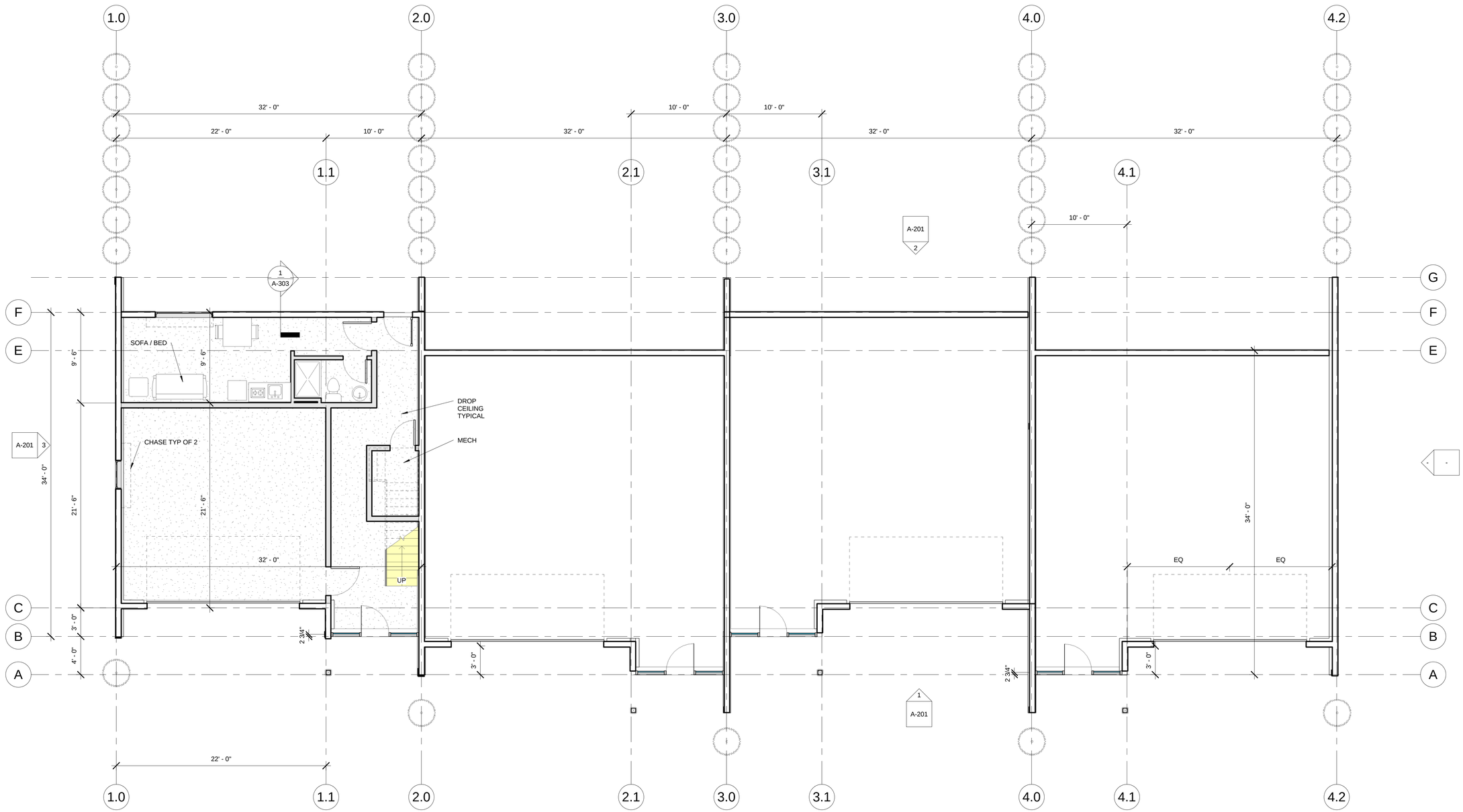
| INSPECTION REQUIREMENTS | | |
|---|---|---|
| **ACTION TAKEN** | **FREQUENCY** | **MAINTENANCE REQUIREMENTS** |
| *-Outlet Control Structures*<br>*-Drain Manholes*<br>*-Catch Basins* | Monthly for 1 year following construction, Every other Month thereafter | *Check for erosion or short-circuiting*<br>*Check for sediment accumulation*<br>*Check for floatable contaminants* |
| *-Drainage Pipes* | Monthly for 1 year following construction, 1 time per 2 years thereafter | *Check for sediment accumulation/clogging, or soiled runoff.*<br>*Check for erosion at outlets.* |

| MAINTENANCE LOG | |
|---|---|
| **PROJECT NAME** | |
| **INSPECTOR NAME** | **INSPECTOR CONTACT INFO** |
| **DATE OF INSPECTION** | **REASON FOR INSPECTION**<br>☐LARGE STORM EVENT ☐PERIODIC CHECK-IN |
| **IS CORRECTIVE ACTION NEEDED?**<br>☐YES ☐NO | **DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE** |
| **DATE OF MAINTENANCE** | **PERFORMED BY** |
| **NOTES** | |

## STABILIZED CONSTRUCTION ENTRANCE CONSTRUCTION MAINTENANCE SHEET

| INSPECTION REQUIREMENTS | | |
|---|---|---|
| **ACTION TAKEN** | **FREQUENCY** | **MAINTENANCE REQUIREMENTS** |
| ENTRANCE SURFACE<br>*-Check for sediment accumulation/clogging of stone* | After heavy rains, as necessary | *-Top dress pad with new stone.*<br>*-Replace stone completely if completely clogged.* |
| WASHING FACILITIES (if applicable)<br>*-Monitor Sediment Accumulation* | As often as necessary | *-Remove Sediments from traps.* |

| MAINTENANCE LOG | |
|---|---|
| **PROJECT NAME** | |
| **INSPECTOR NAME** | **INSPECTOR CONTACT INFO** |
| **DATE OF INSPECTION** | **REASON FOR INSPECTION**<br>☐LARGE STORM EVENT ☐PERIODIC CHECK-IN |
| **IS CORRECTIVE ACTION NEEDED?**<br>☐YES ☐NO | **DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE** |
| **DATE OF MAINTENANCE** | **PERFORMED BY** |
| **NOTES** | |




1 0.0 FLR
3/16" = 1'-0"

0' 4' 8' 16'

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PORTSMOUTH NH

CONSULTANTS

PROGRESS PRINT

NOT FOR CONSTRUCTION

PROJECT

1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

| REVISION SCHEDULE | | |
|---|---|---|
| No. | Date | Description |

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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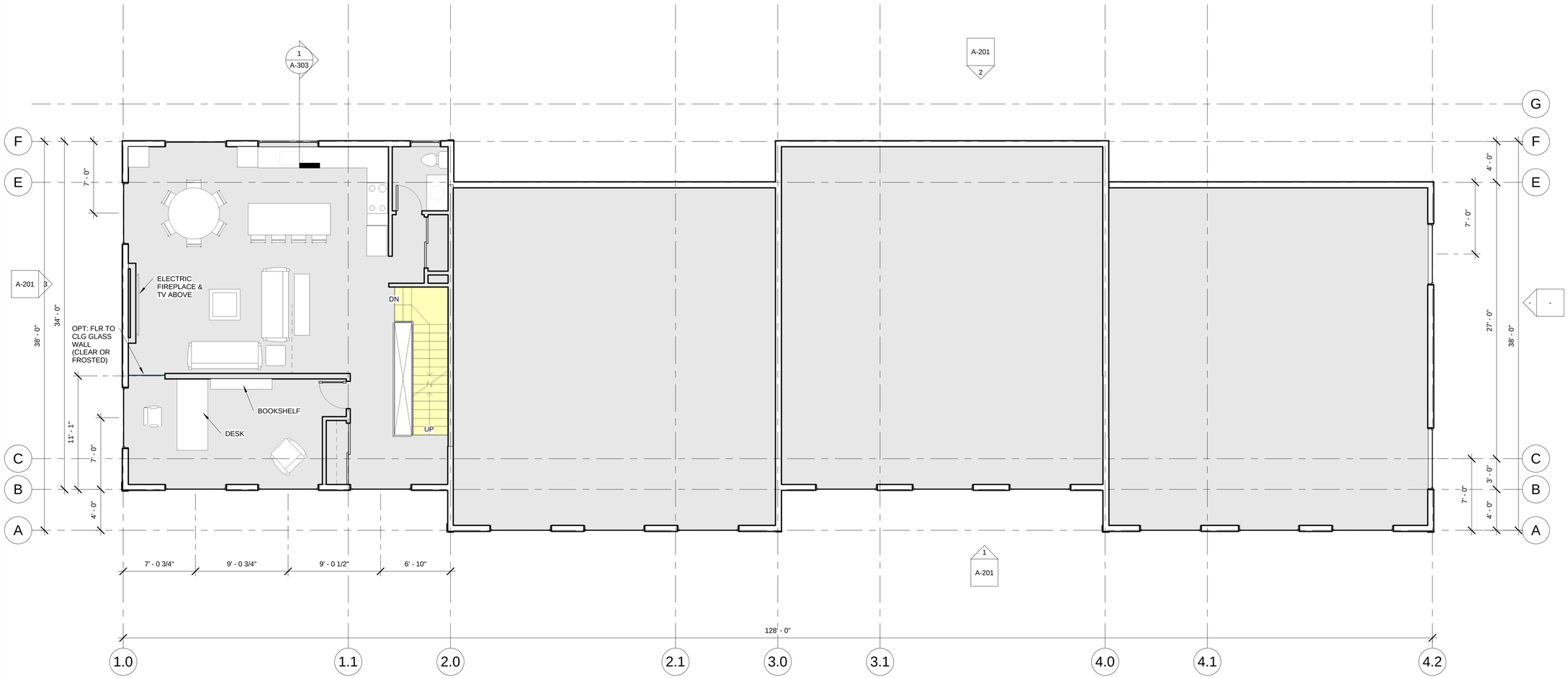
SHEET TITLE

# Ground Floor Plan

SHEET ISSUE DATE: 07/29/2023

A-101

SHEET 1 OF 8




1 1.0 FLR
3/16" = 1'-0"

0' 4' 8' 16'

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PROJECT

## 1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

| REVISION SCHEDULE | | |
|---|---|---|
| No. | Date | Description |

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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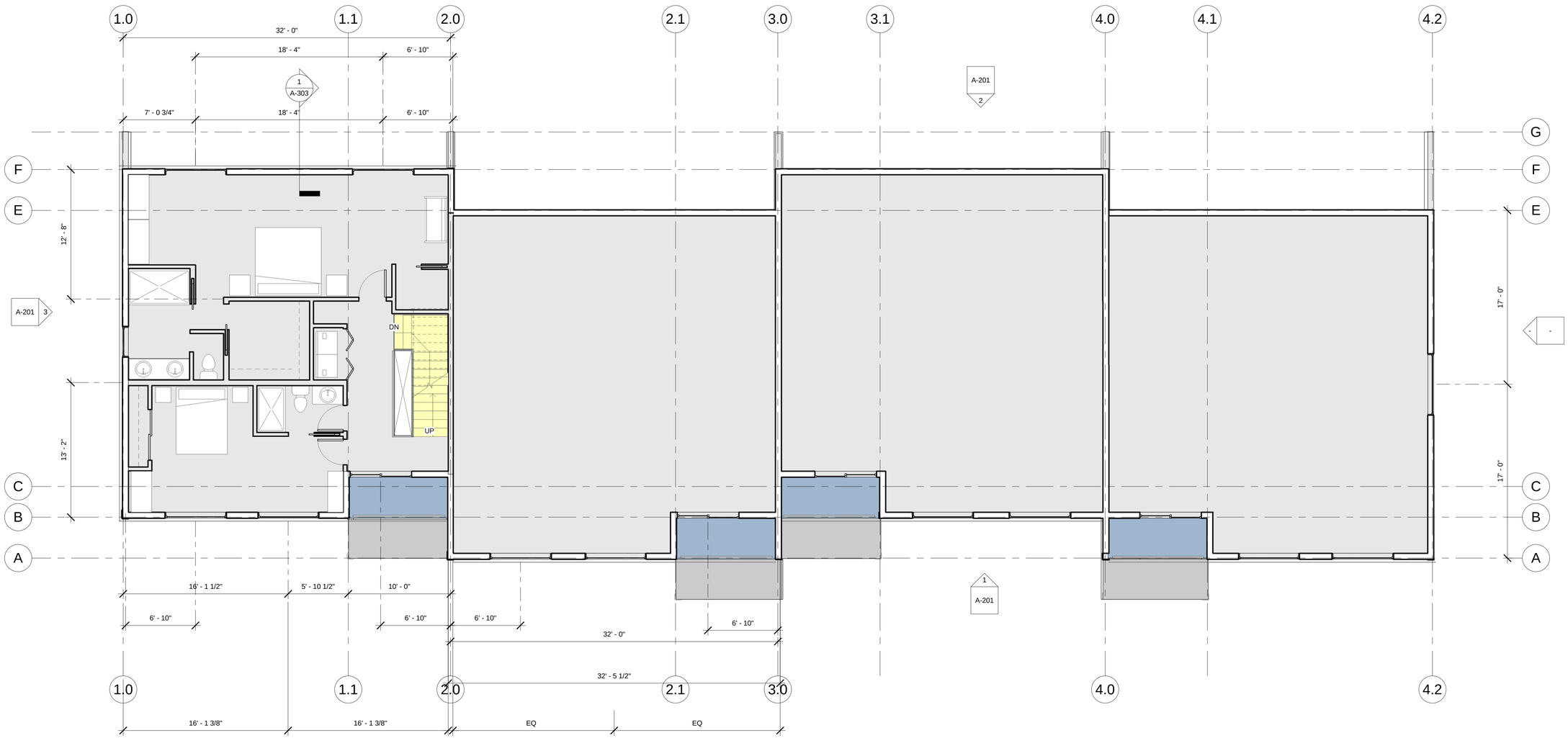
SHEET TITLE

## First Floor Plan

SHEET ISSUE DATE: 07/29/2023

# A-102

SHEET 2 OF 8




1 2.0 FLR
3/16" = 1'-0"

0' 4' 8' 16'

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PORTSMOUTH NH

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PROJECT

1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

| REVISION SCHEDULE | | |
|---|---|---|
| No. | Date | Description |

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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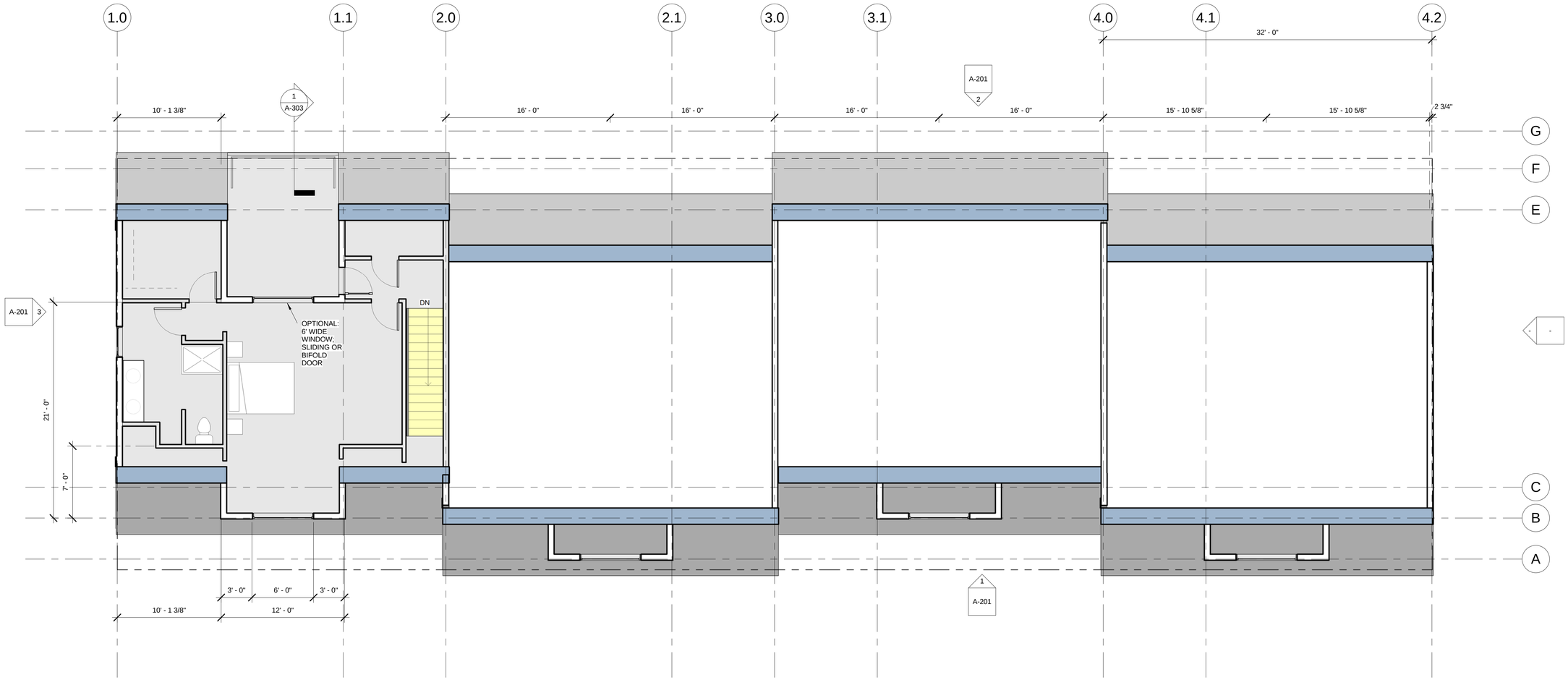
SHEET TITLE

Second Floor Plan

SHEET ISSUE DATE: 07/29/2023

A-103

SHEET 3 OF 8




1 3.0 FLR
3/16" = 1'-0"

0' 4' 8' 16'

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PROJECT

1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

REVISION SCHEDULE

| No. | Date | Description |
|---|---|---|

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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SHEET TITLE

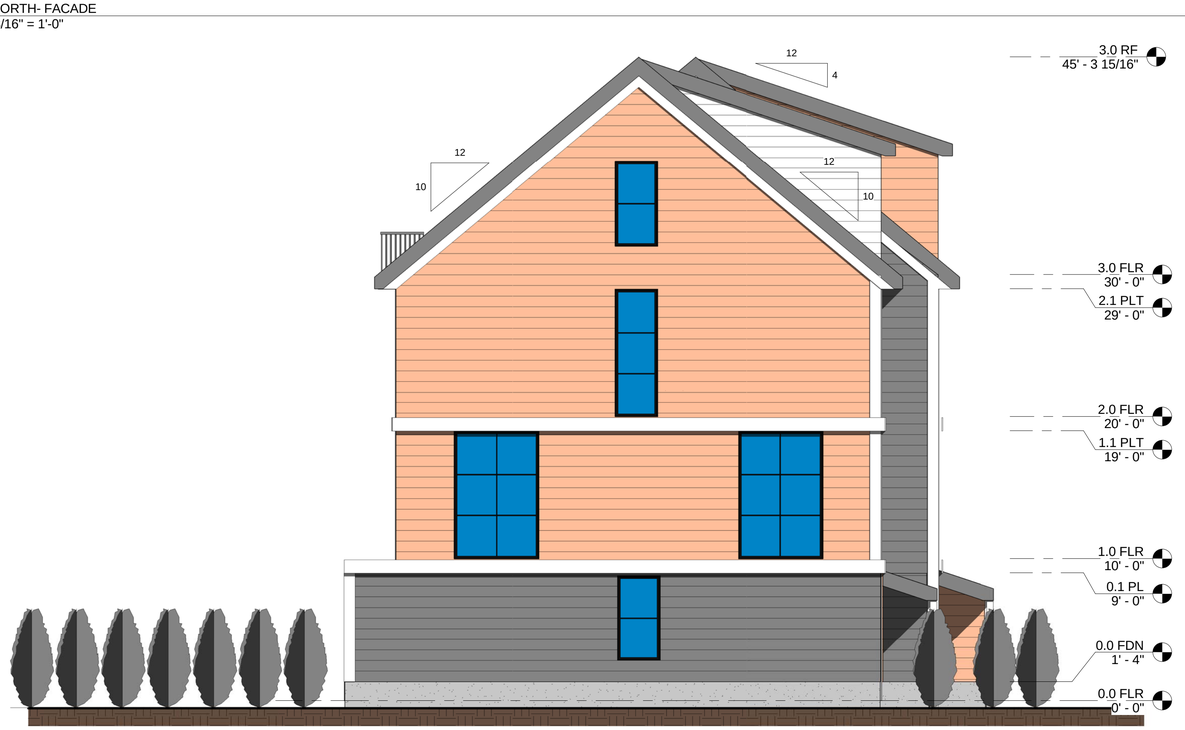
Third Floor Plan

SHEET ISSUE DATE: 07/29/2023

A-104

SHEET 4 OF 8

1 NORTH- FACADE
3/16" = 1'-0"




3 EAST
3/16" = 1'-0"

1
A-303

2 SOUTH
3/16" = 1'-0"

0' 4' 8' 16'

