SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

CONFERENCE ROOM A
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

Members of the public also have the option to join the meeting over Zoom
*(See below for more details)**

2:00 PM **January 3, 2023**

AGENDA

I. APPROVAL OF MINUTES

A. Approval of minutes from the December 15, 2022 Site Plan Review Technical Advisory Committee Meeting.

II. OLD BUSINESS

A. The application of **Banfield Realty, LLC, (Owner)**, for property located at **375 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f. industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District. (LU-20-259)

B. The request of **Frederick J. Bailey III & Joyce Nelson (Owners)**, and **Tuck Realty Corporation (Applicant),** for properties located at **212, 214, and 216 Woodbury Avenue** requesting Preliminary and Final Subdivision Approval for a Lot Line Relocation to create the following lots: Proposed Lot 1 to be 60,025 square feet of lot area where 26,012 square feet are existing, Proposed Lot 2 to be 12,477 square feet of lot area where 29,571 square feet are existing, and Proposed Lot 3 to be 7,917 square feet of lot area where 24,836 square feet are existing. No changes in street frontage are proposed. Said properties are located on Assessor Map 175 Lots 1, 2, and 3 and lie within the General Residence A (GRA) District. (LU-22-129)

C. The request of **Frederick J. Bailey III & Joyce Nelson (Owners)**, and **Tuck Realty Corporation (Owner and Applicant),** for properties located at **212 Woodbury Avenue** requesting Site Plan Approval for the construction of an eight-unit condominium development consisting of four (4) single living-unit structures, two (2) two-unit structures, 18 parking spaces where are 13 required, and associated stormwater, utility and site improvements with access to the development from Boyd Street. Said properties

are located on Assessor Map 175 Lot 1 and lies within the General Residence A (GRA) District. (LU-22-129)

D. The request of **One Market Square LLC (Owner),** for property located at **1 Congress Street** requesting Site Plan Review approval for the partial demolition and expansion of the existing structure to construct a 3-story building with 58,780 square feet of gross floor area, 12,080 square foot building footprint, 13 parking spaces, and associated onsite and offsite improvements. Said property is shown on Assessor Map 117 Lot 14 and lies within the Character District 4 (CD4), Character District 5 (CD5), Downtown Overlay (DOD), and Historic District. (LU-22-12)

III. NEW BUSINESS

A. The request of **Pease Development Authority (Owner)**, for property located at **80 Rochester Avenue** Site Plan approval for the construction of a ±209,750 SF advanced manufacturing building including ±18,145 SF of office space, two (2) parking areas, two (2) loading dock areas, minor realignment of a portion of Rochester Avenue, and associated site improvements consisting of underground utilities, landscaping, lighting, and a stormwater management system. Said property is shown on Assessor Map 308 Lot 1 and lies within the Pease Industrial District (PI). (LU-22-210)

B. The request of **Pease Development Authority (Owner)**, for property located at **80 Rochester Avenue** requesting lot line adjustment to add 22,251 square feet to the existing lot as part of a realignment of Rochester Avenue for a proposed lot size of 496,584 square feet (11.4 acres). Said property is shown on Assessor Map 308 Lot 1 and lies within the Pease Industrial District (PI). (LU-22-210)

C. The request of **Nicole J. Giusto** and **David A. Sinclair (Owners),** for property located at **765 Middle Street** requesting Site Plan Approval for a fourth dwelling unit in a new detached structure with a 3-bay garage, including stormwater management improvements, expanded driveway utility services and landscaping. Said property is located on Assessor Map 148 Lot 37 and lies within the General Residence A (GRA) and Historic Districts. (LU-22-196)

IV. OTHER BUSINESS

V. ADJOURNMENT

https://us06web.zoom.us/webinar/register/WN_ed1Kf23yQJG32-UTimM61g

SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

CONFERENCE ROOM A
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

2:00 PM **December 6, 2022**

MINUTES

MEMBERS PRESENT:

Peter Stith, Chairperson, Principle Planner; David Desfosses, Construction Technician Supervisor; Patrick Howe, Deputy Fire Chief; Shanti Wolph, Chief Building Inspector; Peter Britz, Environmental Planner; Nicholas Cracknell, Principal Planner;; Zachary Cronin, Assistant City Engineer, Eric Eby, Parking and Transportation Engineer (Virtual); Mike Maloney, Deputy Police Chief

MEMBERS ABSENT:

ADDITIONAL STAFF PRESENT: Beverly Mesa Zendt, Planning Director; Stefanie Casella, Planner 1, Kate Homet, Associate Environmental Planner

Chairman Stith noted that Mr. Eby would be participating via Zoom.

I. APPROVAL OF MINUTES

A. Approval of minutes from the November 17, 2022 Site Plan Review Technical Advisory Committee Meeting.

[0:23] The Committee voted to approve the minutes as presented.
Motion: P. Howe, Second: P. Britz. Motion passed all in favor.

[0:34] Chairman Stith noted that the applications listed in items A-C would be postponed to a future meeting. Chairman Stith introduced item D.

II. OLD BUSINESS

A. REQUEST TO POSTPONE The application of **Banfield Realty, LLC, (Owner)**, for property located at **375 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f.

industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District. (LU-20-259) **REQUEST TO POSTPONE**

The Committee postponed consideration to the January meeting.

B. The request of **Frederick J. Bailey III & Joyce Nelson (Owners)**, and **Tuck Realty Corporation (Applicant),** for properties located at **212, 214, and 216 Woodbury Avenue** requesting Preliminary and Final Subdivision Approval for a Lot Line Relocation to create the following lots: Proposed Lot 1 to be 60,025 square feet of lot area where 26,012 square feet are existing, Proposed Lot 2 to be 12,477 square feet of lot area where 29,571 square feet are existing, and Proposed Lot 3 to be 7,917 square feet of lot area where 24,836 square feet are existing. No changes in street frontage are proposed. Said properties are located on Assessor Map 175 Lots 1, 2, and 3 and lie within the General Residence A (GRA) District. (LU-22-129)

The Committee postponed consideration to the January meeting.

C. The request of **Frederick J. Bailey III & Joyce Nelson (Owners)**, and **Tuck Realty Corporation (Owner and Applicant),** for properties located at **212 Woodbury Avenue** requesting Site Plan Approval for the construction of an eight-unit condominium development consisting of four (4) single living-unit structures, two (2) two-unit structures, 18 parking spaces where are 13 required, and associated stormwater, utility and site improvements with access to the development from Boyd Street. Said properties are located on Assessor Map 175 Lot 1 and lies within the General Residence A (GRA) District. (LU-22-129)

The Committee postponed consideration to the January meeting.

D. The request of **Jonanthan Watson Sobel Revocable Trust (Owner)**, for property located at **49 Sheafe Street** requesting preliminary and final subdivision approval to subdivide one (1) lot with an area of 5,402 s.f. and 50.55 ft. of continuous street frontage on Sheafe Street and 22.93 feet of frontage on Custom House Court into two (2) lots as follows: Proposed lot 1 with an area of 1,855 s.f. and 22.93 ft. of continuous street frontage on Custom House Court; and Proposed Lot 2 with an area of 3,548 s.f. and 50.55 ft of continuous street frontage on Sheafe Street. Said property is shown on Assessor Map 107 Lot 21 and lies within the CD4 and Historic Districts. (LU-22-179)

SPEAKING TO THE APPLICATION

[2:30] John Chagnon of Ambit Engineering as well as the property owner came to present this application. Chairman Stith noted that the main outstanding item was the addressing issue which Mr. Howe was able to go and do a site visit to confirm. A plan was included for DPW to show the water service in the packet. The applicant intends to go forth to the December Planning Board meeting.