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PROJECT

1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

| REVISION SCHEDULE | | |
|---|---|---|
| No. | Date | Description |

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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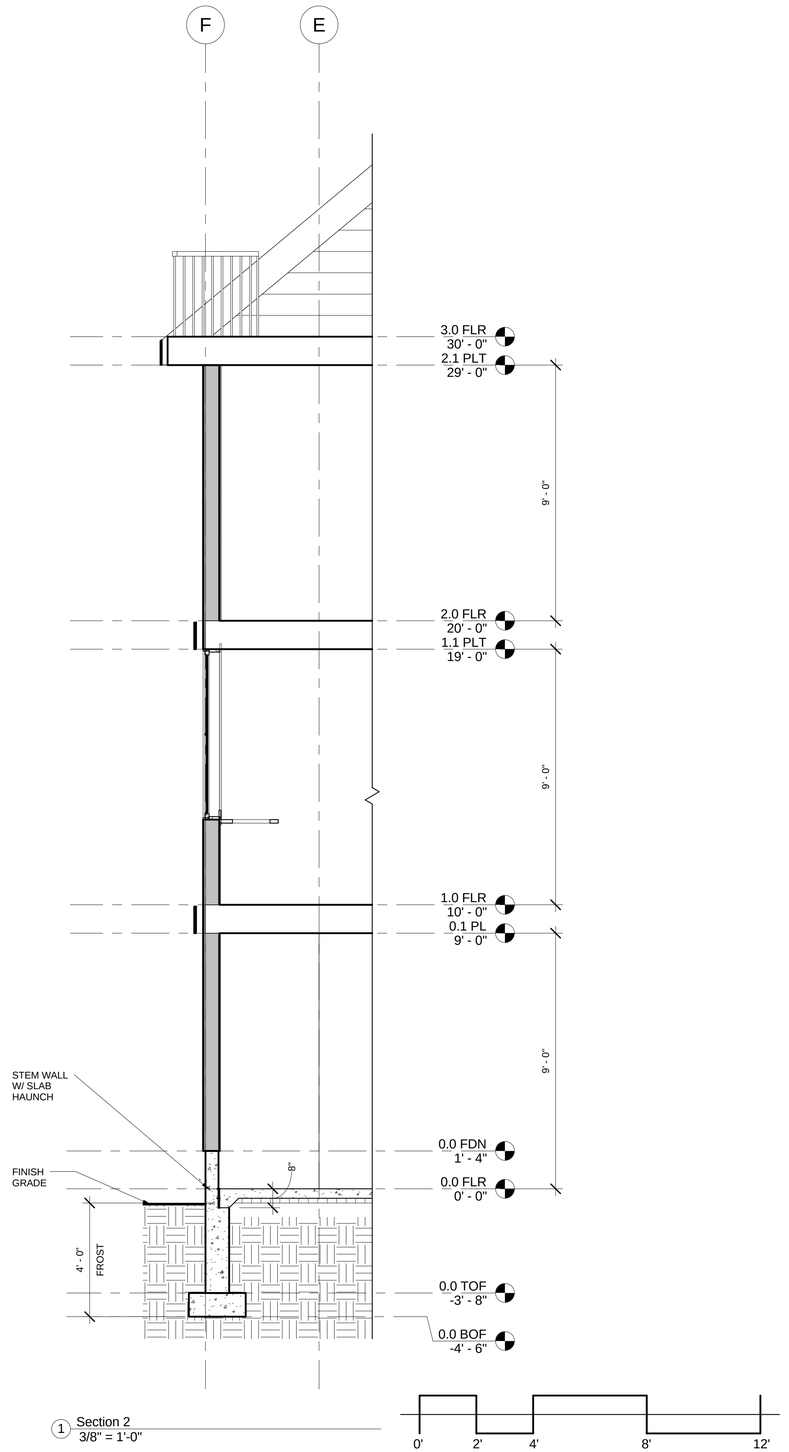
SHEET TITLE

Elevations

SHEET ISSUE DATE: 07/29/2023

A-201

SHEET 5 OF 8




1 Section 2
3/8" = 1'-0"

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1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

| REVISION SCHEDULE | | |
|---|---|---|
| No. | Date | Description |

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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SHEET TITLE

## Wall Sections

SHEET ISSUE DATE: 07/29/2023

A-303

SHEET 6 OF 8

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1 {3D}

0' 4' 8' 16'

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PROJECT

## 1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

| REVISION SCHEDULE | | |
|---|---|---|
| No. | Date | Description |

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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SHEET TITLE

## 3-D

SHEET ISSUE DATE: 07/29/2023

# A-904

SHEET 7 OF 8

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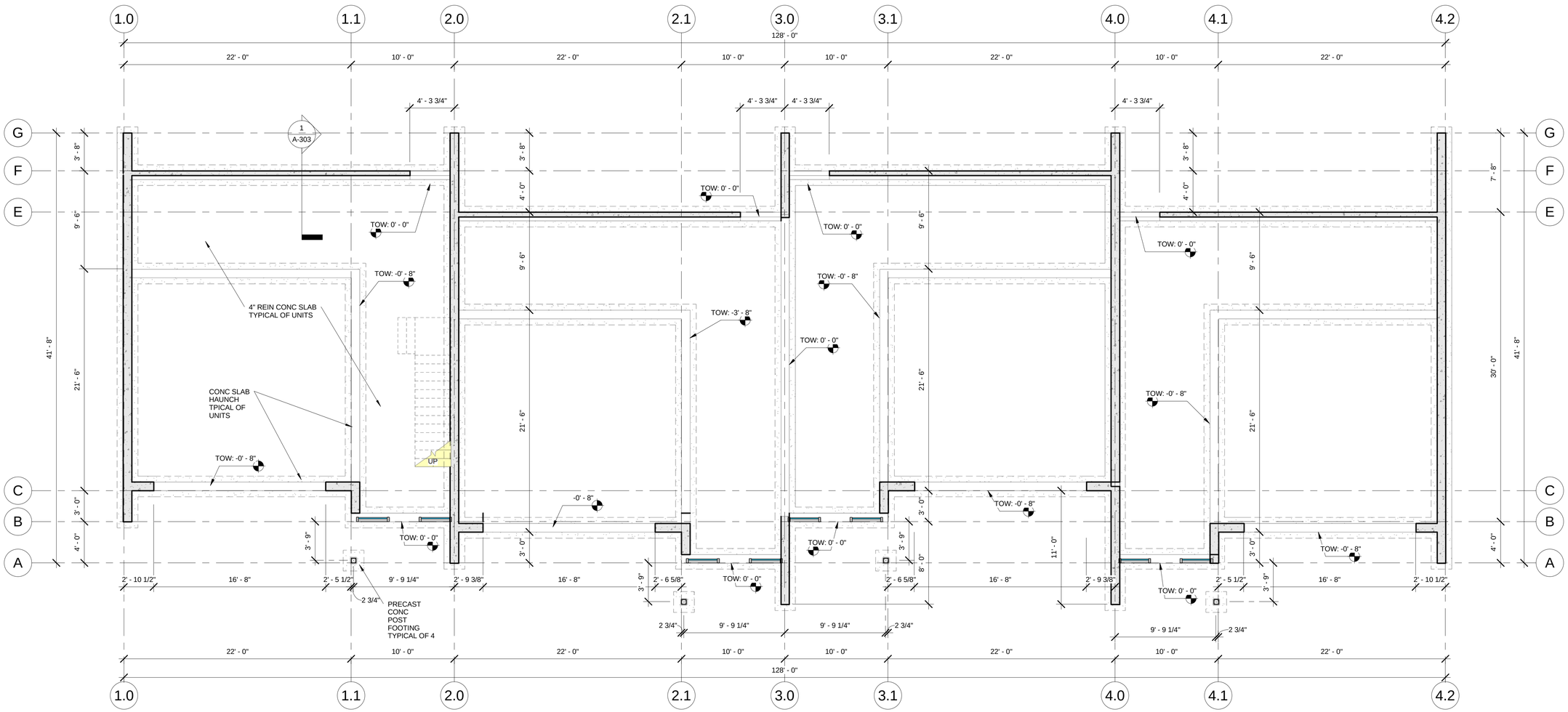


NOTE:
1. REINFORCED 10" THK CONC FDN W/ REIN. 10" X 24" CONT. FOOTING TYPICAL UON
2. TOF: -3'-2" , BOF: -4'-6" TYPICAL (SEE WALL SECTION)
3. TOW: 1'-4" TYPICAL (GRAY) , UNLESS OTHERWISE NOTED

1 0.0 FDN
3/16" = 1'-0"

0' 4' 8' 16'

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PROJECT

1155 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

| REVISION SCHEDULE | | |
|---|---|---|
| No. | Date | Description |

| | |
|---|---|
| Project Phase | SCHEMATIC |
| Proj Issue Date | N/A |
| Project No. | 2306 |

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SHEET TITLE

Foundation Plan

SHEET ISSUE DATE: 07/29/2023

S-101

SHEET 8 OF 8

# PROPOSED BUILDING REPLACEMENT
# BUILD AMERICA
# 1155 SAGAMORE AVENUE
## PORTSMOUTH NEW HAMPSHIRE
# SITE PERMIT PLANS

**PROJECT PERMITS:**
PORTSMOUTH SITE PLAN: PENDING

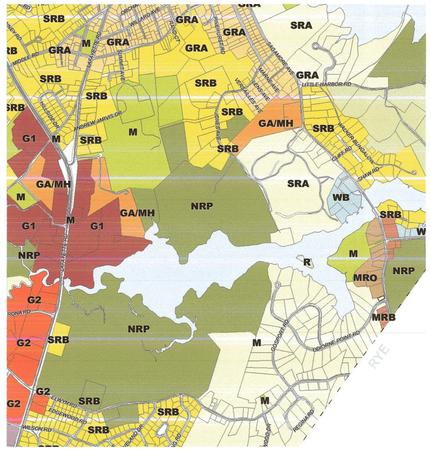
**OWNER:**
MICHAEL A. VALINSKI &
MAUREEN OAKMAN
1155 SAGAMORE AVENUE
PORTSMOUTH, NH 03802
TEL. (617) 877–6711

**APPLICANT:**
BUILD AMERICA
PO BOX 1664
PORTSMOUTH, NH 03802
TEL. (617) 877–6711

**CIVIL ENGINEER & LAND SURVEYOR:**
AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, NH 03801
TEL. (603) 430–9282

**ARCHITECT/DESIGNER:**
BUILD AMERICA
PO BOX 1664
PORTSMOUTH, NH 03802
TEL. (617) 877–6711

### PORTSMOUTH ZONING MAP




**Legend**

**Character Districts**
Character-Based Zoning Area
(Refer to Zoning Map Sheet 2 of 2 Character Districts Regulating Plan)

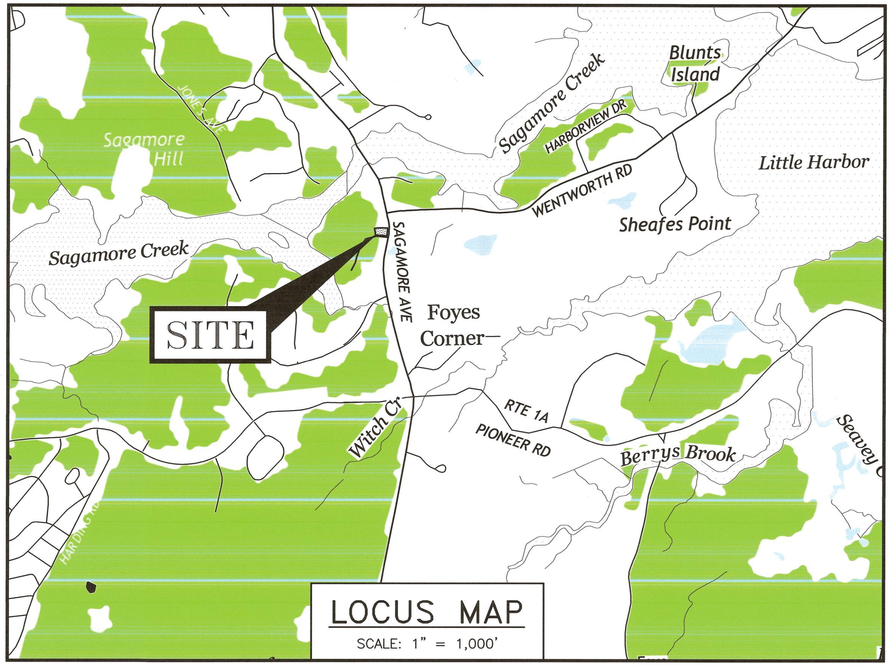
**Residential Districts**
- R Rural
- SRA Single Residence A
- SRB Single Residence B
- GRA General Residence A
- GRB General Residence B
- GRC General Residence C
- GA/MH Garden Apartment/Mobile Home Park

**Mixed Residential Districts**
- MRO Mixed Residential Office
- MRB Mixed Residential Business
- G1 Gateway Cooridor
- G2 Gateway Center

**Business Districts**
- GB General Business
- B Business
- WB Waterfront Business

**Industrial Districts**
- OR Office Research
- I Industrial
- WI Waterfront Industrial

PROJECT SITE:
TAX MAP 224, LOT 18




LOCUS MAP
SCALE: 1" = 1,000'

**LEGEND:**

| EXISTING | PROPOSED | |
|---|---|---|
| | | PROPERTY LINE |
| | | SETBACK |
| S | S | SEWER PIPE |
| SL | SL | SEWER LATERAL |
| G | G | GAS LINE |
| D | D | STORM DRAIN |
| W | W | WATER LINE |
| WS | WS | WATER SERVICE |
| | | UNDERGROUND ELECTRIC |
| | | OVERHEAD ELECTRIC/WIRES |
| FD | FD | FOUNDATION DRAIN |
| FM | FM | FORCED SEWER MAIN |
| | | EDGE OF PAVEMENT (EP) |
| | | WOODS / TREE LINE |
| 100 | 100 | CONTOUR |
| 97x3 | 98x0 | SPOT ELEVATION |
| | | UTILITY POLE |
| | | SIGNS |
| | | WALL MOUNTED EXTERIOR LIGHTS |
| GWE | GWE | METER (GAS, WATER, ELECTRIC) |
| | | TRANSFORMER ON CONCRETE PAD |
| | | ELECTRIC HANDHOLD |
| WSO | WSO | SHUT OFFS (WATER/GAS) |
| GV | GV | GATE VALVE |
| | HYD | HYDRANT |
| CB | CB | CATCH BASIN |
| S | SMH | SEWER MANHOLE |
| D | DMH | DRAIN MANHOLE |
| T | TMH | TELEPHONE MANHOLE |
| 14 | 14 | PARKING SPACE COUNT |
| PM | | PARKING METER |
| LSA | | LANDSCAPED AREA |
| TBD | TBD | TO BE DETERMINED |
| CI | CI | CAST IRON PIPE |
| COP | COP | COPPER PIPE |
| DI | DI | DUCTILE IRON PIPE |
| PVC | PVC | POLYVINYL CHLORIDE PIPE |
| RCP | RCP | REINFORCED CONCRETE PIPE |
| AC | – | ASBESTOS CEMENT PIPE |
| VC | VC | VITRIFIED CLAY PIPE |
| EP | EP | EDGE OF PAVEMENT |
| EL. | EL. | ELEVATION |
| FF | FF | FINISHED FLOOR |
| INV | INV | INVERT |
| S = | S = | SLOPE FT/FT |
| TBM | TBM | TEMPORARY BENCH MARK |
| | TBR | TO BE REMOVED |
| TYP | TYP | TYPICAL |
| W.W. | W.W | WINDOW WELL |
| | | PHOTO LOCATION |

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## INDEX OF SHEETS


| DWG No. | |
|---|---|
| C1 | EXISTING CONDITIONS & DEMOLITION PLAN |
| C2 | SITE PLAN |
| L1–L2 | LANDSCAPE PLAN |
| C3 | GRADING AND EROSION CONTROL PLAN |
| C4 | UTILITY PLAN |
| C5 | DRIVEWAY PROFILE PLAN |
| D1–D3 | DETAILS & EROSION CONTOL |


## UTILITY CONTACTS

**ELECTRIC:**
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 436–7708, Ext. 555.5678
ATTN: MICHAEL BUSBY, P.E. (MANAGER)

**NATURAL GAS:**
UNITIL
325 WEST ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 294–5144
ATTN: DAVE BEAULIEU

**CABLE:**
COMCAST
155 COMMERCE WAY
PORTSMOUTH, N.H. 03801
Tel. (603) 679–5695 (X1037)
ATTN: MIKE COLLINS

**SEWER & WATER:**
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427–1530
ATTN: JIM TOW

**COMMUNICATIONS:**
CONSOLIDATED
COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427–5525

**PORTSMOUTH APPROVAL CONDITIONS NOTE:**
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

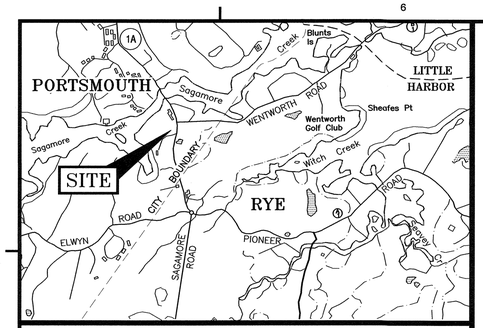
PROPOSED BUILDING REPLACEMENT
BUILD AMERICA
1155 SAGAMORE AVENUE
PORTSMOUTH, NH


AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM


PLAN SET SUBMITTAL DATE: 29 NOVEMBER 2023

5010314 | 417.01

P:\NH\5010314-Build America\417.01-1155 Sagamore Ave, Portsmouth-IRC\2023 Site Plan\Plans & Specs\Sheet417.01 Cover 2023.dwg, 11/29/2023 11:30:57 AM, Portsmouth Plotter Canon TX3000.pc3




LOCATION MAP SCALE: 1" = 2000'

## LEGEND: SEE COVER SHEET

ABUTTERS:

201/22
N/F
WENTWORTH-SAGAMORE LLC
1150 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
5629/0040

201/23
N/F
WENTWORTH-SAGAMORE LLC
1150 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
5689/0881

201/24
N/F
WENTWORTH-SAGAMORE LLC
1150 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
5689/0877

### LENGTH TABLE

| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | S13°36'10"W | 9.05' |

## DEMOLITION NOTES

A) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.

B) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.

C) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

D) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.

E) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT TRENCH IN AREAS WHERE PAVEMENT IS TO BE REMOVED.

F) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.

G) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

H) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE.

I) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.

J) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFELY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

K) ANY CONTAMINATED MATERIAL REMOVED DURING THE COURSE OF THE WORK WILL REQUIRE HANDLING IN ACCORDANCE WITH NHDES REGULATIONS. CONTRACTOR SHALL HAVE A HEALTH AND SAFETY PLAN IN PLACE, AND COMPLY WITH ALL APPLICABLE PERMITS, APPROVALS, AUTHORIZATIONS, AND REGULATIONS

### TEST PIT #1

Date: 9/22/23
Logged by: Steve D. Riker
ESHWT: NONE TO 56"
Observed Water: NONE
Restrictive layer: NONE TO 56"
REFUSAL: NONE TO 56"
Percolation rate: 10 MINS./INCH
Roots:

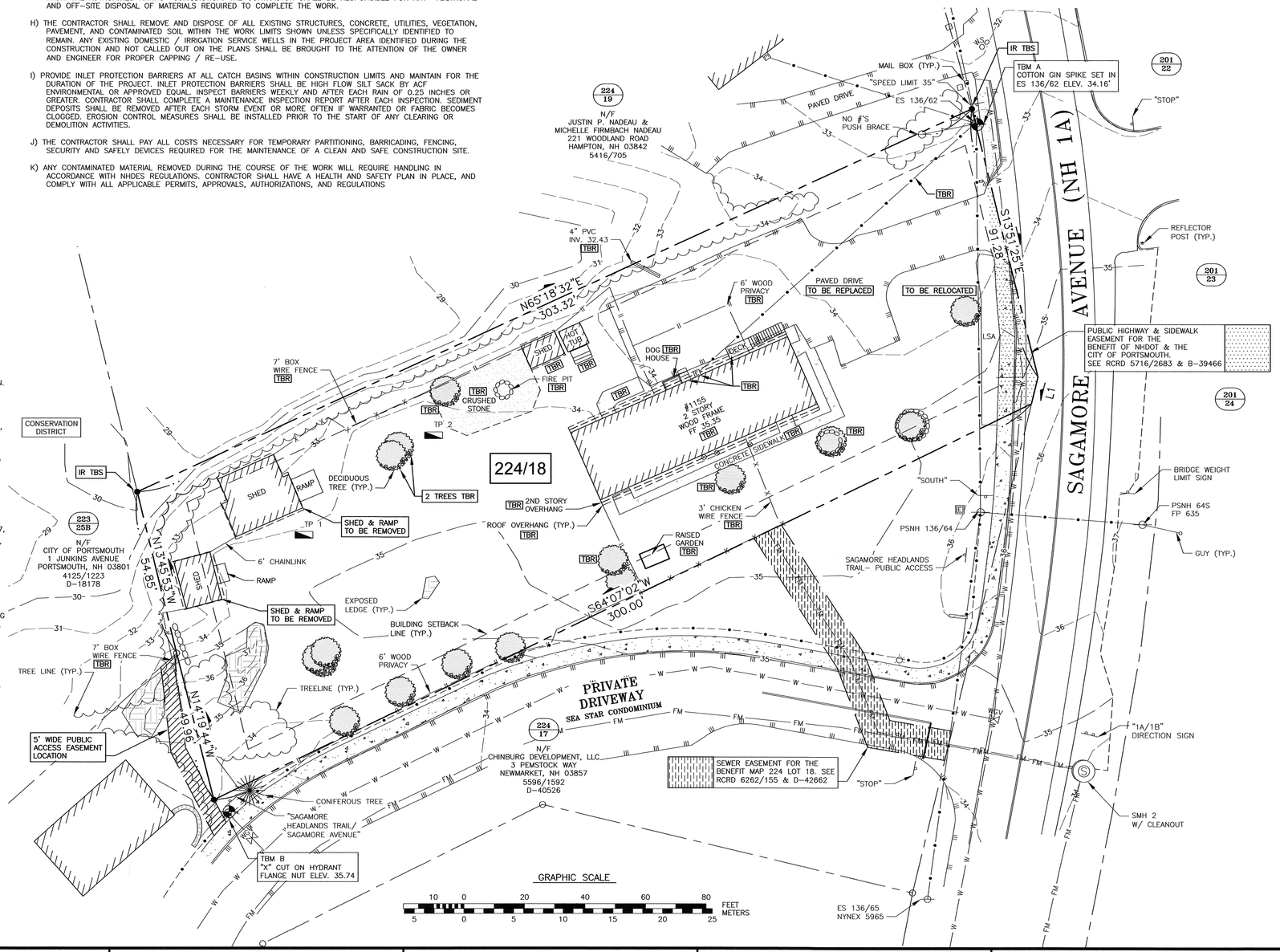
| DEPTH | DESCRIPTION |
|---|---|
| 0" – 56" | 10YR 3/2 FINE SANDY LOAM, GRANULAR, FRIABLE (FILL) |

### TEST PIT #2

Date: 9/22/23
Logged by: Steve D. Riker
ESHWT: NONE TO 70"
Observed Water: NONE
Restrictive layer: NONE TO 70"
REFUSAL: NONE TO 70"
Percolation rate: 10 MINS./INCH
Roots:

| DEPTH | DESCRIPTION |
|---|---|
| 0" – 58" | 10YR 3/2 FINE SANDY LOAM, GRANULAR, FRIABLE (FILL) |
| 58"–70" | 10YR 3/1 FINE SANDY LOAM, GRANULAR, FRIABLE (OLD O HORIZON) |

NORTH NAD83(2011)
N
GRID NHSPC




## PLAN REFERENCES:

1) PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS, SURVEYED BY E.M.HUNT, JUN. ENGR., SCALE: 1"=1000', DATED: MARCH 1908, RCRD PLAN# 00254.

2) PLAN OF LAND PORTSMOUTH, N.H. FOR NORMAN J. & JANET S. SMITH, SCALE: 1IN. = 100FT., DATED: NOV. 1964, PREPARE BY JOHN W. DURGIN CIVIL ENGINEERS, RCRD PLAN# 1549.

3) BOUNDARY LINE CHANGE LODGE 444 LOYAL ORDER OF MOOSE AND ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE, SCALE: 1" = 50', DATED MAY 1984, PREPARED BY K.E.MOORE & B.G.STAPLES LAND SURVEYORS, RCRD D-13349.

4) SUBDIVISION OF LAND PORTSMOUTH & RYE, N.H. FOR R & S TRUST, SCALE: 1" = 100', DATED: DEC. 13, 1984, PREPARED BY JOHN W. DURGIN ASSOCIATES, INC., RCRD D-13415.

5) SUBDIVISION OF LAND PORTSMOUTH, N.H. FOR STUART SHAINES & ROBERT SHAINES, SCALE: 1" = 40', DATED JAN. 15, 1988, PREPARED BY DURGIN SCHOFIELD ASSOCIATES, RCRD D-18178.

6) STANDARD BOUNDARY SURVEY & PROPOSED EASEMENT PLAN TAX MAP 224 LOT 17, OWNER: CHINBURG DEVELOPMENT, LLC, LAND LOCATED AT: 1163 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: 1" = 50', DATED: JANUARY 2015, RCRD D-39476

7) STATE HIGHWAY EASEMENT PLAN TAX MAP 224 LOT 18, OWNERS: MICHAEL A. VALINSKI & MAUREEN OAKMAN, 1155 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: 1" = 20', DATED JANUARY 2016, RCRD B-39466.

8) SEA STAR COVE CONDOMINIUM SITE PLAN TAX MAP 224 LOT 17, OWNER; CHINBURG DEVELOPMENT, LLC, LAND LOCATED AT 1163 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: 1" = 50', DATED: APRIL 2016, RCRD D-40526

9) SEWER EASEMENT PLAN SEA STAR COVE CONDOMINIUM TAX MAP 224 LOT 17, OWNER OF RECORD / DECLARANT: CHINBURG DEVELOPMENT, LLC, TO BENEFIT MICHAEL A VALINSKI & MAUREEN OAKMAN, LOCATED AT 1163 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: AS SHOWN, DATED: MARCH 2021, RCRD D-42662.

"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

10.16.23
JOHN R. CHAGNON, LLS #738 DATE

## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 224 AS LOT 18.

2) OWNERS OF RECORD:
MICHAEL A. VALINSKI &
MAUREEN OAKMAN
1155 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
3991/781

APPLICANT:
BUILD AMERICA
PO BOX 1664
PORTSMOUTH, NH 03802

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0286F. EFFECTIVE JANUARY 29, 2021.

4) EXISTING LOT AREA:
30,264 S.F.
0.6948 ACRES

5) PARCEL IS LOCATED IN MIXED RESIDENTIAL OFFICE (MRO) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

| | | |
|---|---|---|
| MIN. LOT AREA: | | 7,500 S.F. |
| FRONTAGE: | | 100 FEET |
| SETBACKS: | FRONT | 5 FEET |
| | SIDE | 10 FEET |
| | REAR | 15 FEET |
| MAXIMUM STRUCTURE HEIGHT: | | 40 FEET<br>SLOPED ROOF<br>30 FEET<br>FLAT ROOF |
| MAXIMUM BUILDING COVERAGE: | | 40% |
| MINIMUM OPEN SPACE: | | 25% |

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITION ON ASSESSOR'S MAP 224 LOT 18 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.

| No. | DATE | DESCRIPTION | BY | CHK. |
|---|---|---|---|---|
| 1 | 10/16/23 | ISSUED TO TAC | SJR | JRC |
| 0 | 9/05/23 | ISSUED FOR APPROVAL | CSA | JRC |

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AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282


PROJECT
BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE
EXISTING CONDITIONS
& DEMOLITION PLAN

STATE OF NEW HAMPSHIRE No. 738 JOHN R. CHAGNON LICENSED LAND SURVEYOR

| DATE | SCALE |
|---|---|
| JULY 2023 | 1" = 20' |
| DRAWN BY: CSA | DESIGNED BY: JRC |
| CHECKED BY: JRC | |
| PROJECT No.: 5010314.417.01 | FIELD BOOK & PAGE: FB 450 PG 1 |

SHEET
SHEET 1 C1

P:\NH\5010314-Build_America\417.01-1155 Sagamore Ave, Portsmouth-JRC\2023 Site Plan\Plans & Specs\Site\417.01-5010314-SITE 2023.dwg, Mon Oct 23 09:04:21 2023, Portsmouth Plotter Canon iTX3000.pc3

LEGEND: SEE COVER SHEET

## IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

| STRUCTURE | PRE-CONSTRUCTION IMPERVIOUS (S.F.) | POST-CONSTRUCTION IMPERVIOUS (S.F.) |
|---|---|---|
| MAIN STRUCTURE | 1,926 | 4,126 |
| PORCHES | 0 | 152 |
| SHEDS | 742 | 0 |
| DECKS, STAIRS & RAMPS | 193 | 0 |
| PRIVACY WALL | 0 | 10 |
| HOT TUB | 56 | 0 |
| CONCRETE/WALKWAYS | 510 | 0 |
| PAVEMENT | 3,693 | 6,843 |
| CURB | 0 | 71 |
| CRUSHED STONE | 637 | 0 |
| PATIOS | 0 | 720 |
| | | |
| TOTAL | 7757 | 11922 |
| LOT SIZE | 30,264 | 30,264 |
| % LOT COVERAGE | 25.6% | 39.4% |

## CONDITIONS OF APPROVAL:

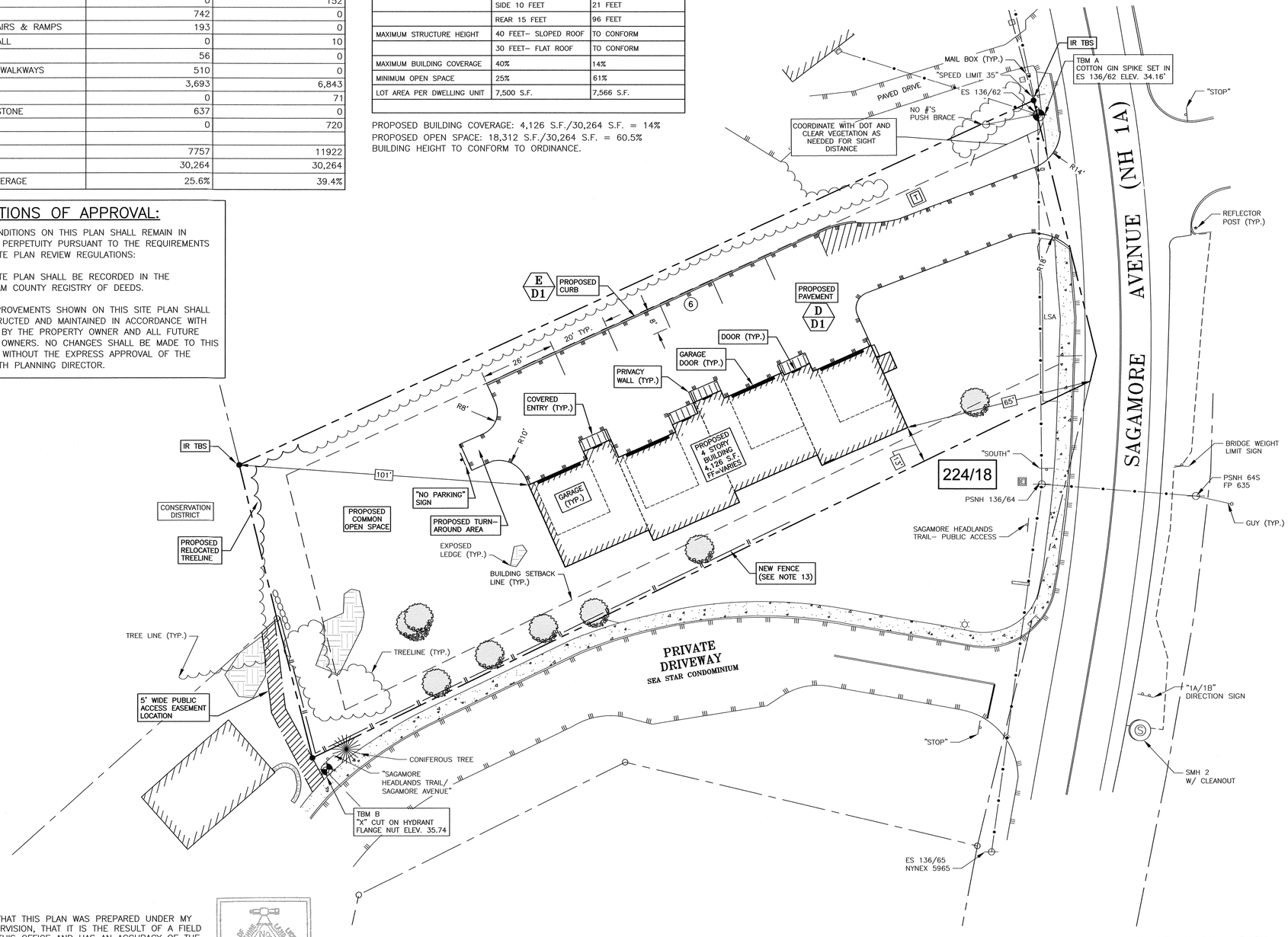
1. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS:

2. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

3. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

| ZONING DATA DIMENSIONAL REQUIREMENTS | REQUIRED | PROPOSED |
|---|---|---|
| MIN. LOT AREA | 7,500 S.F. | 30,264 S.F. |
| FRONTAGE | 100 FEET | 100.33 FEET |
| SETBACKS | FRONT 5 FEET | 67 FEET |
| | SIDE 10 FEET | 21 FEET |
| | REAR 15 FEET | 96 FEET |
| MAXIMUM STRUCTURE HEIGHT | 40 FEET- SLOPED ROOF | TO CONFORM |
| | 30 FEET- FLAT ROOF | TO CONFORM |
| MAXIMUM BUILDING COVERAGE | 40% | 14% |
| MINIMUM OPEN SPACE | 25% | 61% |
| LOT AREA PER DWELLING UNIT | 7,500 S.F. | 7,566 S.F. |
| | | |

PROPOSED BUILDING COVERAGE: 4,126 S.F./30,264 S.F. = 14%
PROPOSED OPEN SPACE: 18,312 S.F./30,264 S.F. = 60.5%
BUILDING HEIGHT TO CONFORM TO ORDINANCE.




GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

11.29.23
JOHN R. CHAGNON, LLS #738 DATE

STATE OF NEW HAMPSHIRE No. 738 JOHN R. CHAGNON LICENSED LAND SURVEYOR SIGNATURE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 224 AS LOT 18.

2) OWNERS OF RECORD:
MICHAEL A. VALINSKI &
MAUREEN OAKMAN
1155 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
3991/781

APPLICANT:
BUILD AMERICA
PO BOX 1664
PORTSMOUTH, NH 03802

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0286F. EFFECTIVE JANUARY 29, 2021.

4) EXISTING LOT AREA:
30,264 S.F.
0.6948 ACRES

5) PARCEL IS LOCATED IN MIXED RESIDENTIAL OFFICE (MRO) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

| | | |
|---|---|---|
| MIN. LOT AREA: | | 7,500 S.F. |
| FRONTAGE: | | 100 FEET |
| SETBACKS: | FRONT | 5 FEET |
| | SIDE | 10 FEET |
| | REAR | 15 FEET |
| MAXIMUM STRUCTURE HEIGHT: | | 40 FEET SLOPED ROOF<br>30 FEET FLAT ROOF |
| MAXIMUM BUILDING COVERAGE: | | 40% |
| MINIMUM OPEN SPACE: | | 25% |

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE STRUCTURE REPLACEMENT ON ASSESSOR'S MAP 224 LOT 18 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.

9) TRASH PICKUP TO BE CURBSIDE.

10) REQUIRED PARKING:
1.3 PER UNIT X 4 = 6
PROVIDED: 10

11) PROPOSAL IS TO CREATE A 4 UNIT RESIDENTIAL CONDOMINIUM ON THE PROPERTY.

12) SEE LANDSCAPING PLAN L1 FOR SITE LANDSCAPING & DETAILS.