PUBLIC HEARING

[3:42] Chairman Stith opened it up for public comment. No one spoke. The public comment was closed.

DISCUSSION AND DECISION OF THE BOARD

[3:55] The Committee voted to recommend approval to the Planning Board at the December meeting with the following condition:

1. The water line shall be installed and functioning before subdivision is recorded at the registry.

Motion: P. Howe. Second: D. Desfosses. Motion passed all in favor.

E. The request of **One Market Square LLC (Owner),** for property located at **1 Congress Street** requesting Site Plan Review approval for the partial demolition and expansion of the existing structure to construct a 3-story building with 58,780 square feet of gross floor area, 12,080 square foot building footprint, 13 parking spaces, and associated onsite and offsite improvements. Said property is shown on Assessor Map 117 Lot 14 and lies within the Character District 4 (CD4), Character District 5 (CD5), Downtown Overlay (DOD), and Historic District. (LU-22-12)

SPEAKING TO THE APPLICATION

[4:32] Chairman Stith introduced item E in the agenda and mentioned that there were no new submittals and that he wanted to talk about offsite improvements during this meeting.

John Chagnon represented this application.

Ms. Mesa Zendt stated that the public improvements associated with the site and around the site be developed then reviewed as a separate TAC application for review that will be moved along to the Parking and Traffic Safety Committee and then City Council for review. The on-site plans will be presented separately in TAC which will then proceed on the normal track to the Planning Board.

[7:45] Mr. Chagnon responded that the applicant was on board with this plan and would engage stakeholders and other departments to plan for the off-site improvements. They will be coming back to TAC next month with improvements for just the on-site application. A license plan was submitted which includes details on the identified licenses for the proposed awnings on High Street and the catenary lighting strung between buildings.

[12:05] Ms. Mesa Zendt recommended that the applicant go to the Parking and Traffic Safety Committee for the elimination of any parking along with the Arts and Nonprofits Committee for any public art.

PUBLIC HEARING
[19:47] Chairman Stith opened it up for public comment. No one spoke. The public comment was closed.

DISCUSSION AND DECISION OF THE BOARD

[19:56] The Committee voted to continue to the January meeting.

Motion: N. Cracknell, Second: P. Britz. Motion passed all in favor.

III. NEW BUSINESS

A. The request of **Brady J. Byrd** and **Brian L. Neste (Owner),** for property located at **184 Walker Bungalow Road** & **27 Shaw Road** requesting lot line relocation to convey 3,834 square feet of area and 26 feet of frontage from lot 223/18 to lot 223/19. Said property is located on Assessor Map 223 Lot 19 and lies within the Single Residence B (SRB) District. (LU-22-224)

SPEAKING TO THE APPLICATION

[20:45] John Chagnon came to present this application and noted that the property that is 27 Shaw Road just came under new ownership. Mr. Chagnon has received authorization from the new owner whom he is now representing and the plans will be updated to reflect that change. Since last month, there have been changes made to the notes on the plan, eliminating one and adding in note 8. He also mentioned that neither Brian Neste or Brady Byrd are prepared to talk about maintenance details or ownership of the drainage system as it was not designed nor is it to be constructed by them.

[24:06] Mr. Cronin asked what lot the offsite drainage easement was for.

Mr. Chagnon responded that it was for 18-1. There exists currently a drainage facility on the southern side of 18-1 that includes an easement that was created to allow that drainage to flow through Lot 223-18 which was part of the subdivision approval for those lots.

[25:01] Mr. Britz asked if the drainage that is coming off of 18-1 was intended to go into the drainage easement he was talking about.

Mr. Chagnon responded that no, it is entirely for supporting Lot 18-1.

PUBLIC HEARING

[26:20] Chairman Stith opened it up for public comment. No one spoke. The public comment was closed.

DISCUSSION AND DECISION OF THE BOARD

[27:08] The Committee voted to recommend approval to the Planning Board at the January meeting with the following condition:

1. Applicant will update the application materials to reflect the new owner information for 184 Walker Bungalow Road and submit a new owner authorization form.

Motion: P. Howe, Second: P. Britz. Motion passed all the favor.

B. The request of **Torrington Brown LLC** and **Single Venture LLC (Owners)**, for property located at **132 & 134 Middle Street** requesting a Conditional Use Permit Approval to provide 7 parking spaces where 17 spaces are required as permitted under Section 10.1112.62 of the Zoning Ordinance Said property is shown on Assessor Map 127 Lots 11, 12 and is located within the Character District 4-L1 (CD4-L1) and Historic Districts. (LU-22-232)

SPEAKING TO THE APPLICATION

[27:26] Chairman Stith introduced the next application.

John Chagnon and Gregg Mikolaities came to present this application. It was previously approved with some differences a few years ago. Multiple approvals were extended except for the parking conditional use permit where they came to present. These are two separate lots with one building bifurcated down the middle. There is a commercial use in 184 Middle Street and the other units are residential. They will be converting the commercial to residential which would increase the residential units by one. The existing parking space requirements required 18 parking spaces with the proposed new use requiring only 17 spaces. The property has 7 on-site parking spaces, including parking on both sides of the building along with parking in the back which is accessible via an easement on State Street.

[33:05] Mr. Chagnon addressed the staff comments on this application:

1. CUP methodology is ok. Just need to be sure that all vehicles can get in and out of parking spaces on site as shown.
    a. They believe they are able to get in and out as shown. It is tight and they are stacked but there will be coordination with tenants.

2. Consider adding more bike racks.
    a. More bike racks have been installed on the building to hold up to four bikes. This is in addition to the two standing racks.

[35:37] Mr. Britz asked if there was any process for reserving the parking spaces or if it was first come first serve.

Mr. Chagnon responded that tenants were being asked whether or not they needed spaces and some did not have vehicles. The need to coordinate stacked parking is understood and the new tenants are fully informed of the parking situation.

PUBLIC HEARING

[39:07] Chairman Stith opened it up for public comment. No one spoke. The public comment was closed.

DISCUSSION AND DECISION OF THE BOARD

[39:24] Mr. Britz stated that he supported this application as long as the tenants are fully aware of what they are getting into. This plan supports sustainability with less cars and less congestion.

[39:43] The Committee voted to recommend approval to the Planning Board at the January meeting with the following condition:

1. Applicant will update plans to reflect the addition of an extra bike rack.

Motion: P. Britz, Second: Z. Cronin. Motion Passed all in favor.

IV. OTHER BUSINESS

V. ADJOURNMENT

The meeting adjourned at 2:41 p.m.

Respectfully submitted,

Kate E. Homet
Secretary for the Technical Advisory Committee

JONES&BEACH
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December 22, 2022

Portsmouth Technical Advisory Committee
Attn. Board Members
1 Junkins Avenue, 3rd Floor
Portsmouth, NH 03801

RE: Response Letter 3 – Altus Engineering & TAC Comments
212, 214, & 216 Woodbury Ave., Portsmouth, NH, 03801
Tax Map 175, Lots 1, 2, & 3
JBE Project No. 21254

Dear Board Members,

We are in receipt of comments from Eric Weinrieb, P.E., Altus Engineering, dated October 25, 2022, and from Stefanie Casella, Portsmouth Planning Department, dated November 14, 2022. Review comments are listed below with our responses in bold.