13) ABUTTING PROPERTY OWNERS REQUEST FOR NEW FENCING WILL BE THE SUBJECT OF PRIVATE POST PLANNING BOARD NEGOTIATIONS.

| No. | DATE | DESCRIPTION | BY | CHK |
|---|---|---|---|---|
| 3 | 11/29/23 | NOTE 13, DOT NOTE | DJT | JRC |
| 2 | 11/7/23 | TAC COMMENTS | DJT | JRC |
| 1 | 10/16/23 | ISSUED TO TAC | SJR | JRC |
| 0 | 9/5/23 | ISSUED FOR APPROVAL | CSA | JRC |

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A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282


PROJECT
BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE
SITE PLAN

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 738 LICENSED PROFESSIONAL ENGINEER

| | |
|---|---|
| DATE: AUGUST 2023 | SCALE: 1" = 20' |
| DRAWN BY: OMS | DESIGNED BY: JRC / CHECKED BY: JRC |
| PROJECT No.: 5010314.417.01 | FIELD BOOK & PAGE: FB 450 PG 1 |
| SHEET: SHEET 2 | C2 |

R:\5010314-Build_Amr\dwg\417.01-1155 Sagamore Ave, Portsmouth--(RC)\2023 Site Plan\Plans & Specs\SPA417_01-5010314.STE 2023.dwg, 11/29/2023 12:47:18 PM, Portsmouth Printer Canon-TS9500Series.pc3

## Plant List - Trees and Shrubs

| ID | Qty | Botanical Name | Common Name | Scheduled Size | Size at Maturity | Growth Habits | Urban Tolerance | Planting Requirements |
|---|---|---|---|---|---|---|---|---|
| ASV | 1 | Acer rubrum 'Sun Valley' | Sun Valley Maple | 3" Cal. | Height | Growth Habit | Urban, Salt Tolerant | Moist to Well-drained, Full sun to Partial Shade |
| CCF | 1 | Cercis canadensis 'Forest Pansy' | Forest Pansy Redbud | 3" Cal. | 15 - 35 ft. | Round | Urban, Drought Tolerant | Moist to Well-drained, Full sun to Partial Shade |
| CFF | 3 | Carpinus betulus 'Frans Fontaine' | Frans Fontaine Hornbeam | 1 1/2-2" Cal. | 20-30' | Oval | Urban, Drought Tolerant, Disease Resistant | Moist to Well-drained, Full sun to Partial Shade |
| ICC | 2 | Ilex crenata 'Compacta' | Compact Japanese Holly | 4-5' | Height | Growth Habit | Tolerances | Soil Range |
| JES | 14 | Juniperus virginiana 'Emerald Sentinel' | Emerald Sentinel Red Cedar | 6' HT | 15-20' | Upright, Pyramidal | Urban Tolerant | Moist to Well-drained, Full sun |
| JHC | 12 | Juniperus chinensis 'Hetzi Columnaris' | Columnar Hetzi Juniper | 6' HT | 15' | Upright, Pyramidal | Urban, Drought Tolerant | Well-drained, Full sun |
| NS | 6 | Nyssa sylvetica | Black Tupelo | 1 1/2 -2" Cal. | 30-40' | Pyramidal | Urban Tolerant | Moist to Well-drained, Full sun to Partial Shade |
| TJG | 9 | Thuja plicata 'Junior Giant' | Junior Giant Western Arborvitae | 6' Ht. | 15-20' | Upright, Pyramidal | Urban Tolerant | Well-drained, Full sun |
| UAP | 2 | Ulmus americana 'Princeton' | Princeton Elm | 1 1/2-2" Cal. | 60' | Vase | Urban, Salt Tolerant | Moist to Well-drained, Full sun |

## Plant List - Perennials

| ID | Qty | Botanical Name | Common Name | Scheduled Size |
|---|---|---|---|---|
| AMT | 17 | Amsonia tabernaemontana | Blue Star Flower | 1 Gal. |
| AOS | 48 | Aster oblongifolius 'October Skies' | Aromatic Aster | 2 QT |
| GM | 25 | Geranium macrorrhizum 'Bevan's Variety' | Cranesbill | 2 QT |
| HS | 49 | Hemerocallis 'Stella de Oro' | Stella de Oro Daylily | 2 QT |

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Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

### Rain Garden Mix - ERNMX-180

| | Botanical Name | Common Name |
|---|---|---|
| 29.50 % | *Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype* | Little Bluestem, Fort Indiantown Gap-PA Ecotype |
| 20.00 % | *Elymus virginicus, Madison-NY Ecotype* | Virginia Wildrye, Madison-NY Ecotype |
| 7.50 % | *Echinacea purpurea* | Purple Coneflower |
| 7.00 % | *Carex vulpinoidea, PA Ecotype* | Fox Sedge, PA Ecotype |
| 5.80 % | *Panicum rigidulum, PA Ecotype* | Redtop Panicgrass, PA Ecotype |
| 5.00 % | *Chasmanthium latifolium, WV Ecotype* | River Oats, WV Ecotype |
| 3.00 % | *Chamaecrista fasciculata, PA Ecotype* | Partridge Pea, PA Ecotype |
| 3.00 % | *Coreopsis lanceolata* | Lanceleaf Coreopsis |
| 3.00 % | *Rudbeckia hirta* | Blackeyed Susan |
| 2.10 % | *Heliopsis helianthoides, PA Ecotype* | Oxeye Sunflower, PA Ecotype |
| 2.00 % | *Panicum clandestinum, Tioga* | Deertongue, Tioga |
| 2.00 % | *Verbena hastata, PA Ecotype* | Blue Vervain, PA Ecotype |
| 1.50 % | *Asclepias incarnata, PA Ecotype* | Swamp Milkweed, PA Ecotype |
| 1.00 % | *Carex scoparia, PA Ecotype* | Blunt Broom Sedge, PA Ecotype |
| 1.00 % | *Penstemon digitalis, PA Ecotype* | Tall White Beardtongue, PA Ecotype |
| 1.00 % | *Senna hebecarpa, VA & WV Ecotype* | Wild Senna, VA & WV Ecotype |
| 0.90 % | *Pycnanthemum tenuifolium* | Narrowleaf Mountainmint |
| 0.90 % | *Zizia aurea, PA Ecotype* | Golden Alexanders, PA Ecotype |
| 0.50 % | *Baptisia australis, Southern WV Ecotype* | Blue False Indigo, Southern WV Ecotype |
| 0.50 % | *Juncus effusus* | Soft Rush |
| 0.50 % | *Juncus tenuis, PA Ecotype* | Path Rush, PA Ecotype |
| 0.50 % | *Vernonia noveboracensis, PA Ecotype* | New York Ironweed, PA Ecotype |
| 0.40 % | *Monarda fistulosa, Fort Indiantown Gap-PA Ecotype* | Wild Bergamot, Fort Indiantown Gap-PA Ecotype |
| 0.30 % | *Aster novae-angliae, PA Ecotype* | New England Aster, PA Ecotype |
| 0.20 % | *Aster lanceolatus* | Lance Leaved Aster |
| 0.20 % | *Aster prenanthoides, PA Ecotype* | Zigzag Aster, PA Ecotype |
| 0.20 % | *Solidago nemoralis, PA Ecotype* | Gray Goldenrod, PA Ecotype |
| 0.10 % | *Aster lateriflorus* | Calico Aster |
| 0.10 % | *Aster pilosus, PA Ecotype* | Heath Aster, PA Ecotype |
| 0.10 % | *Eupatorium perfoliatum, PA Ecotype* | Boneset, PA Ecotype |
| 0.10 % | *Mimulus ringens, PA Ecotype* | Square Stemmed Monkeyflower, PA Ecotype |
| 0.10 % | *Solidago rugosa, PA Ecotype* | Wrinkleleaf Goldenrod, PA Ecotype |

**100.00 %**

**Seeding Rate:** 20 lb per acre with a cover crop. For sites that drain within 24 hours of a rain event use one of the following cover crops:Oats (1 Jan to 31 Jul; 30 lbs/acre), Japanese Millet (1 May to 31 Aug; 10 lbs/acre), or grain rye (1 Aug to 31 Dec; 30 lbs/acre).

Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial; Stormwater Management; Uplands & Meadows

The native perennial forbs and grasses provide food and cover for rain garden biodiversity. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

ERNST SEEDS

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8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

### PA Coastal Plain Province UPL Meadow Mix - ERNMX-270-1

| | Botanical Name | Common Name |
|---|---|---|
| 62.10 % | *Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype* | Little Bluestem, Fort Indiantown Gap-PA Ecotype |
| 20.00 % | *Elymus virginicus, Madison-NY Ecotype* | Virginia Wildrye, Madison-NY Ecotype |
| 3.00 % | *Chamaecrista fasciculata, PA Ecotype* | Partridge Pea, PA Ecotype |
| 2.60 % | *Penstemon digitalis, PA Ecotype* | Tall White Beardtongue, PA Ecotype |
| 2.50 % | *Heliopsis helianthoides, PA Ecotype* | Oxeye Sunflower, PA Ecotype |
| 2.00 % | *Rudbeckia triloba, WV Ecotype* | Browneyed Susan, WV Ecotype |
| 2.00 % | *Senna hebecarpa, VA & WV Ecotype* | Wild Senna, VA & WV Ecotype |
| 1.00 % | *Lespedeza capitata, RI Ecotype* | Roundhead Lespedeza, RI Ecotype |
| 0.90 % | *Aster lateriflorus* | Calico Aster |
| 0.90 % | *Aster novae-angliae, PA Ecotype* | New England Aster, PA Ecotype |
| 0.50 % | *Pycnanthemum tenuifolium* | Narrowleaf Mountainmint |
| 0.40 % | *Monarda fistulosa, Fort Indiantown Gap-PA Ecotype* | Wild Bergamot, Fort Indiantown Gap-PA Ecotype |
| 0.40 % | *Solidago nemoralis, PA Ecotype* | Gray Goldenrod, PA Ecotype |
| 0.30 % | *Asclepias syriaca, PA Ecotype* | Common Milkweed, PA Ecotype |
| 0.30 % | *Oenothera fruticosa var. fruticosa* | Sundrops |
| 0.30 % | *Penstemon laevigatus, PA Ecotype* | Appalachian Beardtongue, PA Ecotype |
| 0.30 % | *Tradescantia virginiana, Southeastern PA/Northern VA* | Virginia Spiderwort, Southeastern PA/Northern VA blend |
| 0.20 % | *Aster pilosus, PA Ecotype* | Heath Aster, PA Ecotype |
| 0.20 % | *Solidago juncea, PA Ecotype* | Early Goldenrod, PA Ecotype |
| 0.10 % | *Solidago odora, PA Ecotype* | Licorice Scented Goldenrod, PA Ecotype |

**100.00 %**

**Seeding Rate:** 20 lbs/acre with 30 lbs/acre of a cover crop. For a cover crop use either grain oats (1 Jan to 31 Jul) or grain rye (1 Aug to 31 Dec).

Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial; Pollinator Favorites; Uplands & Meadows

Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

ERNST SEEDS

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Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

### 5311 Conservation Mix - ERNMX-114

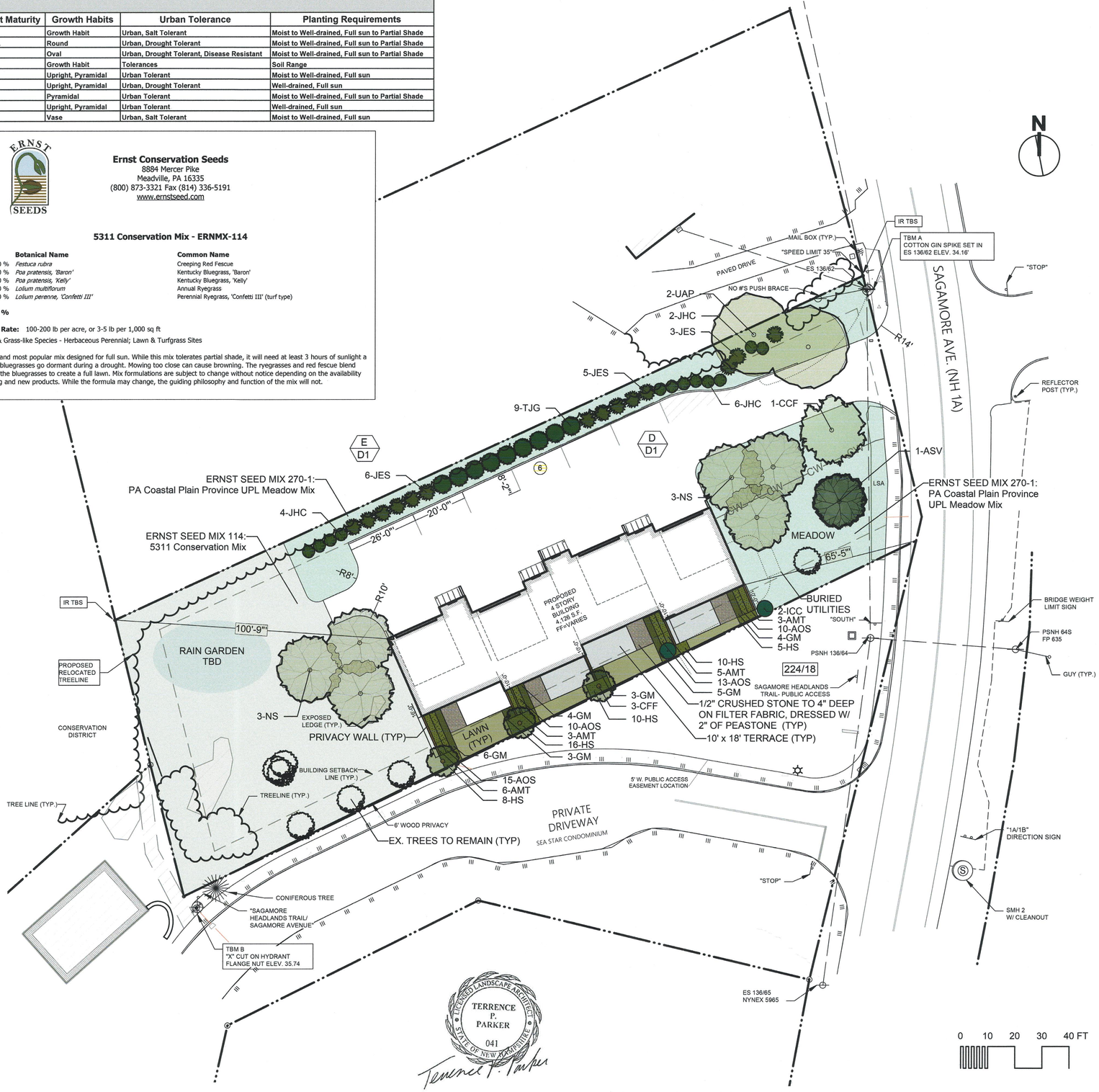
| | Botanical Name | Common Name |
|---|---|---|
| 30.00 % | *Festuca rubra* | Creeping Red Fescue |
| 25.00 % | *Poa pratensis, 'Baron'* | Kentucky Bluegrass, 'Baron' |
| 25.00 % | *Poa pratensis, 'Kelly'* | Kentucky Bluegrass, 'Kelly' |
| 10.00 % | *Lolium multiflorum* | Annual Ryegrass |
| 10.00 % | *Lolium perenne, 'Confetti III'* | Perennial Ryegrass, 'Confetti III' (turf type) |

**100.00 %**

**Seeding Rate:** 100-200 lb per acre, or 3-5 lb per 1,000 sq ft

Grasses & Grass-like Species - Herbaceous Perennial; Lawn & Turfgrass Sites

Our best and most popular mix designed for full sun. While this mix tolerates partial shade, it will need at least 3 hours of sunlight a day. The bluegrasses go dormant during a drought. Mowing too close can cause browning. The ryegrasses and red fescue blend well with the bluegrasses to create a full lawn. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.




LICENSED LANDSCAPE ARCHITECT
TERRENCE P. PARKER
041
STATE OF NEW HAMPSHIRE

Terrence P. Parker

PLEASE NOTE: THIS SHEET IS SCALED FOR 22 BY 34 PAPER, DO NOT REDUCE OR ENLARGE. 1155sagamore101223.vwx


terra firma
landscape architecture
163.a court street | portsmouth nh 03801
603.436.5388 | terrence@terrafirmalandarch.com

| No. | Date | By | Revision Notes |
|---|---|---|---|
| | | | |

| No. | Date | Issue Notes |
|---|---|---|
| | | |

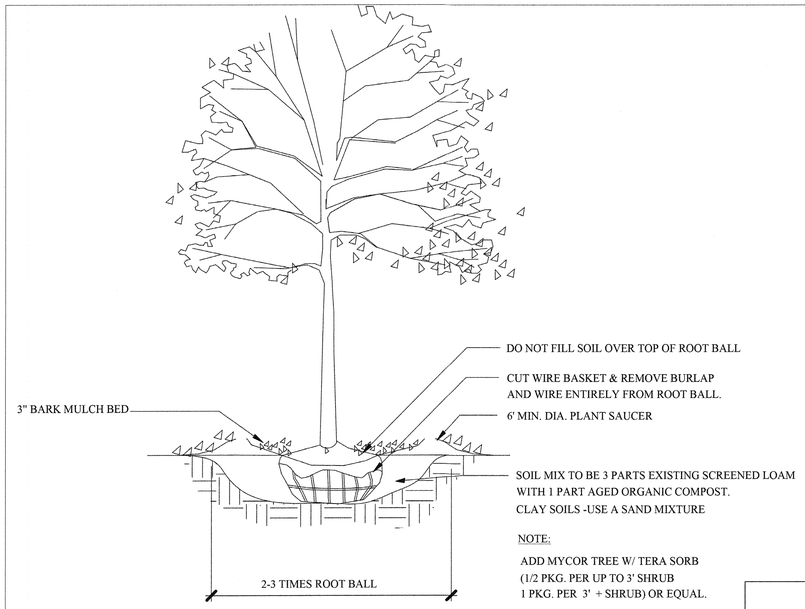
Design Firm
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

Project Title
BUILD AMERICA
1155 Sagamore Avenue
Portsmouth, NH 03801

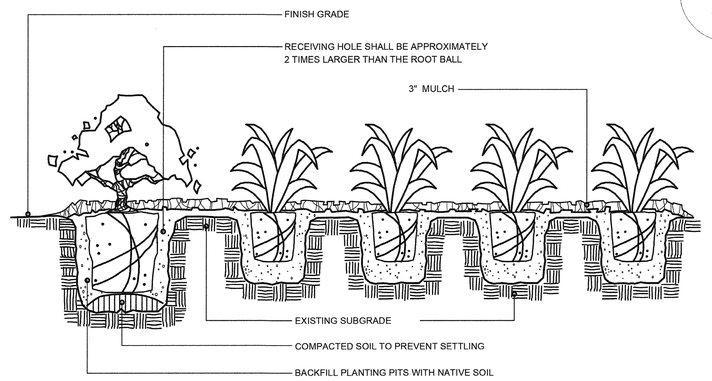
Sheet Title
Landscape Plan

| | |
|---|---|
| Project Manager: JC | Project ID: BUILD AMERICA |
| Drawn By: TC | Scale: 1:240 |
| Reviewed By: TP | Sheet No.: L-1 of 2 |
| Date: 10/23/2023 | |
| CAD File Name: 1155sagamore101223.vwx | |




1 L-5

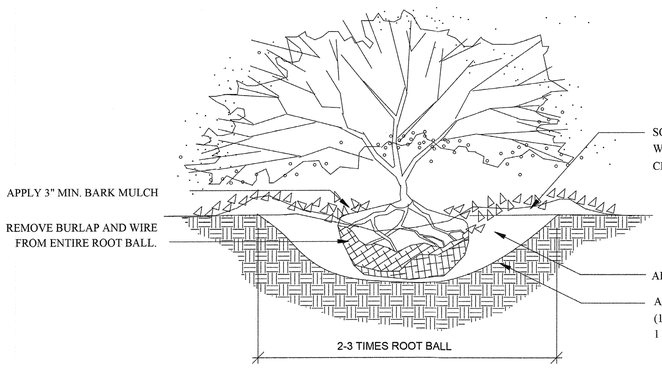
## TREE PLANTING - 2"+ CAL.
SCALE: NTS




NOTE: SHRUBS SHALL BE PLANTED A MINIMUM OF 1" & NO MORE THAN 2" ABOVE FINISH GRADE, DEPENDING UPON SITE CONDITIONS.

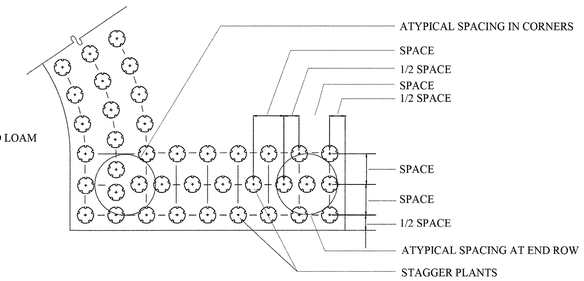
3 L-5

## SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS




4 L-5

## B&B SHRUB PLANTING
SCALE: NTS

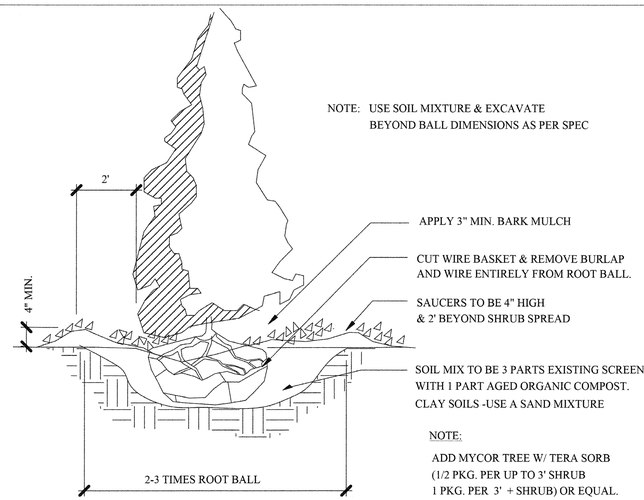



NOTES:

1. PLACE PLANTS IN BED AS SHOWN, SPACING AS SPECIFIED IN PLANT SCHEDULE.
2. GROUNDCOVER SHALL BE TRIANGULAR SPACED IN ROWS PARALLEL TO STRAIGHT EDGES AND SHALL BE EVENLY SPACED IN ROWS PARALLEL TO CURVE EDGES.

5 L-5

## GROUND COVER SPACING DETAIL
SCALE: NTS




2 L-5

## PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT DELIVERED TO THE SITE FOR AESTHETIC REASONS BEFORE PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE QUALITY FOR ALL THE PLANTS.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL PLANTS SHALL BE INSTALLED AND DETAILED PER PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM. LANDSCAPE CONTRACTOR SHALL PRUNE PLANTINGS OF DEAD LIMBS OR TWIGS DURING THE FIRST YEAR OF GROWTH.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. LANDSCAPE CONTRACTOR SHOULD REPLACE DEAD PLANTINGS IMMEDIATELY UPON OWNER DIRECTION WITHIN THE WARRANTY PERIOD AND AGAIN AT THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAVE DIED, THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS CALLED FOR.
15. ALL TREES AND SHRUBS TO BE PLANTED IN MULCH BEDS WITH DEFINED AND CUT EDGES TO SEPARATE TURF GRASS AREAS.
16. FOR ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE, REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC., THEN APPLY GRASS SEED OR PINE BARK MULCH AS DEPICTED ON PLANS.
17. LANDSCAPE CONTRACTOR SHALL FEED AND PRUNE EX. TREES, ON OR JUST OFF SITE, THAT HAVE EXPERIENCED ROOT BASE INTRUSION OR DAMAGE DURING CONSTRUCTION IMMEDIATELY AND FOR THE DURATION OF THE WARRANTY PERIOD AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE EDGE OF THE EX. TREE CANOPY THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. ALL MULCH AREAS SHALL RECEIVE A 2" LAYER OF SHREDDED PINE BARK MULCH.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.

PLEASE NOTE: THIS SHEET IS SCALED FOR 22 BY 34 PAPER, DO NOT REDUCE OR ENLARGE.

terra firma
landscape architecture
163.a court street | portsmouth, nh 03801
ofc: 603.430.3588 | terrence@terrafirmalandarch.com

| No. | Date | By | Revision Notes |
|---|---|---|---|
| | | | |

| No. | Date | Issue Notes |
|---|---|---|
| | | |

Design Firm
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

Project Title
BUILD AMERICA
1155 Sagamore Avenue
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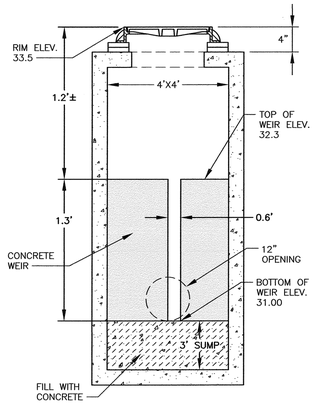
Sheet Title
Landscape Plan

| | |
|---|---|
| Project Manager: JC | Project ID: BUILD AMERICA |
| Drawn By: TC | Scale: AS NOTED |
| Reviewed By: TP | Sheet No.: L-2 of 2 |
| Date: 10/23/2023 | |
| CAD File Name: 1155sagamore101223.vwx | |

LEGEND: SEE COVER SHEET

## RAIN GARDEN PLANTING MIX

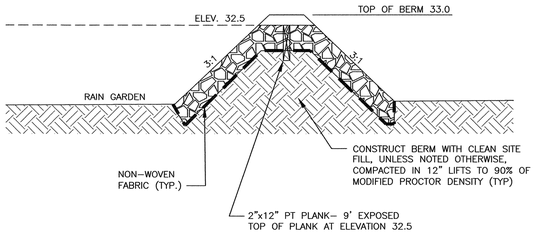
SEE LANDSCAPE PLAN



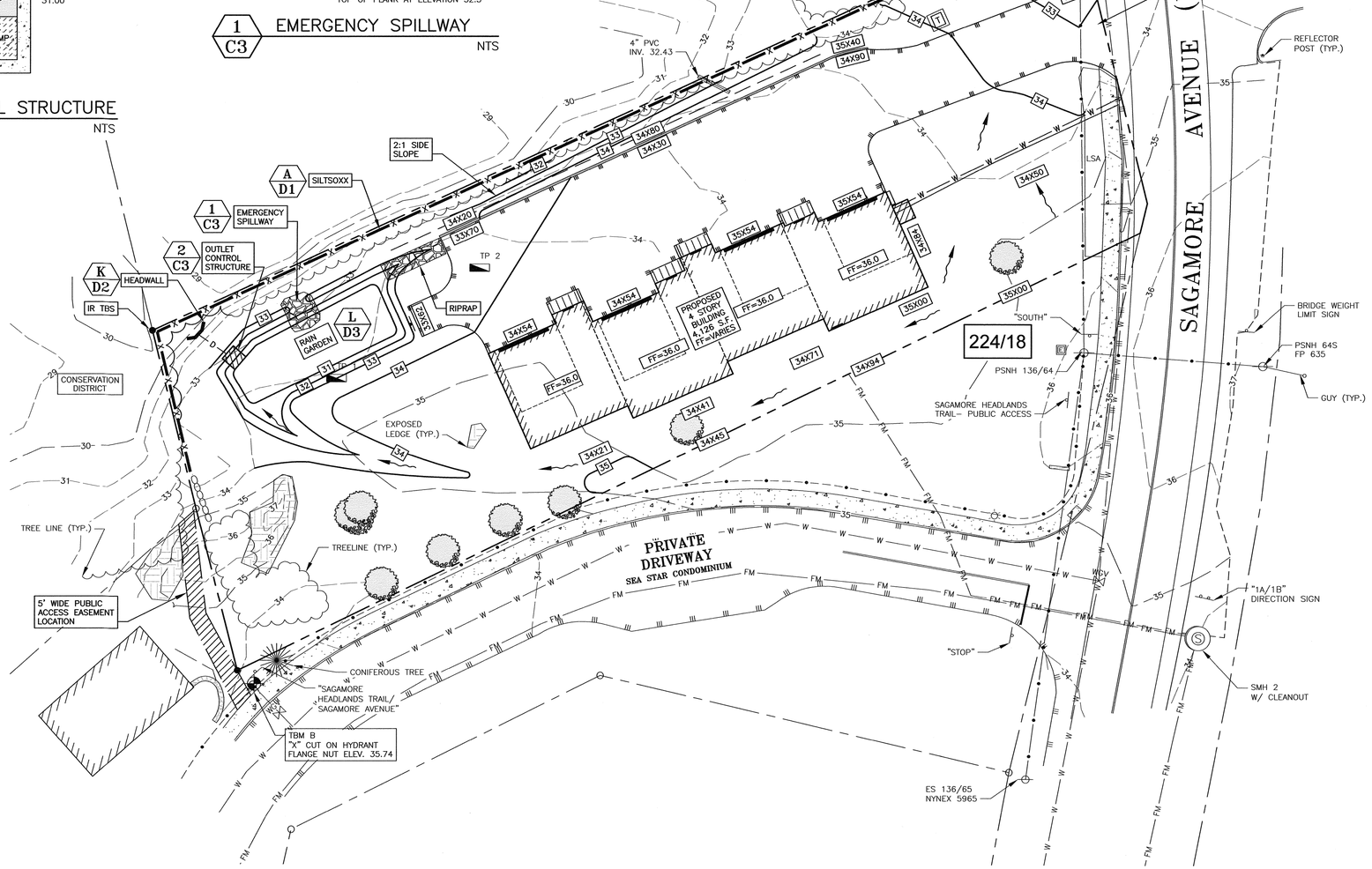

2 / C3 OUTLET CONTROL STRUCTURE
5'X5' CONCRETE NTS

## PIPE AND HEADWALL

NOTE: PIPE FROM OCS TO HEADWALL WILL BE A 12" HDPE WITH AN INVERT IN OF 31.00, INVERT OUT OF 30.50, LENGTH OF 11 FEET, AND SLOPE OF 0.045.




1 / C3 EMERGENCY SPILLWAY
NTS




GRAPHIC SCALE

10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

NORTH NAD83(2011) N GRID NHSPC

## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 224 AS LOT 18.

2) OWNERS OF RECORD:
MICHAEL A. VALINSKI &
MAUREEN OAKMAN
1155 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
3991/781

APPLICANT:
BUILD AMERICA
PO BOX 1664
PORTSMOUTH, NH 03802

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE SITE GRADING ON ASSESSOR'S MAP 224 LOT 18 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.

9) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

10) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

11) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

12) GARAGE SLAB SHALL BE 4" BELOW FLOOR ELEVATION LISTED, SLOPING $\frac{1}{8}$" PER FOOT TOWARDS THE DOOR.

13) SEE TEST PIT LOGS ON SHEET C1.

| No. | DATE | DESCRIPTION | BY | CHK. |
|---|---|---|---|---|
| 2 | 11/29/23 | NOTE 13, SPOT GRADES | DJT | JRC |
| 1 | 10/16/23 | ISSUED TO TAC | SJR | JRC |
| 0 | 9/5/23 | ISSUED FOR APPROVAL | CSA | JRC |

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION


AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
WWW.HALEYWARD.COM
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282


PROJECT

BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE

GRADING &
EROSION CONTROL PLAN

JOHN R. CHAGNON NO. 7951 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

| DATE | SCALE |
|---|---|
| AUGUST 2023 | 1" = 20' |

| DRAWN BY | DESIGNED BY | CHECKED BY |
|---|---|---|
| OMS | JRC | JRC |

| PROJECT No. | FIELD BOOK & PAGE |
|---|---|
| 5010314.417.01 | FB 450 PG 1 |

SHEET

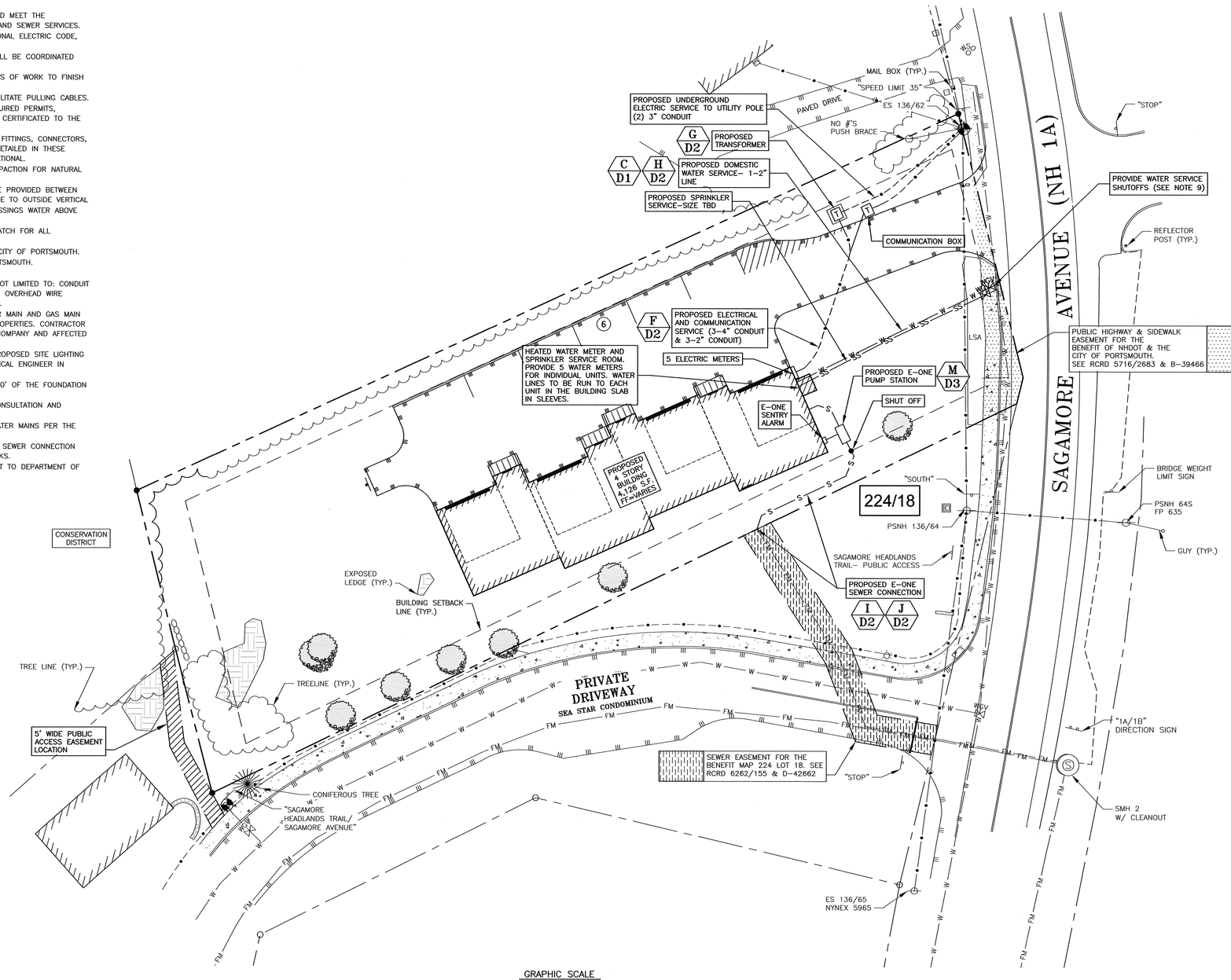
SHEET 3 C3

P:\5010314-Build_America\417.01-1155 Sagamore Ave, Portsmouth, NH\2023 Site Plan\Plans & Sheets\5010417.01-101314 ST1 2023.dwg, 11/29/2023 12:59:01 PM, Portsmouth Plotter Canon 7100\DSMmap3

## UTILITY NOTES:

1) SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
2) COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY.
3) SEE GRADING AND DRAINAGE PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
4) ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, POLYWRAPPED, CEMENT LINED DUCTILE IRON PIPE.
5) ALL WATERMAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION AND BEFORE ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH.
6) ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
7) ALL WORK WITHIN CITY R.O.W. SHALL BE COORDINATED WITH CITY OF PORTSMOUTH
8) CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
9) ANY CONNECTION TO EXISTING WATERMAIN SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.
10) EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
11) ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
12) THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH BUILDING DRAWINGS AND UTILITY COMPANIES.
13) ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
14) ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
15) THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATED TO THE OWNER PRIOR TO THE COMPLETION OF PROJECT.
16) THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED IN THESE DRAWING TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
17) CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
18) A 10–FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18–INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS WATER ABOVE SEWER.
19) SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVED AREAS.
20) GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
21) COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
22) ALL SEWER PIPES WITH LESS THAN 6' COVER SHALL BE INSULATED.
23) CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
24) CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH UTILITY COMPANY AND AFFECTED ABUTTER.
25) SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER IN COORDINATION WITH THE SITE CIVIL ENGINEER.
26) CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
27) THE CONTRACTOR SHALL INSTALL THE SEWER LINE AND MANHOLE IN CONSULTATION AND COORDINATION WITH DEPARTMENT OF PUBLIC WORKS.
28) BRASS WEDGES FOR CONTINUITY OF SIGNAL MUST BE INSTALLED ON WATER MAINS PER THE PORTSMOUTH WATER DEPARTMENT
29) FINAL REVIEW OF ALL UTILITIES SHALL BE MADE DURING THE REQUIRED SEWER CONNECTION PERMIT PROCESS IN COORDINATION WITH DEPARTMENT OF PUBLIC WORKS.
30) ALL WORK PERFORMED IN THE PUBLIC RIGHT–OF–WAY SHALL BE BUILT TO DEPARTMENT OF PUBLIC WATER WORKS STANDARDS.

## LEGEND: SEE COVER SHEET




GRAPHIC SCALE

10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 224 AS LOT 18.

2) OWNERS OF RECORD:
MICHAEL A. VALINSKI &
MAUREEN OAKMAN
1155 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
3991/781

APPLICANT:
BUILD AMERICA
PO BOX 1664
PORTSMOUTH, NH 03802

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE SITE IMPROVEMENTS ON ASSESSOR'S MAP 224 LOT 18 IN THE CITY OF PORTSMOUTH.

4) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.

5) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

6) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

7) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

8) IRRIGATION WILL BE PROVIDED ON A SEPARATE METERED SERVICE. DESIGNS OF IRRIGATION WILL BE PROVIDED BY THE LANDSCAPE CONTRACTOR AT THE TIME OF CONSTRUCTION.