ALTUS COMMENTS

GRADING AND DRAINAGE PLAN

4. Based on the proposed grading, it appears that some of the specimen trees scheduled to remain may be disturbed by the construction activities near bioretention system 1. The Designer should provide the spread on the specimen trees and obtain a letter from the landscape architect certifying that the trees will not be damaged by the construction activities. Issue partially addressed. The landscape architect has submitted a letter indicating that the trees adjacent to the pond and roadway will survive the construction activities. The site grading has been modified. The Designer should add notes to the effect that if trees scheduled to remain need to be removed or become unhealthy, additional trees will need to be planted to the satisfaction of the Planning Department.
RESPONSE: See Note #22 on Sheet L1.

8. Based on the test pits provided, it is apparent that the basements (if provided) will be within the seasonal high-water table. The Designer needs to identify if sump pumps will be provided and if so, where will they discharge and what will be the projected volume. Issue partially addressed. The Designer has indicated that building units 5 through 8 will have sump pumps. Building 5 will discharge along the westerly property line as a concentrated flow. Altus does not support this discharge location. The Designer has indicated that building units 6 through 8 will discharge into Bioretention Pond 2. The discharge pipes should be depicted on the plans. The Designer needs to provide documentation on the quantity of groundwater flow expected. The Designer needs to explain how the infiltration basins adjacent to the building units will not discharge into the perimeter drain system.

RESPONSE: We previously provided a spreadsheet to estimate the volume, discharge, and lag time of each unit's sump pump. Please note that we have raised the finished floors for Units 6&8 in order to somewhat reduce the amount of pumping necessary, so these calculations have changed and a revised spreadsheet is included in the revised drainage report with this submission.

The surface area of each basement is approximately 953 S.F. Each foundation is presumed to be 8 feet deep, so 8 was subtracted from the finished floor elevation to determine the excavation depth on each unit. Then the SHWT elevation was determined based on average existing grade within the foundation footprint. The depth from average SHWT to the bottom of foundation was then multiplied by the foundation footprint. This was multiplied by a void ratio of 0.5 as a high estimate for loamy sand in order to determine the volume of water displaced by each foundation. This is presumed to be equal to the sump pump discharge volume from each unit.

Next, a lag time needed to be determined in order to calculate peak flow. The lag time is equal to the depth of the foundation below the water table multiplied by the permeability rate. The permeability rate was multiplied by a factor of safety of two. Then, the volume was divided by the lag time to determine the peak flow.

We then used this data to generate hydrographs for each sump pump which were then used to model links in HydroCAD. These links represent the estimated flow and volume of sump pump discharge for each unit. We then designed a system to completely infiltrate the peak 24-hour sump pump discharge, but have also provided an overflow for the systems due to the uncertainty of groundwater flow.

The subsurface stone infiltration basins that were already shown on the plan will no longer be used for roof runoff. Instead, these are being repurposed to infiltrate the sump pump discharge and the roof runoff is being piped into the stone beneath the eco-paver driveways. There will be a 30 mil impermeable liner between the stone beneath the eco-paver driveways and the road in order to prevent migration of water into the road gravels.

The foundation drain discharge pipes are now shown on the plans. We do not anticipate that the infiltration basins will discharge into the perimeter drain system because we are proposing a 20 mil impermeable liner along the top and sides of the infiltration basins.

10. The Designer is proposing to mitigate the impacts from the roofs by discharging some of the stormwater into crushed stone infiltration beds. Altus believes that this is an acceptable design approach. However, the Designer has not provided roof plans indicating where the runoff will discharge. It will be critical that the crushed stone infiltration basins are constructed according to the plans and that the roof areas each discharge to the appropriate area. Deviations during construction could have substantial impact on the rate and volume of runoff that discharges from the site. Issue partially addressed. The Designer has added note 29 to Sheet C2. It needs to include modifications to the gutters and roof lines as they can have an impact on the drainage computations triggering a modification to the site design.
RESPONSE: Note #29 on Sheet C2 has been expanded to include this language.

11. Section 6.6.1 of the SPRR requires that side slopes for all landscaped areas shall not exceed 3 to 1 slope. The berm for bioretention basin 2 is designed with a 2 to 1 slope. The Designer either needs to request a waiver from the regulations or regrade the berm. Issue partially addressed. Portions of the 2 to 1 slope have been changed to 3 to 1. The Designer has proposed a retaining wall at the toe of slope at bioretention basin 2. It appears that the slope remains at 2 to 1 adjacent to the riprap overflow weir. The new retaining wall is within 6-inches of the property. It does not appear to be reasonably possible to construct and maintain the wall without impacting the abutting property. See additional comments below.
RESPONSE: The area has been revised so that the entire slope is now 3:1. The proposed retaining wall against the property line has been removed from the design.

NEW COMMENTS BASED ON REVISED GRADING PLAN

a) It appears that the grading for Bioretention System 1 encroaches into the Woodbury Avenue right-of-way.
RESPONSE: The grading for Bioretention System 1 has been revised.

b) Two new infiltration basins are proposed. Neither have test pits within the bed area.
RESPONSE: New test pits have been performed and new test pit logs are enclosed.

c) Notes should be added to the plans indicating that building units 1 through 4 will not have sump pumps or foundation drains.
RESPONSE: Note #29 on Sheet C2 has been expanded to indicate that units 1-4 will not have basements, sump pumps, or foundation drains.

NEW COMMENTS BASED ON REVISED LANDSCAPE PLAN

d) It appears that the proposed white fir will be in the berm of Bioretention basin 1. The Designer needs to comment if it is acceptable to plant in the berm.
RESPONSE: The proposed white fir has been moved further away from the berm.

DETAIL SHEETS

NEW COMMENTS BASED ON REVISED PLANS

e) A retaining wall detail has been added to the plans at the toe of the bioretention basin adjacent to the abutters parking lot. The detail indicates that there will be an underdrain. The Designer needs to show where the drain will outlet. The backfill is granular. The Designer needs to comment on how the ponded water from the basin will not discharge into the select backfill and weep through the wall. The Designer needs to indicate if a handrail or a fence is needed. The wall detail should be stamped by a structural engineer. The Designer needs to provide a detail as to how the existing wall will interface with the new wall.

RESPONSE: One of the proposed retaining walls has been eliminated. The underdrain outfall location for the proposed retaining wall that remains is now shown. The retaining wall downslope of the bioretention pond has been removed from the plan, so ponded water from the basin will not be an issue. As shown on Sheet C2, a wooden fence is proposed along the high side of the retaining wall that remains in the design. The detail on our civil plan set is for approval purposes only and our detail states that the final retaining wall design shall be stamped by a structural engineer for retaining walls taller than 4'. A detail for the connection between the proposed and existing retaining walls is not necessary as we have eliminated the proposed wall that would connect to the existing one.

STORMWATER OPERATION AND MAINTENANCE REQUIREMENTS

21. The submittal is deficient the stormwater operation and maintenance plan. This document should be included in the condominium/homeowner's association documents and should be recorded at the Registry of Deeds to ensure that the association and all owners are aware of the requirements to maintain the site.

RESPONSE: A stormwater operations and maintenance plan is now included within the revised stormwater operations and maintenance manual and this document will be part of the Condominium documents.

EXISTING AND PROPOSED WATERSHED PLANS

26. There are natural depressions in subcatchment 3 that should be modelled as ponds. The natural ponding areas in subcatchment 3 will require additional modelling and will reduce the longest flow path. Issue partially addressed. The depressions are now modelled as ponds. The Designer has added reaches for routing from the outlet to the next downgradient subcatchment. There are numerous errors in the routing computations. See below.