9) PROVIDE STANDARD LEAK, VALVE AND METER EASEMENT DEED FOR THE PRIVATE WATER SYSTEM TO BE REVIEWED AND APPROVED BY THE CITY OF PORTSMOUTH.

| No. | DATE | DESCRIPTION | BY | CHK |
|---|---|---|---|---|
| 3 | 11/29/233 | DETAIL 1&2, NOTE 9&13 | DJT | JRC |
| 2 | 11/7/23 | TAC COMMENTS | DJT | JRC |
| 1 | 10/16/23 | ISSUED FOR TAC | SJR | JRC |
| 0 | 9/05/23 | ISSUED FOR APPROVAL | OMS | JRC |

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION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603.430.9282
WWW.HALEYWARD.COM


PROJECT

BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE

UTILITY PLAN

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

| DATE | SCALE |
|---|---|
| AUGUST 2023 | 1" = 20' |

| DRAWN BY | DESIGNED BY | CHECKED BY |
|---|---|---|
| OMS | JRC | JRC |

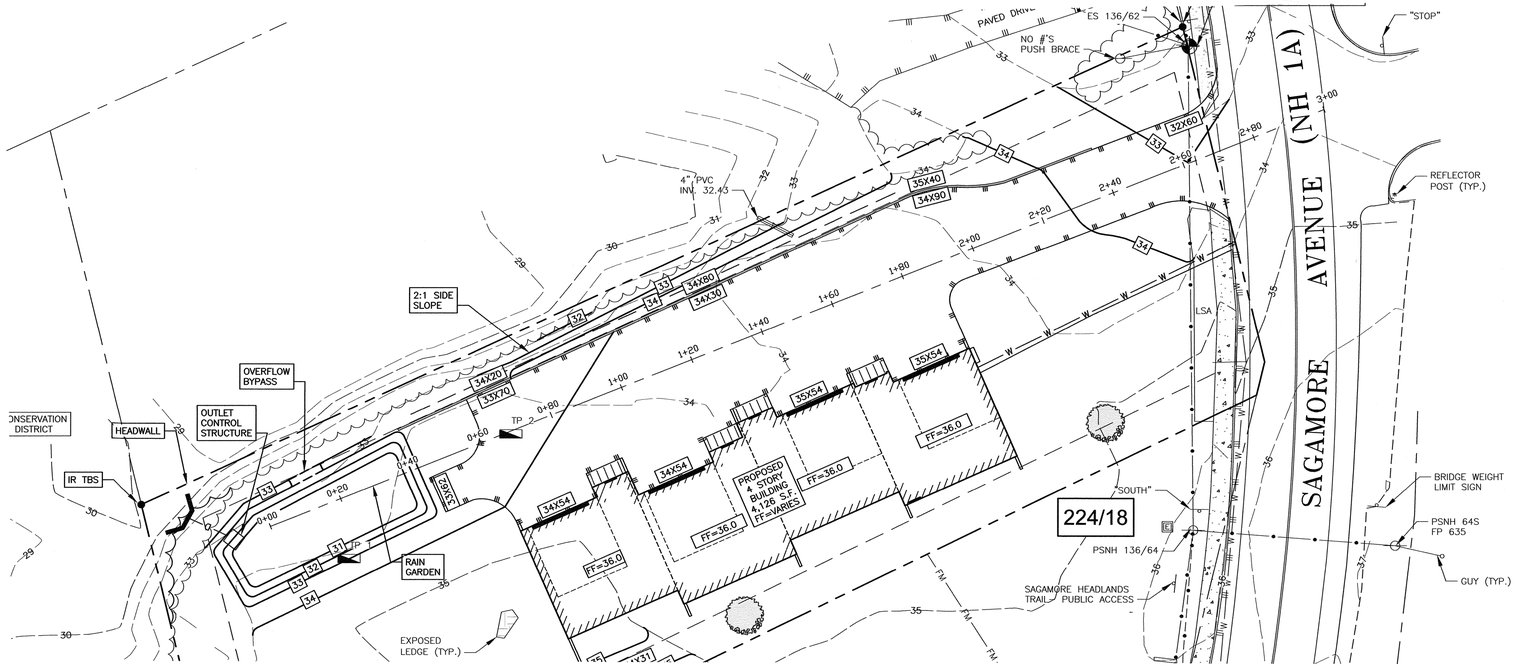
| PROJECT No. | FIELD BOOK & PAGE |
|---|---|
| 5010314.417.01 | FB 450 PG 1 |

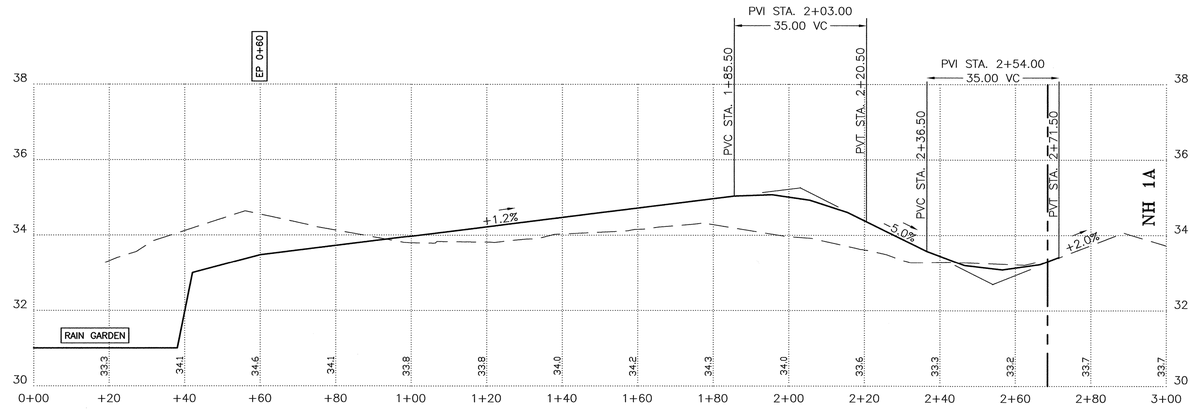
SHEET

**SHEET 4** C4

P:\5010\5010314-Build_Amoskeag\417.01-1155 Sagamore Ave, Portsmouth-ISC\2023 Site Plan\Plan & Sheets\Sheet\17_01-5010314.417.01-2023-Aug_11-ISSUED 7:58:27 PM_Portsmouth Plotter Canon 1600000Thread.pc3

LEGEND: SEE COVER SHEET




VERTICAL SCALE: 1" = 2'
HORIZONTAL SCALE: 1" = 20'

GRAPHIC SCALE

10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

10.23.23

JOHN R. CHAGNON, LLS #738 DATE

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON SIGNATURE

## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 224 AS LOT 18.

2) OWNERS OF RECORD:
MICHAEL A. VALINSKI &
MAUREEN OAKMAN
1155 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
3991/781

APPLICANT:
BUILD AMERICA
PO BOX 1664
PORTSMOUTH, NH 03802

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED DRIVEWAY PROFILE ON ASSESSOR'S MAP 224 LOT 18 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.

9) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

10) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

11) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

12) GARAGE SLAB SHALL BE 4" BELOW FLOOR ELEVATION LISTED. SLOPING $\frac{1}{8}$" PER FOOT TOWARDS THE DOOR.

| No. | DATE | DESCRIPTION | BY | CHK |
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| 1 | 10/23/23 | PROFILE | EDS | JRC |
| 0 | 9/5/23 | ISSUED FOR APPROVAL | OMS | JRC |

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION


AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM


PROJECT

BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE

DRIVEWAY PROFILE PLAN

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON NO. 7864 LICENSED PROFESSIONAL ENGINEER

| DATE | SCALE |
|---|---|
| AUGUST 2023 | 1" = 20' |

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SHEET

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## CONSTRUCTION SEQUENCE

DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

INSTALL SILT SOXX TO CONTROL EROSION AND SEDIMENTATION PRIOR TO ANY EARTH MOVING ACTIVITIES.

REMOVE EXISTING BUILDINGS AND OTHER SITE FEATURES TO BE REMOVED.

CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.

CUT AND REMOVE ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND OTHER DEBRIS AND RUBBISH AS REQUIRED.

STRIP AND STOCKPILE LOAM FROM SITE. STOCKPILES SHALL BE SURROUNDED WITH SILT SOXX TO CONTROL SEDIMENT RUN OFF.

ROUGH GRADE SITE AND CONSTRUCT DRAINAGE STRUCTURES, RAIN GARDEN AND SWALES. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS SHOWN ON THE PLANS. ALL PERMANENT DITCHES, AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM. CONSTRUCT BUILDING FOUNDATIONS.

LOAM AND SEED DISTURBED AREAS IN ACCORDANCE WITH VEGETATIVE PRACTICE AND GENERAL CONSTRUCTION NOTES. CUT AND FILL SLOPES SHALL BE SEEDED IMMEDIATELY AFTER THEIR CONSTRUCTION.

CONSTRUCT UTILITIES, BUILDINGS AND PAVEMENT BASE COURSE.

PLANT LANDSCAPING.

CONSTRUCT PAVEMENT WEARING COURSE.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

## PROJECT DESCRIPTION

THE PROJECT CONSISTS OF FOUR HOUSING UNITS WITH ASSOCIATED PARKING AND UTILITIES.

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 0.695 ACRES.

BASED ON THE USCS WEB SOIL SURVEY THE SOILS ON SITE CONSIST OF CHATFIELD–HOLLIS–CANTON COMPLEX WHICH IS WELL DRAINED SOILS WITH A HYDROLOGIC SOIL GROUP RATING OF B.

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA OVERLAND DRAINAGE PATHWAYS WHICH ULTIMATELY FLOW TO THE SAGAMORE CREEK.

## GENERAL CONSTRUCTION NOTES

THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED FOR MORE THAN 45 DAYS.

ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION.

THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

DUST CONTROL: DUST CONTROL MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.
IF TEMPORARY STABILIZATION PRACTICES, SUCH AS TEMPORARY VEGETATION AND MULCHING, DO NOT ADEQUATELY REDUCE DUST GENERATION, APPLICATION OF WATER OR CALCIUM CHLORIDE SHALL BE APPLIED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

SILTSOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILTSOXX SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED IN A SECURED LOCATION.

ALL FILLS SHALL BE PLACED AND COMPACTED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.

ALL NON–STRUCTURAL, SITE–FILL SHALL BE PLACED AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY IN LAYERS NOT EXCEEDING 18 INCHES IN THICKNESS UNLESS OTHERWISE NOTED.

FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIAL, TRASH, WOODY DEBRIS, LEAVES, BRUSH OR ANY DELETERIOUS MATTER SHALL NOT BE INCORPORATED INTO FILLS.

FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.

DURING CONSTRUCTION AND UNTIL ALL DEVELOPED AREAS ARE FULLY STABILIZED, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH ONE HALF INCH OF RAINFALL.

THE CONTRACTOR SHALL MODIFY OR ADD EROSION CONTROL MEASURES AS NECESSARY TO ACCOMMODATE PROJECT CONSTRUCTION.

ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED ON AREAS TO BE PAVED
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
- EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
- IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.

STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY–ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA.

STABILIZATION MEASURES TO BE USED INCLUDE:
- TEMPORARY SEEDING;
- MULCHING.

1. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
2. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN THESE AREAS, SILTSOXX, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
3. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILTSOXX, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY OCTOBER 15.

## MAINTENANCE AND PROTECTION

THE SILTSOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

SILTSOXX SHALL BE REMOVED ONCE SITE IS STABILIZED, AND DISTURBED AREAS RESULTING FROM SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

THE CATCH BASIN INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.
SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

## WINTER NOTES

ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;

AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;

## STOCKPILES

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN–OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

## CONCRETE WASHOUT AREA

THE FOLLOWING ARE THE ONLY NON–STORMWATER DISCHARGES ALLOWED. ALL OTHER NON–STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
1. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FAILITY;
2. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
3. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
4. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

## ALLOWABLE NON–STORMWATER DISCHARGES

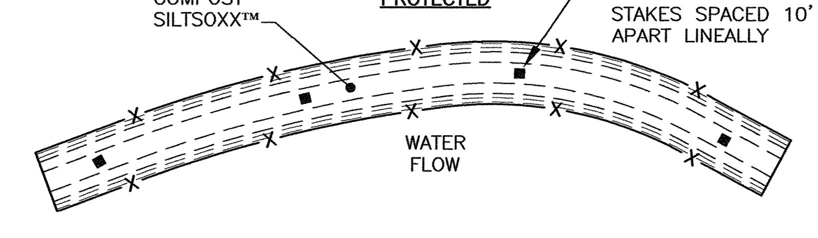
1. FIRE–FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

## WASTE DISPOSAL

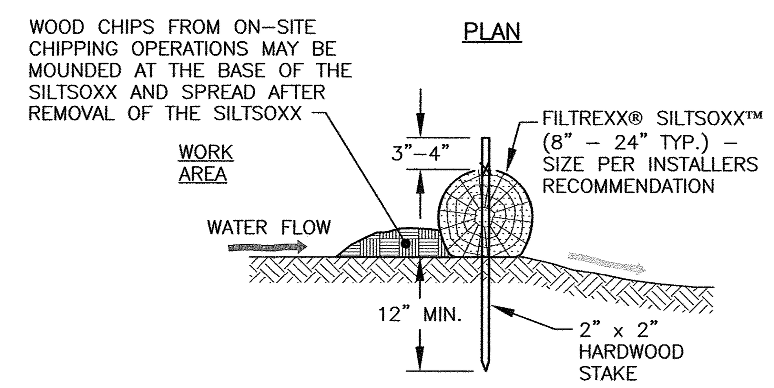
1. WASTE MATERIAL
   - ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   - NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   - ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE
   - ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   - SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE
   - ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

## BLASTING NOTES

1. CONTRACTOR SHALL CONTACT THE NHDES AND/OR LOCAL JURISDICTION PRIOR TO COMMENCING ANY BLASTING ACTIVITIES.
2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT A BLASTING PLAN THAT IDENTIFIES:
   - WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
   - THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
   - SITE–SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.




PLAN

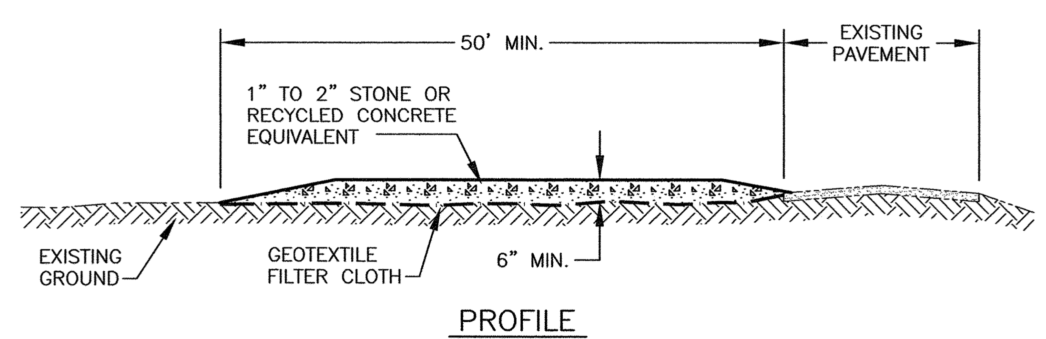



ELEVATION

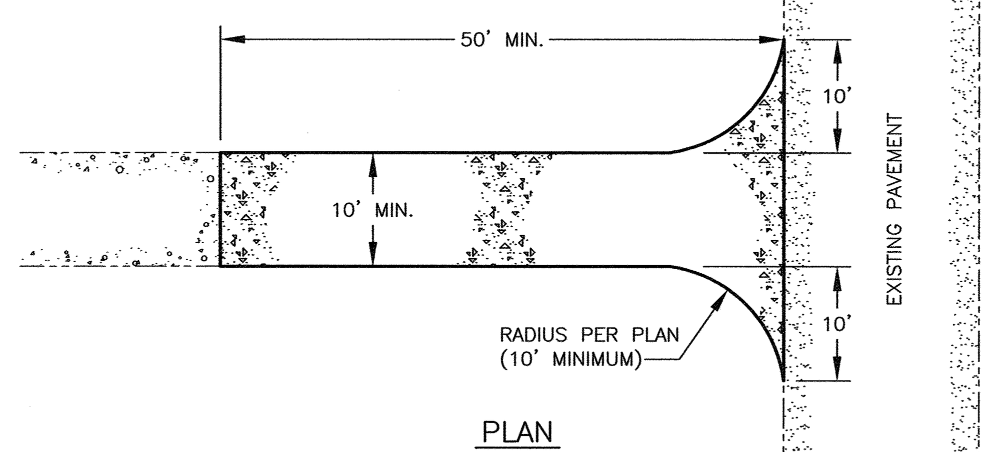
NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

### A / C3 FILTREXX® SILTSOXX™ FILTRATION SYSTEM

NTS




PROFILE




PLAN

MAINTENANCE

1) MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE GRAVEL AND THE EFFECTIVENESS OF THE GRAVEL PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOP DRESSED WITH NEW STONE. COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.
2) IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS

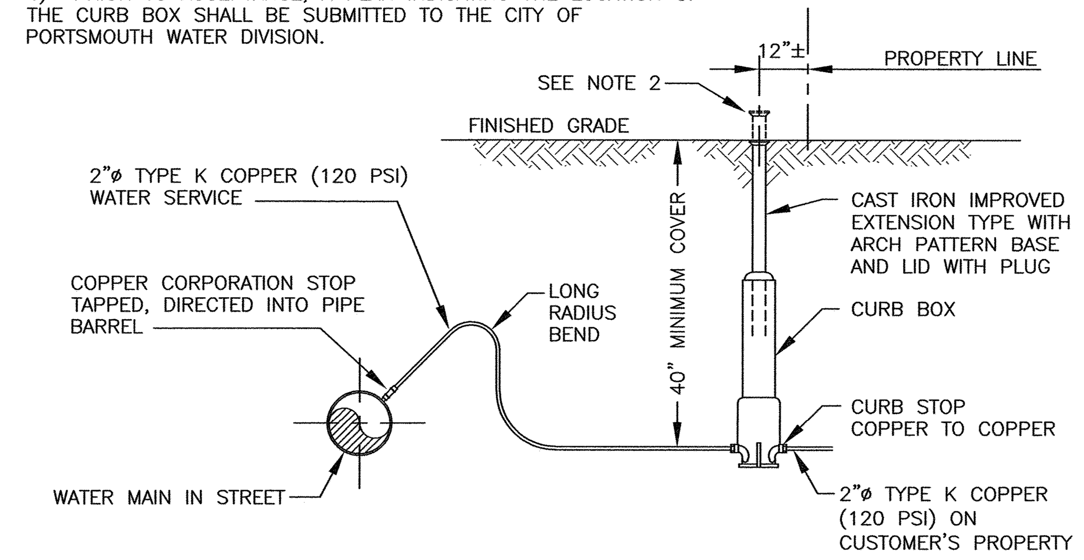
1) STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2) THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3) THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4) THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5) GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6) ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7) THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT–OF–WAY MUST BE REMOVED PROMPTLY.
8) WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY, WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

### B / C3 STABILIZED CONSTRUCTION ENTRANCE

SUBSTITUTE FODS IF DESIRED

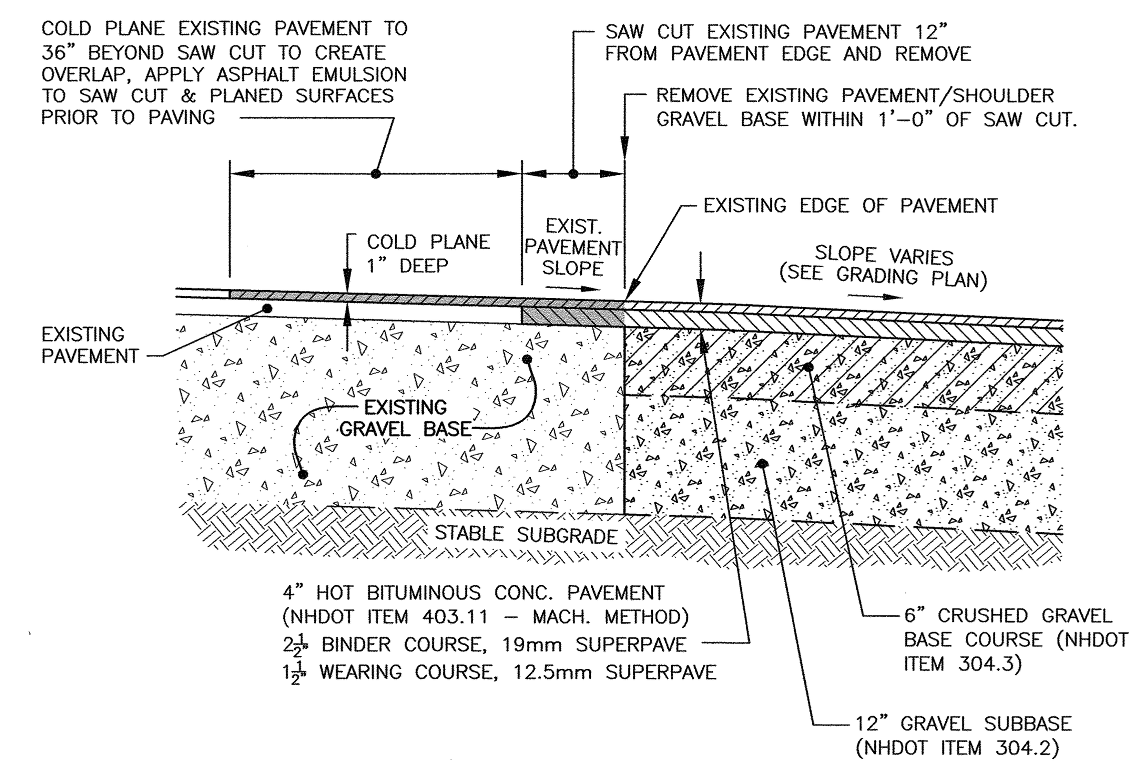
NTS

NOTE:
1) INSTALLATION OF WATER MAIN TAP & CURB STOP & BOX SHALL ONLY BE PERFORMED BY THOSE AUTHORIZED BY THE PUBLIC WORKS DEPARTMENT.
2) IN AREAS OF HEAVY GROWTH THE CURB BOX COVER SHALL BE SET 6" ABOVE FINISH GRADE AND A WITNESS STAKE SET.
3) CURB BOX SHALL BE SET APPROXIMATELY 12" OUTSIDE PROPERTY LINE AS SHOWN.
4) PRIOR TO ACCEPTANCE, A PLAN INDICATING THE LOCATION OF THE CURB BOX SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH WATER DIVISION.




### C / C4 WATER SERVICE CONNECTION

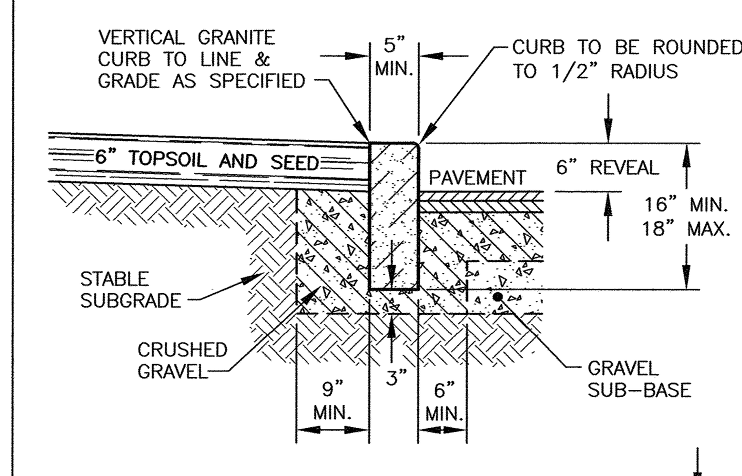
NTS



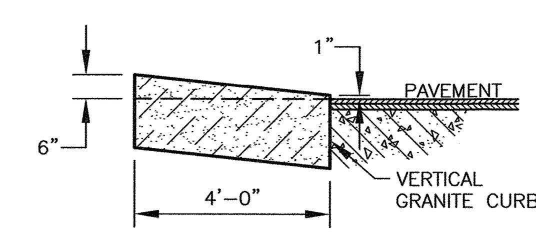

NOTES:
1) PAVEMENT SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS – SECTION 401.
2) CRUSHED GRAVEL AND GRAVEL SUBBASE SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS – SECTION 304, TABLE 1E, AND SHALL BE COMPACTED AS INDICATED IN SECTION 304, 3.6 COMPACTION, AND 3.7 DENSITY TESTING, AND CITY OF PORTSMOUTH CONSTRUCTION STANDARDS.

### D / C2 PAVEMENT / PAVEMENT JOINT DETAIL

NTS




VERTICAL GRANITE CURB




NOTE: JOINTS BETWEEN STONES TO BE MORTARED

GRANITE CURB END FOR VERTICAL GRANITE CURB

### E / C2 VERTICAL GRANITE CURB

NTS

## NOTES:

1) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) PURSUANT TO RSA 483–B:9 11 (D), NO FERTILIZER SHALL BE APPLIED TO VEGETATION OR SOILS LOCATED WITHIN 25 FEET OF THE REFERENCE LINE OF ANY PUBLIC WATER. BEYOND 25 FEET, SLOW OR CONTROLLED RELEASE FERTILIZER MAY BE USED. SLOW RELEASE NITROGEN MUST CONTAIN NO MORE THAN 2% PHOSPHORUS, AND A NITROGEN COMPONENT WHICH IS AT LEAST 50% SLOW RELEASE NITROGEN COMPONENTS.

5) NO CHEMICALS INCLUDING PESTICIDES OR HERBICIDES OF ANY KIND, SHALL BE APPLIED TO GROUND, TURF, OR ESTABLISHED VEGETATION WITHIN THE WETLAND BUFFER, EXCEPT IF APPLIED BY HORTICULTURE PROFESSIONAL WHO HAVE AN APPLICATION LICENSE. NO CALCIUM CHLORIDE SHALL BE APPLIED WITHIN THE WETLAND BUFFER.

| No. | DATE | DESCRIPTION | BY | CHK. |
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| 1 | 10.16.2023 | ISSUED FOR APPROVAL | DJT | JRC |
| 0 | 09.05.2023 | ISSUED FOR COMMENT | OMS | JRC |

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AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM


PROJECT

BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE

EROSION CONTROL NOTES & DETAILS

STATE OF NEW HAMPSHIRE · JOHN R. CHAGNON No. 7651 · LICENSED · PROFESSIONAL ENGINEER

| DATE | SCALE |
|---|---|
| AUGUST 2023 | SCALE: 1" = 20' |

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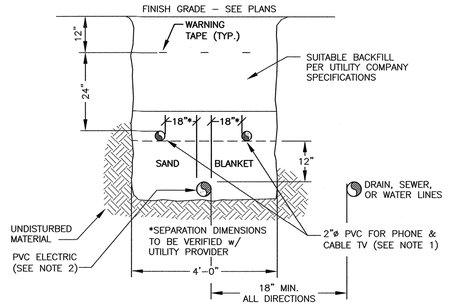
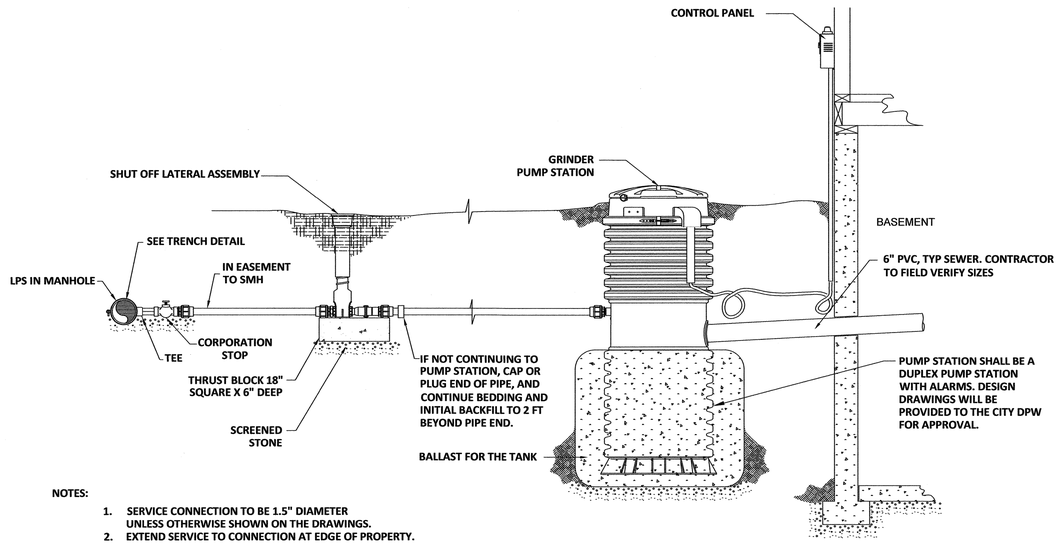



NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCH. 40 FOR THE REMAINDER.
2) NORMAL CONDUIT SIZES FOR CMP ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT
5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

F / C4 UTILITY TRENCH
ELECTRIC/PHONE/CABLE NTS



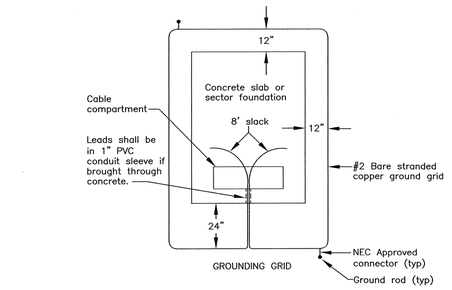

NOTES:
1. SERVICE CONNECTION TO BE 1.5" DIAMETER UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. EXTEND SERVICE TO CONNECTION AT EDGE OF PROPERTY.

I / C4 LPS SERVICE CONNECTION DETAIL
COORDINATE WITH CITY OF PORTSMOUTH DPW NTS

NOTES:
1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

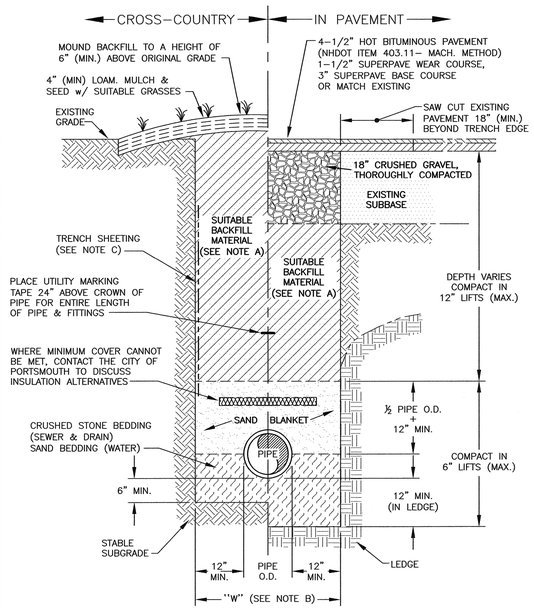
2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008)".




NOTES
1. See sheet "Requirements for Padmounted Transformer Slab Details".
2. All reinforcing to be #6 bars.
3. 1" PVC conduit sleeve for ground grid leads.
4. The ground grid shall be supplied and installed by the customer and is to be buried at least 12" below grade. Eight feet of extra wire for each ground grid leg shall be left exposed in the cable compartment to allow for the connection to the transfomer. the two 8' ground rods may be either galvanized steel or copperweld and they shall be connected to the grid with NEC approved connectors.

G / C4 TRANSFORMER PAD
NTS




TRENCH NOTES:
A) TRENCH BACKFILL:
– IN PAVED AREAS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIALS DEEMED TO BE UNACCEPTABLE BY THE ENGINEER.

– IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE.

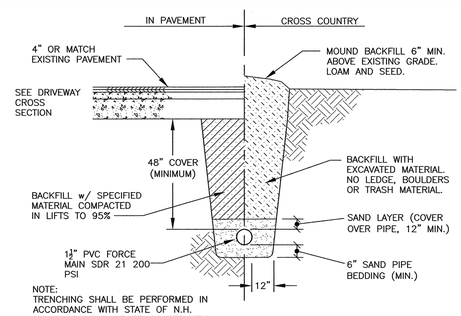
B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

C) TRENCH SHEETING:
IF REQUIRED, WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID–DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

D) MINIMUM PIPE COVER FOR UTILITY MAINS (UNLESS GOVERNED BY OTHER CODES):
- 6' MINIMUM FOR SEWER (IN PAVEMENT)
- 4' MINIMUM FOR SEWER (CROSS COUNTRY)
- 3' MINIMUM FOR STORMWATER DRAINS
- 5' MINIMUM FOR WATER MAINS

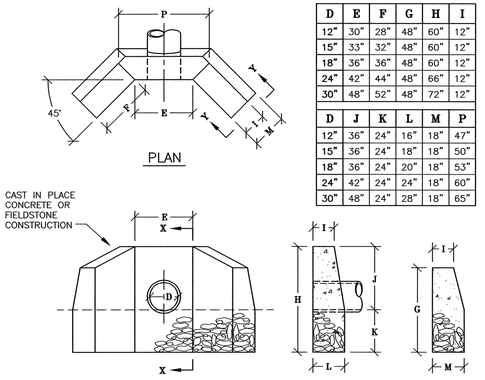
E) ALL PAVEMENT CUTS SHALL BE REPAIRED BY THE INFRARED HEAT METHOD.

H / C4 TYPICAL PIPE TRENCH
NTS




NOTE:
TRENCHING SHALL BE PERFORMED IN ACCORDANCE WITH STATE OF N.H. STANDARDS FOR SEWER CONSTRUCTION.

J / C4 FORCE MAIN TRENCH DETAIL
NTS




| D | E | F | G | H | I |
|---|---|---|---|---|---|
| 12" | 30" | 28" | 48" | 60" | 12" |
| 15" | 33" | 32" | 48" | 60" | 12" |
| 18" | 36" | 36" | 48" | 60" | 12" |
| 24" | 42" | 44" | 48" | 66" | 12" |
| 30" | 48" | 52" | 48" | 72" | 12" |

| D | J | K | L | M | P |
|---|---|---|---|---|---|
| 12" | 36" | 24" | 16" | 18" | 47" |
| 15" | 36" | 24" | 18" | 18" | 50" |
| 18" | 36" | 24" | 20" | 18" | 53" |
| 24" | 42" | 24" | 24" | 18" | 60" |
| 30" | 48" | 24" | 28" | 18" | 65" |

K / C3 HEADWALL DETAIL
NTS

| No. | DATE | DESCRIPTION | BY | CHK |
|---|---|---|---|---|
| 2 | 11.07.2023 | TAC COMMENTS | DJT | JRC |
| 1 | 10.16.2023 | ISSUED FOR APPROVAL | DJT | JRC |
| 0 | 09.05.2023 | ISSUED FOR COMMENT | DT | JC |

DRAWING ISSUE STATUS
NOT FOR CONSTRUCTION

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PROJECT
BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE
DETAILS

JOHN R. CHAGNON No. 7551 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

| DATE | SCALE |
|---|---|
| SEPTEMBER 2023 | NTS |

| DRAWN BY | DESIGNED BY | CHECKED BY |
|---|---|---|
| DT | JC | JC |

| PROJECT No. | FIELD BOOK & PAGE |
|---|---|
| 5010314.417.01 | FB 450 PG 1 |

DRAWING No.
SHEET 7 D2

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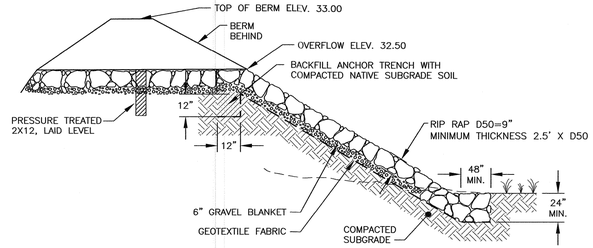
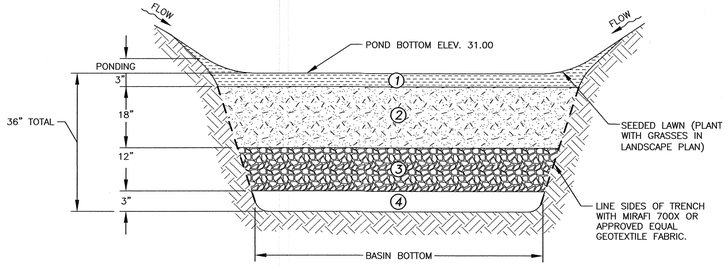



EMERGENCY SPILLWAY




RAIN GARDEN SECTION

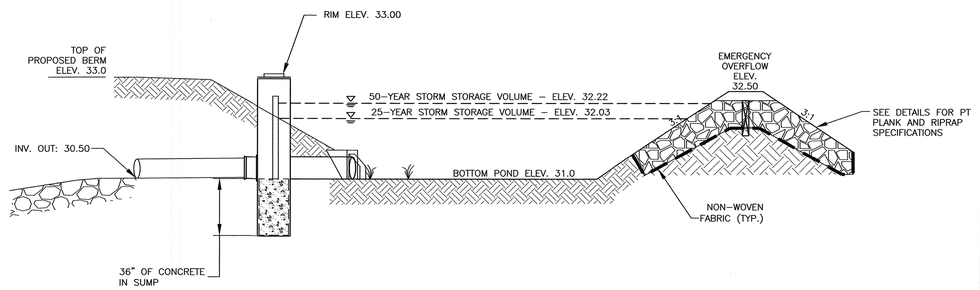
| RAIN GARDEN MEDIA | | |
|---|---|---|
| ① | MULCH/GROWING MEDIUM: GRASS SEED MIX A WITH LOAM | |
| ② | SOIL FILTER LAYER: USE UNHSC BIORETENTION SOIL SPECIFICATIONS DATED FEBRUARY, 2017.20% – 30% MULCH BY VOLUME, MIXED THOROUGHLY WITH LOAMY, COARSE SAND (70% – 80% BY VOLUME) MEETING THE FOLLOWING GRADATION: | |
| | SIEVE NO. | % BY WEIGHT, PASSING |
| | 4 | 100 |
| | 10 | 95 |
| | 40 | 10 – 25 |
| | 200 | 0 – 5 |
| ③ | 0.75"ø – 1.5"ø CRUSHED STONE, WASHED. | |
| ④ | ⅜" PEA GRAVEL | |

BIORETENTION MAINTENANCE

SOILS: VISUALLY INSPECT AND REPAIR EROSION MONTHLY. USE SMALL STONES TO STABILIZE EROSION ALONG DRAINAGE PATHS. CHECK THE pH ONCE OR TWICE A YEAR. APPLY AN ALKALINE PRODUCT, SUCH AS LIMESTONE, IF NEEDED.

MULCH: REMULCH ANY VOID AREAS BY HAND AS NEEDED. EVERY 6 MONTHS, IN THE SPRING AND FALL, ADD A FRESH MULCH LAYER. ONCE EVERY 2 TO 3 YEARS, IN THE SPRING, REMOVE OLD MULCH LATER BEFORE APPLYING NEW ONE.

PLANTS: IMMEDIATELY AFTER THE COMPLETION OF CELL CONSTRUCTION, WATER GRASS COVERING FOR 14 CONSECUTIVE DAYS UNLESS THERE IS SUFFICIENT NATURAL RAINFALL. ONCE A MONTH (MORE FREQUENTLY IN SUMMER), VISUALLY INSPECT VEGETATION FOR DISEASE OR PEST PROBLEMS. IF TREATMENT IS WARRANTED, USE THE LEAST TOXIC APPROACH. TWICE A YEAR, FROM MARCH 15TH TO APRIL 30TH AND OCTOBER 1ST TO NOVEMBER 30TH, REMOVE AND REPLACE ALL DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. DURING TIMES OF EXTENDED DROUGHT, LOOK FOR PHYSICAL FEATURES OF STRESS (UNREVIVED WILTING, YELLOW, SPOTTED OR BROWN PATCHES ETC.). WATER IN THE EARLY MORNING AS NEEDED. WEED REGULARLY, IF NEEDED.