RESPONSE: See below, we have revised the drainage report accordingly.

DRAINAGE COMPUTATIONS

30. The Designer needs to confirm the longest flow paths. The surfaces and slopes used in the computations do not appear to be consistent with the site conditions. Thus, Altus is not in full agreement with the Designer's methodology. The discrepancies should be discussed at an on-site meeting. Issue partially addressed.

RESPONSE: See below responses.

a. *Existing subcatchment 1S should not be routed in reach 3R.*
RESPONSE: Existing subcatchment 1S is now routed directly to AP1.

b. *Existing pond 4P and 2P should not be routed into same length reach.*
RESPONSE: 4P is routed directly toward 3R. 2P is now routed toward pre-development reach 4R, which is directed toward 3R.

c. *Existing reach 1R scales to be approximately 200-feet. The input shows it is only 122-feet.*
RESPONSE: Reach 1R has been split into 3 reaches of different longitudinal slopes. The three reaches add up to 188 feet.

d. *Post development subcatchment 3S longest flow path appears to be less than 25-feet. The computations indicate that it is 187-feet.*
RESPONSE: The time of concentration has been revised for the longest flow path, 25 feet in length.

e. *Post development subcatchment 6S indicates that longest flow path is 165-feet. The Designer should confirm the computation. The plans indicate that the subcatchment starts in Boyd Road and ends in Bioretention basin 2.*
RESPONSE: The proposed watershed plans indicate that the longest flow path begins at the corner of the house on lot 2 and ends at bioretention basin 2. This is hydraulically the longest flow path due to the preponderance of wooded area within the sheet flow segment. A flow path beginning at Boyd Road shows the wooded area in the shallow concentrated flow segment and therefore results in a shorter time of concentration. The two different Tc paths with their lengths in minutes have been added to the plans for reference.

f. *Post development subcatchments 14S and 15S should be combined and reach 2R eliminated.*
RESPONSE: Post development subcatchments 14S & 15S have been combined and reach 2R eliminated.

g. *The Designer needs to provide information supporting the 85-foot-long reach 3R and why subcatchment 17 is routed through it.*
RESPONSE: Reach 3R and Subcatchment 17S were created in response to Comment #30 from the previous Altus review letter, which pointed out that "a significant portion of post-development subcatchment 3 longest flow path is a V-shaped channel rather than shallow concentrated flow." Therefore, Subcatchment 3S was broken up into the land that remains in subcatchment 3S, draining directly toward the Best Western Plus property, and 17S. This V-shaped channel is modelled as Reach 3R and Subcatchment 17S represents the land area directed toward the channel.

The V-shaped channel was modelled as a reach rather than a time of concentration segment because outflow from Pond 1P also enters the channel. In order to accurately model the peak elevation of the channel, Reach 3R was created with flow from Subcatchment 17 as well as outflow from Reach 4R both directed toward it.

h. *Post development subcatchment 17 longest flow path appears to be underestimated.*
RESPONSE: The longest flow path for subcatchment 17S ends at the beginning of Reach 3R. Similarly, to the Tc path for subcatchment 6S, the specific flow path for 17S was chosen due to the preponderance of woods in the sheet flow segment. If we begin in grass, the time of concentration is only 13.1 minutes as the wooded section is within the shallow concentrated flow segment. Beginning in woods the Tc path is 16.3 minutes. The two different Tc paths with their lengths in minutes have been added to the plans for reference.

i. *The outflow from pond 1P should be routed through a reach before discharging at AP3.*
RESPONSE: The outflow from pond 1P is routed toward Reach 4R, representing the section of 17S preceding the V-shaped channel, which is then routed into Reach 3R, representing the V-shaped channel itself.

j. *The Designer needs to summarize how the infiltration basins and permeable driveways are routed directly to AP3.*
RESPONSE: This has been revised so that theoretical overflow from the permeable paver driveways and from infiltration basin 11P is directed toward Bioretention #2 rather than AP3. There is no overflow during the analyzed storm events, so this is theoretical routing only.

k. *It appears that pond 4P will overflow into the drip edge behind units 3 and 4 and flow into pond 10P rather than towards AP4.*
RESPONSE: We concur. Pond 4P has been routed directly to Pond 10P and any overflows would go there. Routing Pond 4P to Pond 3P where Pond 3P is already routed to Pond 4P would result in an illegal loop in HydroCAD. However, there is no overflow from this system during any analyzed storm event so this is purely theoretical. Hypothetical secondary overflow from 3P has also now been routed toward 10P instead of AP4.

32. In accordance with Section 7.4.2.9, the Designer needs to demonstrate that the downstream channel or system capacity is sufficient to carry the stormwater run-off volume and flow without adverse effects. It is understood that the Designer notes that there will be a reduction in flow onto the abutting property. The Designer should document as to where the runoff flows and if the receiving system is adequately sized. Issue not addressed. The Designer has made modifications to the design to correct the issues. However, until all the computations have been satisfactorily addressed, it is not possible to assure that the abutting properties will not be affected by the development.
RESPONSE: See above responses to comments a-k above. We are now showing the surveyed detail on the abutting property on an exhibit to the closest catch basin in the Best Western Plus parking lot.

34. The Designer needs to provide the calculation for the maximum effective impervious area for the development. Open issue. The Designer has indicated that the post development effective impervious will be approximately 2,000 SF. It appears that the Designer is not addressing the existing driveway and other built infrastructure that will remain. It is Altus' understanding that the regulations refer to all impervious on the site which is both existing to remain and new impervious.
RESPONSE: The effective impervious calculation on Note #26 on Sheet C3 has been revised to include the existing impervious surface to remain on Lots 2&3.

DEPARTMENT OF PUBLIC WORKS COMMENT RESPONSE

2. The Designer has added sediment forebays to the surface treatment devices.
RESPONSE: In order to save space, the sediment forebay for bioretention #2 has been replaced with a Pre-Tx curb inlet device. A detail for this device is on Sheet D6. This provides pre-treatment as well. Bioretention #1 still has a proposed sediment forebay.

3. The Designer has provided the pollutant efficiency removal for each treatment device. However, a significant portion of the site will not be treated. The Designer needs to indicate how much of the entire site will be treated and provide the overall site pollutant removal efficiency. Open issue. Computations need clarification.
RESPONSE: Previously the computations provided removal efficiency calculations for only paved runoff. Now the computations provide removal efficiency for roof runoff as well, so they account for all impervious surface. Where Section 7.6.2.1(a) of the Site Plan Review Regulations require that we achieve 80% removal of TSS and 50% removal of total nitrogen, we are providing removal for 84% TSS and 61% of total nitrogen with the stormwater management system as designed.

These computations refer to the pollutant removal efficiency for the existing and proposed impervious surface on what will be Lot 1, post-lot line adjustment. Runoff from the existing impervious surface on Lots 2&3 currently enters a catch basin that we understand is currently tied into the sanitary sewer. The flow patterns for the existing impervious surface to remain on Lots 2&3 post lot-line adjustment cannot be changed.