RAIN GARDEN PROFILE

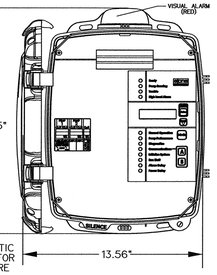
L / C3 RAIN GARDEN DETAIL

NTS

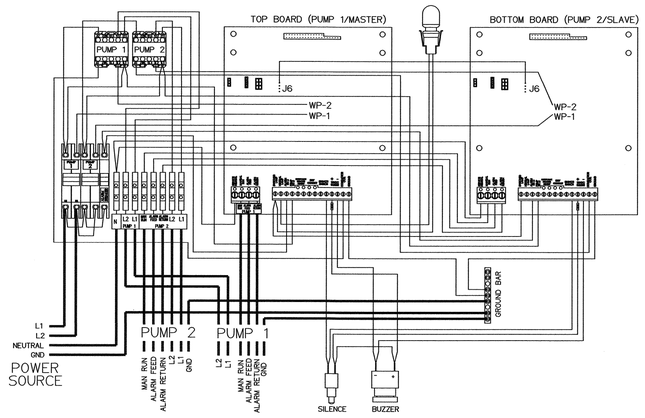
## SENTRY PROTECT PLUS DUPLEX

EXTERNAL VISUAL & AUDIBLE ALARM
REMOTE SENTRY DRY CONTACTS FOR OPTIONAL POWER LOSS HIGH LEVEL ALARM (POWER LOSS ALARM FOR WIRELESS)
MANUAL ALARM SILENCE
MANUAL RUN
STATUS LEDS: NORMAL, PUMP RUNNING, HIGH LEVEL
TROUBLE INDICATIONS: RUN DRY, OVERPRESSURE, BROWNOUT, VOLTAGE, EXTENDED RUN TIME
DRY CONTACTS
CONFORMAL COATED CIRCUIT BOARD (BOTH SIDES)
PADLOCK
DEAD FRONT
PREDICTIVE ALARMS
REAL TIME PUMP PERFORMANCE
ADJUSTABLE ALARM DELAY
ADJUSTABLE RUN TIME DELAY
HOUR/CYCLE COUNTER
NEMA 4X ENCLOSURE ASSEMBLY

DIMENSION FROM BACK PANEL TO FRONT OF OPEN DOOR = 18.02"



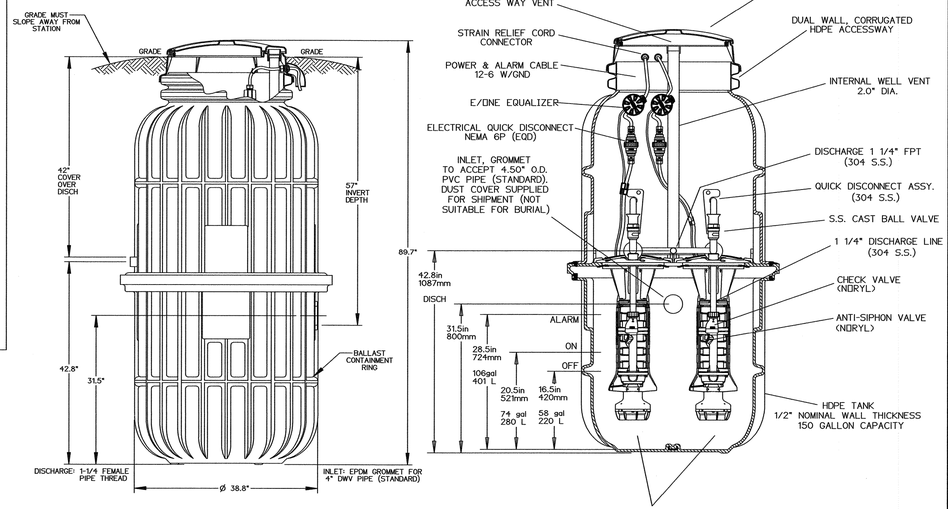

ENCLOSURE:
CORROSION PROOF THERMOPLASTIC POLYESTER APPROVED BY UL FOR ELECTRICAL CONTROL ENCLOSURE




| PIN | FUNCTION | 2000S | EXTREME |
|---|---|---|---|
| 1 | MANUAL RUN | RED | BROWN |
| 2 | L1 | BLACK | RED |
| 3 | L2 | WHITE | BLACK |
| 4 | GND | GREEN | GRN/YEL |
| 5 | ALARM FEED | ORANGE | YELLOW |
| 6 | ALARM RETURN | BLUE | BLUE |

LEGEND
- FROM CORE
- SUPPLY CABLE
- FACTORY INSTALLED

CONTROL CABLE:
TYPE TC: DIRECT BURIAL, SIX CONDUCTOR




CONCRETE BALLAST MAY BE REQUIRED SEE INSTALLATION INSTRUCTIONS FOR DETAILS

SEMI-POSITIVE DISPLACEMENT TYPE PUMP EACH DIRECTLY DRIVEN BY A 1 HP MOTOR

M / C4 DUPLEX SEWAGE PUMP AND ALARM

NTS

## NOTES:

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| No. | DATE | DESCRIPTION | BY | CHK. |
|---|---|---|---|---|
| 0 | 11.29.2023 | ADDED TO SET | DJT | JRC |

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PROJECT

BUILD AMERICA
1155 SAGAMORE AVENUE, PORTSMOUTH, NH 03801

TITLE

DETAILS

JOHN R. CHAGNON 10076851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

| DATE | SCALE |
|---|---|
| NOVEMBER 2023 | NTS |
| DRAWN BY: DJT | DESIGNED BY: JRC | CHECKED BY: JRC |
| PROJECT No.: 5010314.417.01 | FIELD BOOK & PAGE: FB 450 PG 1 |
| DRAWING No.: SHEET 8 | D3 |

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**FINAL DRAFT 11/16/23**

# CITY OF PORTSMOUTH, NEW HAMPSHIRE
# PLANNING BOARD

# RULES AND PROCEDURES

**ADOPTED FOLLOWING A PUBLIC HEARING: September 28, 2000**

Last Amended by the Planning Board: _____, 2023

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## PLANNING BOARD RULES AND PROCEDURES

A. Adoption and Purpose.

These rules of procedure have been adopted at a regular meeting of the planning board on the most recent date noted on the cover page. Any changes to these rules of procedure shall be adopted at a regular meeting of the board by majority vote and shall be placed on file with the City clerk for public inspection. (NH RSA 676:1)

These Rules and Procedures have also been adopted by the Board as an aid for better understanding the responsibilities of the Planning Board and its methods of conducting business.[1]

B. Board Membership and Officers.

1. Membership: The Planning Board shall consist of nine voting members and two alternates. Board Membership, selection, qualification, term, removal of Members and filling of vacancies shall conform to the City Charter and applicable City Ordinances and Regulations.[2]

2. Officers: Board members shall elect annually from its membership in January of each year a Chair and Vice-Chair. The votes shall be public votes. The concurring votes of five members in attendance at a meeting shall be necessary to elect each Officer.

3. Duties of the Chair: The Chair shall:

a) Preside at all meetings.

b) Assist in the preparation of the agenda for each meeting in consultation with City staff,

c) Sign Board letters of decision, and Board approved plans for recording at the registry of deeds.

d) Have authority to sign agreements with consultants to the Planning Board only after: 1) a majority vote by the Planning Board specifically granting such authority; and, 2) the approval of the City Council to expend funds for a consultant.

e) Appoint alternate Board Members to sit in the absence of a regular Board members.

f) Have complete voting privileges on all matters, including the election of officers.

[1] NH RSA 676:1

[2] The Board composition is set forth in City Ordinance, Article I, Chapter I, Section 1.303.

g) Report any discussion or action relative to the Board that has taken place since the last meeting.

h) Receive, review and refer appropriate questions from the Board members to staff.

i) Represent the Planning Board outside Planning Board meetings, including before the City Council

4. Duties of the Vice-Chair: The Vice-Chair shall assist the Chair and, in the absence of the Chair, shall have all the powers and duties of the Chair.

5. In the absence of the Chair and Vice-Chair, Board members present and constituting a quorum shall appoint a member of their group as Acting-Chair for purposes of conducting business at that meeting.

6. Duties of Alternate Board Members: An alternate shall sit in the absence, for whatever reason, of a Board Member and shall have all responsibilities becoming of a Board Member in that instance. Additionally, it is the Board's practice to include Alternate members in all Board proceedings so that they may be available to participate as may be required. When serving as an Alternate, the Alternate Member may participate in Board deliberations, once a motion is formally placed on the table. Alternate Members shall only have voting authority when replacing a Board member.

7. Duties of the Secretary: The Secretary[3] shall be the Director of Planning and Sustainability, or their designee. The Secretary shall cause to be kept a complete and accurate record of proceedings of all meetings; record the roll; conduct Board correspondence and fulfill such duties as the Chair and the Board may request. Pursuant to City Ordinances, the Secretary shall act as advisor to the Board on matters coming before it. In this capacity, the Secretary shall work on materials[4] that will further the City's Master Plan and its Master Planning Process. These materials include such other reports, studies or other topical items that come before the Board and which are deemed to be appropriate to be so included in the Master Planning Process.

C. Meetings – Controlling Length of, Types of and Scheduling.

At the start of a Regular Meeting, if an Agenda has not been previously divided by the Chair, any Board Member may request a polling of the membership to determine whether the Agenda should immediately be divided at some designated

[3] The Director of Planning and Sustainability, or designee, shall act as the Board's Secretary but shall be without vote.
[4] Including but not limited to the following: studies, reports, plans, maps and similar work products.

point. On an affirmative vote, the Board shall then act to ascertain if a consensus exists to divide the Agenda in order that the public may be informed, before the meeting formally starts.

If a decision is not made to divide an Agenda, and the Board's business continues to 10:00 PM, the Board shall immediately determine by majority vote, whether to remain working past 10:30 PM and complete the Agenda or to continue any business, which has been not yet been considered before 10:30 PM to a date and time certain (usually, the next Regular Meeting of the Board). One exception to this rule shall be to allow the Board to consider any time sensitive materials as which may be identified by the Chair.

1. Notice of Regular Meetings: Regular Meetings shall be held monthly, the date and time to be selected by majority vote of the Board.[5] The Board's Secretary shall make notice of such meetings by sending out a written notice to all Members at least three days before the meeting indicating the time and the place of the meeting.

2. Special Meetings: These may be called by the Chair, or the Chair at the request of three or more Members, or by the Secretary and the Chair or Vice Chair. The Chair shall select the date, time and place of the Special Meeting. The Secretary shall give at least twenty-four hour written notice of the meeting.

3. The Secretary shall provide a meeting Agenda and a briefing on that agenda to each Board member.[6] The Secretary shall make these materials available for public inspection in the Planning Department Office following delivery to the Board.

D. General Order of Proceedings.

At each Regular Meeting the following Agenda format shall be followed; unless, otherwise modified by the Board.

1. Approval of Minutes.

2. Unfinished Business.

3. Public Hearings.

4. New Business.

5. City and Board Business.

[5] Usually, the Board's regulatory meeting is on the third Thursday of the month. If another meeting is necessary to complete the Board's business, it is usually scheduled either for the next regular Board meeting or for some other day (usually the fourth Thursday of the month).

[6] Agenda items, other than applications requiring a Public Hearing, should be submitted to the Planning Department at least five days before the meeting.

6. Communications and Other Business.

7. Adjournment.

E. Quorum Requirements.

1. Five Board members must be physically present in attendance at a meeting (except in case of emergency) to form a quorum. No Board member shall leave a meeting without the permission of the Chair if such presence is necessary to maintain a quorum.

Remote participation: Where in-person attendance is not reasonably practical for a Board member who requests to participate remotely, that participation may be allowed with a finding of necessity and a concurring vote of a majority of members physically present. Otherwise, a member's absence shall be covered by an alternate appointed to sit by the Chair.[7]

F. Brief Overview of the Statutory Duties of the Planning Board.

1. To prepare and amend a Master Plan for the City and as may be appropriate for areas lying within the City.[8] In this capacity the Board has the "responsibility" for promoting the public's "interest in" and "understanding of" the Master Plan (RSA 674:1 (a)).

2. The Board has the authority to make any investigations, maps and reports and recommendations "which relate to the planning and development of the municipality (RSA 674:1 (b))."

3. To report and formulate recommendations to appropriate public officials and agencies programs for development of the City, programs for the "erection of public structures" and programs for municipal improvements. In this capacity the Board shall consult with appropriate officials, the public and provide financing recommendations.[9]

4. To "attend municipal planning conferences or meetings, or hearings upon pending municipal planning legislation."

5. On the performance of these duties, Board members may make site inspections, examinations and surveys "as are reasonably necessary" to complete these responsibilities.

6. To make recommendations to the legislative body (City Council) of amendments of the Zoning Ordinance or Zoning Map.

[7] NH RSA 91-A:2,III

[8] The Master Plan initiates the Board's process of preparing/adopting conforming Bylaws. These consist of the following: Zoning Ordinance and Zoning Map; Subdivision Rules and Regulations; Site Review Regulations; an annual Capital Improvement Plan; and an Official Map. (In Portsmouth, the Official Map is usually deemed to be the Zoning Map.)

[9] The Board's annual Capital Improvement Plan addresses this responsibility.

7. The City Council may grant to the Board such powers "as may be necessary to enable it to fulfill its function, promote municipal planning, or carry out the purposes of this Title" (Title LXIV, Planning and Zoning).[10]

8. Subdivisions. To "approve or disapprove, in its discretion, plats and to approve or disapprove plans showing the extent to which and the manner in which streets within subdivisions shall be graded and improved and to which streets, water, sewer and other utility mains, piping, connections or other facilities within subdivisions shall be installed."[11]

9. Site Plan Review. To "review and approve or disapprove site plans for the development or change or expansion of use of tracts for nonresidential uses or for multi-family dwelling units … whether or not such development includes a subdivision or resubdivision of the site".[12]

10. To exercise any other authority or responsibility contemplated by State or local law.

11. Pursuant to the direction of the City Council, to represent the City before the Rockingham Regional Planning Commission.

G. General Procedures.

1. The Board intends to review, consider and act on completed applications. To accomplish this intention, the Board's application process and calendar is readily available to the public.[13] The Boards regulations specify what constitutes a completed application sufficient for the Board to invoke jurisdiction. Applicants are encouraged to make the original application as complete as possible and to avoid submitting new materials.[14] City staff Memoranda shall be considered City work products and shall not constitute new information.

2. Each application shall be considered and acted upon immediately following the close of its presentation and Public Hearing.

3. A motion shall be carried by a majority of Members present and voting in the affirmative unless other rules should require a greater number voting in the majority.[15]

[10] NH RSA 674:1
[11] NH RSA 674:35
[12] NH RSA 674:43
[13] See City's Web page located at: https://www.cityofportsmouth.com/
[14] See appropriate time requirements contained in the Subdivision Regulations and Site Review Criteria.
[15] For example, the waiving of a requirement in the Board's Subdivision Rules and Regulations require a two-thirds majority vote of the Board (at least six votes in support).

4. When a question is put to the Board, each member present shall vote; except, if such vote would be excluded by a conflict of interest as defined by State Statute and City ordinance.

5. Roll call votes shall be taken at the request of the Chair, a Board member, or the applicant.

6. With these Rules and Procedures, the Board shall conduct its business generally in accord with Roberts Rules of Order; except, when these rules or other laws would dictate otherwise.

7. Planning Board members shall advise the Membership of any contact with an applicant or a representative of the applicant before the initiation of an action on that matter. If a Board member has any questions concerning a contact, these should be discussed immediately with the Chair.

8. Procedure for Public Hearings

   a) Public hearings of the Board shall follow the following procedures:

      (1) Presentation by the proponent

      (2) Questions by Planning Board members

      (3) Public comment limited to comments to, for or against the application or proposal:

         (a) Anyone providing public comment shall provide their name and address for the record.

         (b) Anyone wishing to speak during public comment must speak during the first round and only first round speakers may speak in subsequent rounds.

         (c) All comment shall be directed to the Chair

         (d) First round: maximum of 3 minutes per person; oral comment only

         (e) Second round: maximum of 5 minutes per person; may include presentations

         (f) Third round: maximum of 5 minutes per person; oral comment only. This time may, in the Board's discretion, be extended at the request of the speaker and the approval of the Board.

      (4) Chair closes public hearing

(5) Discussion on Findings of Fact

(6) Motion(s) on Findings of Fact

(7) Discussion on Motion(s) on Findings of Fact

(8) Vote on Findings of Fact

(9) Motion(s) on the application or proposal

(10) Discussion on the motion(s)

(a) No further public comment

(b) No addition by the applicant or proponent unless in answer to a question from the Board

(11) Vote on the motion(s)

b) If the public hearing is continued to a subsequent meeting of the Board, the procedure outlined above shall also be followed at the continued hearing.

9. Electronic or Multimedia Presentations

a) The Planning Board encourages (and, in some cases, requires) applicants to provide their materials in electronic format (PDF). The purpose of this is twofold: to publish application materials on the Planning Department's website for public review, and to project the application materials on a screen in the hearing room so that it can be more easily seen by Board members and the public. Applicants for subdivision or site plan approval must submit their materials at the same time as their paper applications.

b) In addition, applicants are allowed to submit modified plans as PowerPoint, PDF or multimedia presentations in a format that is easier to display or view (for example, colored site plans and renderings). Any such presentations must be submitted to the Planning Department by the close of business on the day preceding the public hearing.

c) Members of the public may use PowerPoint, PDF or multimedia presentations in a public hearing during the second round of public comment, subject to the 5-minute time limit specified above. Any such presentation must be submitted to the Planning Department by the close of business on the day preceding the public hearing, as is required of the applicant.

d) Other presentation formats may be permitted during a public hearing subject to the prior approval by the Director of Planning and Sustainability.

H. General Practice and Guidelines.

1. Board members shall not text each other during public hearings or board deliberations. All deliberations must be done in public.

2. When, for purposes of conducting a Public Hearing, Board attendance at the meeting is five members, the applicant shall be afforded the opportunity to request that the application or item be rescheduled to the next available meeting. Any such rescheduling shall not count against any time standards requiring the Board to act.

3. Board Decisions and Motions:

a) The Board shall decide to either Approve, Conditionally Approve or Disapprove an application pursuant to State Law. Board decisions are not final until one of these decisions has been reached.

b) A motion that receives a tie vote of the Board means the motion fails to pass.

c) A motion shall receive a majority vote of the Board members present to pass.

d) The Board shall issue a written Letter of Decision to the Applicant, including Findings of Fact conforming with the Board's decision and signed by the Chair pursuant to State Law.

I. Definitions.

1. **Bylaw:** The term when used in reference to legislative action taken by a city, town, county or village district shall have the same meaning as an ordinance and shall be subject to the same procedures for enactment.[16]

2. **Conflict of Interest:** Disqualification of Member. No member of the Planning Board "shall participate in deciding or shall sit upon the hearing of any question which the board is to decide in a judicial capacity if that member has a direct personal or pecuniary interest in the outcome which differs from the interest of other citizens, or if that member would be disqualified for any cause to act as a juror upon the trial of the same matter

[16] NH RSA 21:45

in any action at law … When uncertainty arises as to the application (of the above) to a board member in particular circumstances, the board shall, upon the request of that member or another member of the board, vote on the question of whether that member should be disqualified. Any such request and vote shall be advisory and nonbinding, and may not be requested by persons other than board members, except as provided by local ordinance or by a procedural rule …"[17]

3. **Ex Officio Member:** Any member who holds office by virtue of an official position and who shall exercise all the powers of regular members of a local land use board.[18]

4. **Local Governing Body:** The City Council .[19]

[17] NH RSA 673:14
[18] NH RSA 672:5
[19] NH RSA 672:6