PORTSMOUTH PLANNING COMMENTS

1. *With regard to stormwater the proposal for overflow of stormwater directly to an adjacent property is not ok and clear violation of the ZO section called out 10.1320 where the site proposes change the natural flow of water and create a nuisance for abutting property owners with stormwater overflows. Additionally, the locating of foundations below the seasonal high-water table, i.e. in groundwater, is not acceptable. This also alters the natural flow of water and potentially will require continuous pumping of groundwater. As stated previously the number of buildings proposed in this design is beyond the capacity of this lot. This over intensification is resulting in impacts which are unacceptable on this site. This point was raised when we first met on this project and there has been only marginal changes to the site not the overall footprint of the project.*

RESPONSE: The density proposed is in accordance with zoning and we have secured all necessary zoning relief and otherwise meet all zoning requirements - including lot coverage and open space requirements. The design team met with several staff members and TAC members on site and were encouraged to seek higher density via a variance process. The design team determined that we would propose the development based on the zoning density requirements rather than seeking a variance for more density. Part of the reason for the intense grading was to infiltrate as much stormwater as possible. Since we exceed the requirements of the City's stormwater rules, we have shrunk bioretention pond #2 in order to save more of the existing vegetation and reduced the total on-site disturbance by 500 S.F.

See below table with pre- and post-construction peak flow estimates in units of cubic feet per section (cfs), with percentage decreases also provided for Analysis Point #3, the analysis point downstream of Bioretention Cell #2:

Analysis Point	2 Year Peak Flow (cfs)		10 Year Peak Flow (cfs)		25 Year Peak Flow (cfs)		50 Year Peak Flow (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	1.37	1.29	2.79	2.24	3.99	2.99	5.04	3.69
Analysis Point #2	0.06	0.06	0.12	0.12	0.17	0.17	0.21	0.21
Analysis Point #3	0.50	0.16	1.33	0.46	2.00	0.73	2.63	1.57
Analysis Point #4	0.14	0.13	0.28	0.24	0.40	0.34	0.51	0.43
Analysis Point #5	0.15	0.13	0.37	0.28	0.55	0.41	0.74	0.53
AP #3 % Decrease	68%		65%		64%		40%	

See below table with pre- and post-construction runoff volume estimates in units of acre feet (ac-ft), with percentage decreases also provided for Analysis Point #3, the analysis point downstream of Bioretention System #3:

Analysis Point	2 Year Volume (ac-ft)		10 Year Volume (ac-ft)		25 Year Volume (ac-ft)		50 Year Volume (ac-ft)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.145	0.112	0.282	0.198	0.395	0.268	0.504	0.334
Analysis Point #2	0.005	0.005	0.009	0.009	0.013	0.013	0.016	0.016
Analysis Point #3	0.071	0.022	0.161	0.050	0.240	0.093	0.318	0.172
Analysis Point #4	0.011	0.010	0.023	0.020	0.032	0.028	0.042	0.035
Analysis Point #5	0.015	0.010	0.033	0.021	0.050	0.031	0.066	0.041
AP #3 % Decrease	69%		69%		61%		46%	

We met with City Staff on December 5, 2022 to discuss these issues. It was generally agreed that flow from the subject parcel reaches the abutter as sheet flow rather than concentrated flow in the existing condition. Therefore, we have widened the emergency spillway on bioretention system #2 so that overflow would occur as sheet flow rather than concentrated flow. This way, we now mimic the natural flow of water and therefore come into compliance with Section 10.1320. It should be noted that this pond is designed to infiltrate the entire 2&10-year 24-hour storm volume and produce a very small amount of overflow during the 25-year 24-hour storm event. In all cases, peak rates and volumes of runoff are reduced in the proposed condition compared with what is currently the case and therefore this development is designed to mitigate the potential to impact offsite areas by way of stormwater runoff in accordance with City regulations.

It is unavoidable that foundations (basements) will be constructed within the groundwater table. However, we have estimated the rates and volumes of sump pump discharge for each applicable unit and subsequently designed systems to infiltrate the same. These calculations are located within the revised drainage report for Altus' review. With the addition of these practices, the foundations are not anticipated to impact groundwater or surface water flows.

2. *He should add identification for existing trees to remain.*
   RESPONSE: Sheet DM-1 now includes every tree on the lot with designations of which ones are to remain and which are to be removed.

3. *Regarding the 14 SPR requirements, we have concerns about the amount of vegetation and trees being removed as well as the visual buffer between the new residences and the more impactful commercial abutting uses (hotel).*
   RESPONSE: Per the landscape plan on Sheet L1, we are using a mixture of proposed plantings and existing vegetation to shield the proposed residences from the existing abutting commercial uses. We have changed the outline of proposed bioretention #2 in order to save more trees between the proposed development and the hotel.

4. *We are particularly concerned with the following:*

   - 2.9.9 Adequate protection of natural features such as, but not limited to, wetlands.
   RESPONSE: There are no wetlands on or within 100' of the property. We are not aware of any natural features on the property that require protection.

   - 2.9.18 Adequate quantities, type or arrangement of landscaping and open space for the provision of visual, noise and air pollution buffers.
   RESPONSE: See the landscape plan on Sheet L1. We are using a mixture of proposed plantings and existing vegetation to provide visual, noise, and air pollution buffers and saving existing vegetation around the site.

   - 6.3.1 Areas not occupied by buildings or other structures, parking, loading, and accessways shall be landscaped to provide visual relief from expanses of paving and buildings while providing shade and stormwater management benefits.
   RESPONSE: Pervious surfaces will be landscaped to the extent practicable and we have specifically chosen visually attractive plantings to fill these spaces.

- 6.3.4 Natural features, existing healthy mature trees, and other existing vegetation shall be identified on the landscaping plan and shall be retained when required by the Planning Board.
RESPONSE: We are retaining as much existing vegetation as possible, even going to the extent of using tree wells to save existing trees in areas that will be regraded. We have modified the outline of bioretention system #2 to save additional existing trees.

- 6.3.7 Existing topography shall be maintained unless otherwise permitted by the Planning Board.
RESPONSE: We are proposing to regrade much of the property to accommodate drainage, roadway construction, and home construction, all of which are permissible and subject to Planning Board approval. However, the proposed development will be kept close to existing grade.

- Section 6.9 Screening 1. Where nonresidential uses and/or off-street parking facilities abut a residential zone, the perimeter shall be screened to provide physical and visual separation between uses.
RESPONSE: This proposal does not contemplate any non-residential uses. The plans do provide reasonable and adequate landscaping/buffering to the existing hotels proximate to the property. If staff has recommendations for landscaping or buffering we would request specific direction.
2. Natural screening shall consist of evergreen shrubs/trees planted in a line to form a continuous screen and growing to a height of 6 feet within 3 years. The remaining portion of the screening area shall consist of large and small trees, grass, flower beds, or other vegetative groundcover planted to fully cover the ground surface of the area within 3 years.
RESPONSE: Our landscape plan on Sheet L1 is presented as such to meet this request.

3. A 6-foot-high fence or masonry wall may be substituted for natural screening if approved by the Planning Board. The wall or fence shall be placed on the exterior side of any landscaping.
RESPONSE: On the western edge of bioretention system #2 where natural screening is not practicable, a 6-foot high wooden fence is proposed.

4. All sites shall incorporate screening measures to prevent the headlights of vehicles from shining on adjoining residential areas.
RESPONSE: As shown on Sheet L1, we are proposing to keep much of the existing vegetation and also place new landscaping along the property lines of adjacent residential properties in order to prevent headlights of vehicles from shining into these areas.

Included with this response letter are the following:

1. One (1) Full Size Plan Set Folded.
2. One (1) Revised Drainage Analysis.
3. Test Pit Logs.
4. Stormwater Operation & Maintenance Manual.

Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph Coronati
Vice President

cc: Eric Weinrieb, P.E., Altus Engineering (via email and hand delivered)
Michael Garrepy, Tuck Realty Corporation (via email)
Tim Phoenix, Hoefle, Phoenix, Gormley & Roberts, PLLC (via email)
Kevin Baum, Hoefle, Phoenix, Gormley & Roberts, PLLC (via email)

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project: 212 Woodbury Ave, Portsmouth
Client: Tuck Realty Corp.
GES Project No. 2021307
MM/DD/YY Staff 3-18-2022 JPG

Test Pit No. 1
ESHWT: 21"
Termination @ 43"
Refusal: None
Obs. Water: 40"

2" gravel at surface.

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–21"	10YR 4/6	FSL	GR	FR	NONE
21–43"	2.5Y 5/2	FSL	PL	FI	30%, Distinct

Test Pit No. 2
ESHWT: 30"
Termination @ 51"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–30"	10YR 4/6	FSL	GR	FR	NONE
30–51"	2.5Y 5/3	FSL	PL	FI	20%, Distinct

Test Pit No. 3
ESHWT: 27"
Termination @ 45"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–27"	10YR 4/6	FSL	GR	FR	NONE
27–45"	2.5Y 5/3	FSL	PL	FI	20%, Distinct

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

Test Pit No. 4
ESHWT: 15"
Termination @ 41"
Refusal: None - boulder
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–8"	10YR 3/2	FSL	GR	FR	NONE
8–15"	2.5Y 5/4	FSL	GR	FR	NONE
15–41"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 5
ESHWT: 27"
Termination @ 50"
Refusal: None - stony
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–12"	10YR 3/2	FSL	GR	FR	NONE
12–27"	10YR 4/6	FSL	GR	FR	NONE
27–50"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 6
ESHWT: 26"
Termination @ 45"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–10"	10YR 3/2	FSL	GR	FR	NONE
10–26"	10YR 5/6	FSL	GR	FR	NONE
26–45"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 7
ESHWT: 26"
Termination @ 40"
Refusal: None
Obs. Water: None

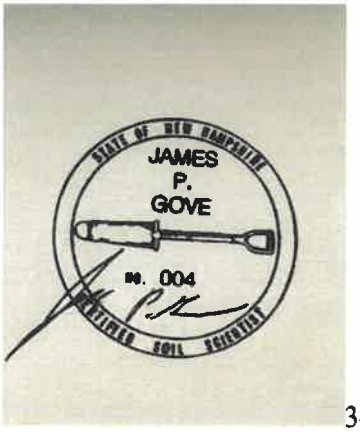
NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–26"	10YR 4/6	FSL	GR	FR	NONE
26–40"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Legend:

FSL = fine sandy loam
GR = granular
FR = friable
PL = platy
FI = firm

Soil Colors at Munsell.



3-22-2022

TEST PITS
FOR
214 WOODBURY AVENUE
PORTSMOUTH, NEW HAMPSHIRE
SEPTEMBER 7, 2022
JBE Project No. 21254

Performed by: Anthony Jones, Jones & Beach Engineers, Inc., SSD #1900

Test Pit #8

0"- 8"	10YR 3/2	very dark grayish brown fine sandy loam granular, friable many roots
8"- 22"	10YR 4/6	dark yellowish brown fine sandy loam granular, friable common roots
22" – 35"	2.5Y 5/3	light olive brown fine sandy loam platey, firm few, distinct redox

SHWT = 22"
Roots: 22"
No H_2O observed
Refusal @ 35"
Perc Rate = 14 min/inch

Test Pit #9

0"- 8"	10YR 3/2	very dark grayish brown fine sandy loam granular, friable many roots
8"- 27"	10YR 4/6	dark yellowish brown fine sandy loam granular, friable common roots
27" – 40"	2.5Y 5/3	light olive brown fine sandy loam platey, firm common, distinct redox

SHWT = 27"
Roots: 27"
No H_2O observed
Refusal @ 40"
Perc Rate = 14 min/inch

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project – Woodbury Avenue, Portsmouth, NH
Client - Jones & Beach Engineers, Inc.
GES Project No. 2022091
MM/DD/YY Staff 11-17-2022 JPG

Test Pit No. 10
ESHWT: 24"
Termination @ 72"
Refusal: None
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–24"	10YR 3/3	FSL	GR	FR	NONE , Fill
24–47"	2.5Y 6/4	FSL	GR	FR	5%, Bw
47–72"	2.5Y5/3	SL	PL	FI	5%, Cd

Test Pit No. 11
ESHWT: 37"
Termination @ 72"
Refusal: None
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–20"	10YR 3/2	FSL	GR	FR	NONE , Ap
20–37"	10YR 5/4	FSL	GR	FR	NONE, Bw
37–72"	2.5Y5/3	SL	PL	FI	5%, Cd

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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: Tuck Realty Corp. Date Submitted: 6/21/22

Application # (in City's online permitting): _____

Site Address: 212, 214 & 216 Woodbury Avenue Map: 175 Lot: 1, 2, & 3

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)**		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)**		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)**		
☒	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)**		N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**		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)**		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)**		N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**		N/A
☒	List of reference plans. **(2.5.3.1H)**		N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**		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)**		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, none onsite	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**		N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**		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)**		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)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Existing Conditions	
☒	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Architectural Drawings	
☒	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Site Plan	
☒	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	Site Plan Notes	
☒	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	Utility Plan	
☒	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	Utility Plan	

☒	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	Utility Plan	
☒	**8. Solid Waste Facilities: (2.5.4.3H)**	Site Plan Notes	
	• The size, type and location of solid waste facilities.		
☒	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	Drainage report	
☒	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	Lighting Plan	
☒	**11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)**		
☒	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.		
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.		
☐	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	N/A	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**		
☐	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	N/A	
☐	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • 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)**	N/A	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Grading & Drainage Plan	
☐	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)**	Plans & Drainage Report	
☒	Inspection and Maintenance Plan **(7.6.5)**	Drainage Report	

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: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	Site Plan Notes	
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Drainage Report	
☐	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. **(2.5.3.2D)**	Pending	

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)**	Site Plan Notes	
☒	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)**	Site Plan Notes	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: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." 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)**	Site Plan Notes	N/A

Applicant's Signature: _____ **Date:** 6/21/22

City of Portsmouth, New Hampshire

Subdivision Application Checklist

This subdivision application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. 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 subdivision review requirements. Please refer to the Subdivision review regulations for full details.

Applicant Responsibilities (Section III.C): Applicable fees are due upon application submittal along with required number of copies of the Preliminary or final plat and supporting documents and studies. Please consult with Planning staff for submittal requirements.

Owner: Frederick J. Bailey & Joyce S. Nelson Date Submitted: June 21, 2022

Applicant: Tuck Realty Corp.

Phone Number: 603-778-6894 E-mail: turnerporterjr@gmail.com

Site Address 1: 212 Woodbury Avenue Map: 175 Lot: 2, 3

Site Address 2: 214 & 216 Woodbury Avenue Map: 175 Lot: 2, 3

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☑	Completed Application form. **(III.C.2-3)**		N/A
☑	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(III.C.4)**		N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☑	Name and address of record owner, any option holders, descriptive name of subdivision, engineer and/or surveyor or name of person who prepared the plat. **(Section IV.1/V.1)**	Plan Set	☑ Preliminary Plat ☑ Final Plat	N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✓	**Preliminary Plat** Names and addresses of all adjoining property owners. **(Section IV.2)** **Final Plat** Names and addresses of all abutting property owners, locations of buildings within one hundred (100) feet of the parcel, and any new house numbers within the subdivision. **(Section V.2)**	Existing Conditions Plan	☑ Preliminary Plat ☑ Final Plat	N/A
✓	North point, date, and bar scale. **(Section IV.3/V3)**	Required on all Plan Sheets	☑ Preliminary Plat ☑ Final Plat	N/A
✓	Zoning classification and minimum yard dimensions required. **(Section IV.4/V.4)**	Existing Conditions Plan	☑ Preliminary Plat ☑ Final Plat	N/A
✓	**Preliminary Plat** Scale (not to be smaller than one hundred (100) feet = 1 inch) and location map (at a scale of 1" = 1000'). **(Section IV.5)** **Final Plat** Scale (not to be smaller than 1"=100'), Location map (at a scale of 1"=1,000') showing the property being subdivided and its relation to the surrounding area within a radius of 2,000 feet. Said location map shall delineate all streets and other major physical features that my either affect or be affected by the proposed development. **(Section V.5)**	Existing Conditions Plan	☑ Preliminary Plat ☑ Final Plat	N/A
✓	Location and approximate dimensions of all existing and proposed property lines including the entire area proposed to be subdivided, the areas of proposed lots, and any adjacent parcels in the same ownership. **(Section IV.6)**	Existing Conditions Plan	☑ Preliminary Plat ☑ Final Plat	
✓	Dimensions and areas of all lots and any and all property to be dedicated or reserved for schools, parks, playgrounds, or other public purpose. Dimensions shall include radii and length of all arcs and calculated bearing for all straight lines. **(Section V.6/ IV.7)**	Existing Conditions Plan	☑ Preliminary Plat ☑ Final Plat	N/A
✓	Location, names, and present widths of all adjacent streets, with a designation as to whether public or private and approximate location of existing utilities to be used. Curbs and sidewalks shall be shown. **(Section IV.8/V.7)**	Existing Conditions Plan	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☑	Location of significant physical features, including bodies of water, watercourses, wetlands, railroads, important vegetation, stone walls and soils types that my influence the design of the subdivision. **(Section IV.9/V.8)**	Existing Conditions Plan	☑ Preliminary Plat ☑ Final Plat	
☑	**Preliminary Plat** Proposed locations, widths and other dimensions of all new streets and utilities, including water mains, storm and sanitary sewer mains, catch basins and culverts, street lights, fire hydrants, sewerage pump stations, etc. **(Section IV.10)** **Final Plat** Proposed locations and profiles of all proposed streets and utilities, including water mains, storm and sanitary sewer mains, catchbasins and culverts, together with typical cross sections. Profiles shall be drawn to a horizontal scale of 1"=50' and a vertical scale of 1"=5', showing existing centerline grade, existing left and right sideline grades, and proposed centerline grade. **(Section V.9)**	Existing Conditions & Utility Plan	☑ Preliminary Plat ☑ Final Plat	
☑	When required by the Board, the plat shall be accompanied by profiles of proposed street grades, including extensions for a reasonable distance beyond the subject land; also grades and sizes of proposed utilities. **(Section IV.10)**	Plan & Profile Sheet	☑ Preliminary Plat ☑ Final Plat	
☐	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	N/A	☑ Preliminary Plat ☑ Final Plat	
☑	For subdivisions of five (5) lots or more, or at the discretion of the Board otherwise, the preliminary plat shall show contours at intervals no greater than two (2) feet. Contours shall be shown in dotted lines for existing natural surface and in solid lines for proposed final grade, together with the final grade elevations shown in figures at all lot corners. If existing grades are not to be changed, then the contours in these areas shall be solid lines. **(Section IV.12/ V.12)**	Existing Conditions, Grading & Drainage Plans	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☑	Dates and permit numbers of all necessary permits from governmental agencies from which approval is required by Federal or State law. **(Section V.10)**	Site Plan	☐ Preliminary Plat ☑ Final Plat	
☐	For subdivisions involving greater than five (5) acres or fifty (50) lots, the final plat shall show hazard zones and shall include elevation data for flood hazard zones. **(Section V.11)**	N/A	☐ Preliminary Plat ☑ Final Plat	
☑	Location of all permanent monuments. **(Section V.12)**	Lot Line Adjustment Plan	☐ Preliminary Plat ☑ Final Plat	

General Requirements[1]			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**1. Basic Requirements: (VI.1)**		
☑	a. Conformity to Official Plan or Map		
☑	b. Hazards		
☑	c. Relation to Topography		
☐	d. Planned Unit Development		
☐	**2. Lots: (VI.2)**		
☑	a. Lot Arrangement		
☑	b. Lot sizes		
☐	c. Commercial and Industrial Lots		
☐	**3. Streets: (VI.3)**		
☑	a. Relation to adjoining Street System		
☑	b. Street Rights-of-Way		
☑	c. Access		
☐	d. Parallel Service Roads		
☑	e. Street Intersection Angles		
☐	f. Merging Streets		
☑	g. Street Deflections and Vertical Alignment		
☐	h. Marginal Access Streets		
☐	i. Cul-de-Sacs		
☑	j. Rounding Street Corners		
☑	k. Street Name Signs		
☑	l. Street Names		
☐	m. Block Lengths		
☐	n. Block Widths		
☑	o. Grade of Streets		
☐	p. Grass Strips		
☑	**4. Curbing: (VI.4)**		
☑	**5. Driveways: (VI.5)**		
☑	**6. Drainage Improvements: (VI.6)**		
☑	**7. Municipal Water Service: (VI.7)**		
☑	**8. Municipal Sewer Service: (VI.8)**		
☐	**9. Installation of Utilities: (VI.9)**		
☑	a. All Districts		
☑	b. Indicator Tape		
☐	**10. On-Site Water Supply: (VI.10)**	N/A	
☐	**11. On-Site Sewage Disposal Systems: (VI.11)**	N/A	
☐	**12. Open Space: (VI.12)**	N/A	
☐	a. Natural Features		
☐	b. Buffer Strips		
☐	c. Parks		
☐	d. Tree Planting		
☐	**13. Flood Hazard Areas: (VI.13)**	N/A	
☐	a. Permits		
☐	b. Minimization of Flood Damage		
☐	c. Elevation and Flood-Proofing Records		
☐	d. Alteration of Watercourses		
☑	**14. Erosion and Sedimentation Control (VI.14)**		

☑	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
☐ ☐ ☐	**15. Easements (VI.15)** a. Utilities b. Drainage	N/A	
☑	**16. Monuments: (VI.16)**		
☑	**17. Benchmarks: (VI.17)**		
☑	**18. House Numbers (VI.18)**		

Design Standards			
	Required Items for Submittal	**Indicate compliance and/or provide explanation as to alternative design**	**Waiver Requested**
☑	**1. Streets have been designed according to the design standards required under Section (VII.1).** a. Clearing b. Excavation c. Rough Grade and Preparation of Sub-Grade d. Base Course e. Street Paving f. Side Slopes g. Approval Specifications h. Curbing i. Sidewalks j. Inspection and Methods	Complied	
☑	**2. Storm water Sewers and Other Drainage Appurtenances have been designed according to the design standards required under Section (VII.2).** a. Design b. Standards of Construction	Complied	
☑	**3. Sanitary Sewers have been designed according to the design standards required under Section (VII.3).** a. Design b. Lift Stations c. Materials d. Construction Standards	Complied	
☑	**4. Water Mains and Fire Hydrants have been designed according to the design standards required under Section (VII.4).** a. Connections to Lots b. Design and Construction c. Materials d. Notification Prior to Construction	Complied	

Applicant's/Representative's Signature: _____ **Date:** June 21, 2022

[1] See City of Portsmouth, NH Subdivision Rules and Regulations for details.

Letter of Authorization

We, Frederick Bailey & Joyce Nelson, owners of property located at 212, 214 & 216 Woodbury Avenue & 6 Boyd in Portsmouth, NH, known as Tax Map 175, Lots 1, 2, 3 & 13 do hereby authorize Jones & Beach Engineers, Inc. ("JBE"), Garrepy Planning Consultants, LLC ("GPC"), and Hoefle, Phoenix, Gormley & Roberts, PLLC ("HPGR") to act on its behalf concerning the previously mentioned property.

I hereby appoint JBE, GPC and HPGR as agents to act on our behalf in the Planning Board and Zoning Board application process, to include any required signatures.

Frederick Bailey

As Partners and, Individually — Date: 1/5/22

Joyce Nelson

Joyce S. Nelson

As Partners and, Individually — Date: 1/05/22

Letter of Authorization

I, Turner Porter, Tuck Realty Corporation, PO Box 190, Exeter, NH 03833, developer of property known as Tax Map 175, Lots 1, 2, 3, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcels are located on 212, 214 & 216 Woodbury Avenue in Portsmouth, NH.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

Susan Porter
Witness

Turner Porter
Tuck Realty Corporation

1/5/22
Date

DEED

KNOW ALL MEN BY THESE PRESENTS that we, Seron E. Nelson and Peter A. Nelson, both of 19 Buckingham Drive, Bow, NH 03304 for nominal (less than $1.00) consideration paid, do hereby release and disclaim any and all claim to or interest in and do hereby give and grant to the other parties of interest, to wit, Frederick J. Bailey III of 27 Kirriemuir, Stratham, NH and Joyce S. Nelson of 19 Buckingham Drive, Bow, NH with QUIT-CLAIM COVENANTS, the following undivided interest in the following described tract of land, to wit:

All of the Grantors estate's right, title and interest in and to eight certain tracts of land with the buildings thereon situated in Portsmouth, County of Rockingham, State of New Hampshire, bounded and described as follow:

120206
2002 DEC 30 AM 8:22
ROCKINGHAM COUNTY
REGISTRY OF DEEDS

TRACTS I, III, V, VI, AND VII.

Beginning at land of the State of New Hampshire at a concrete post in the ground which is a New Hampshire Highway Bound situated at the northeasterly corner of the premises hereby conveyed, which bound is also located at the northwesterly corner of land of Spectrum Enterprises, Inc.; thence turning and running S 14 degrees 15' E along land of Spectrum Enterprises, Inc., a distance of two hundred sixty-seven and 40/100 (267.40) feet to a drill hole in a boulder at other land formerly of Colony Motor Hotel, Inc.; thence turning and running S 14 degrees 08' E along land formerly of Colony Motor Hotel, Inc., a distance of ninety-six and 14/100 (96.14) feet to a corner of other land formerly of Colony Motor Hotel, Inc.; thence turning and running N 82 degrees 49' W along other land formerly of Colony Motor Hotel, Inc. a distance of one hundred twelve and no/100 (112.00) feet to the northeast corner of such other land formerly of Colony Motor Hotel, Inc. (There is also included in the aforesaid tract the right to use so much, if any, of the area owned by the grantor south of such line as is now occupied by the pool or cooling tower now located on the aforesaid tract); thence turning and running S 14 degrees 08' E along such other land formerly of Colony Motor Hotel, Inc. a distance of one hundred fifty and no/100 (150.00) feet to the northerly sideline of Boyd Road at the southeasterly corner of the premises hereby conveyed; thence turning and running N 82 degrees 49' W along the northerly sideline of the said Boyd Road a distance of two hundred ninety-eight and no/100 (298.00) feet to a point in such sideline; thence turning and running N 84 degrees 25' 10" W still along the northerly sideline of Boyd Road a distance of one hundred seven and 39/100 (107.39) feet to an iron pipe set in the ground at land of the State of New Hampshire; thence turning and running N 13 degrees 10'55" E along land of the State of New Hampshire a distance of twenty-four and 88/100 (24.88) feet to and iron pipe set in the ground; thence turning and running N 20 degrees 19' 40" E still along land of the State of New Hampshire a distance of two hundred seventy-two and 92/100 (272.92) feet to an iron pipe set in the ground; thence turning and running N 43 degrees 09' 40" E still along land of the State of New Hampshire a distance of seventy-seven and 61/100 (77.61) feet to an iron pipe set in the ground; thence turning and running N 67 degrees 00'10" E still along land of the State of New Hampshire a distance of two

hundred fifty-four and 38/100 (254.38) feet to the New Hampshire Highway Bound at the place of beginning.

The foregoing described premises include (as Tract VII) the whole of the premises conveyed by the State of New Hampshire to Colony Motor Hotel, Inc. by deed dated November 12, 1975, and recorded in the Rockingham County Registry of Deeds, Book 2247, Page 0552; (as Tract VI) the whole of the premises conveyed by Parkwood, Inc. to Colony Motor Hotel, Inc. by deed dated February 6, 1973, and recorded in the Rockingham County Registry of Deeds, Book 2196, Page 1564; the whole of Tract I (original motel lot) and Tract III (original adjunct to pool lot), and Tract V (triangular lot at corner of State land) as conveyed by Frederick J Bailey and Seron W. Bailey to Colony Motor Hotel, Inc. by deed dated June 30, 1976, and recorded in the Rockingham County Registry of Deeds, Book 2261, Page 0479, together with all grantor's right, title and interest in and to rights of way, easements, options, etc., as set forth on the last page of said Baileys to Colony deed in Book 2261, Page 0479.

There is expressly excepted and reserved to the State of New Hampshire as to the tract adjacent to the Portsmouth Traffic Circle the rights by said State reserved to itself in said deed by the State of New Hampshire to Colony Motor Hotel, Inc. dated November 12, 1975 recorded in said Rockingham County Registry of Deeds, Book 2247, Page 0552 in the following terms as therein set forth, namely:

"There is expressly excepted and reserved to the grantor herein all rights of access, light, air and view, appurtenant to the parcel herein conveyed, over, from and to US Route 1 By-Pass and the Woodbury Avenue Ramp along the first four (4) described courses with the exception of two (2) points of access, as presently existing along the fourth described course at the new right of way line established by this conveyance, said two (2) points of access being as shown on the plan herein above referred to.

Attached hereto is a copy of the relevant portion of the plan referred to above."

Former easement reserved by deed of Parkwood, Inc. to Colony Motor Hotel, Inc. dated February 6, 1973, recorded in Rockingham County Registry of Deeds, Book 2196, Page 1564, reserving easement to Frederick J. Bailey and Seron W. Bailey over strip of land 20 feet in width along southerly side of restaurant property, having since become meaningless, was terminated by conveyance of such easement in total by said Frederick J. Bailey and Seron W. Bailey by deed to Colony Motor Hotel, Inc. dated July 24, 1981, recorded on July 29, 1981, in said Rockingham Deeds, Book 2394, Page 1324.

TRACT II.

A certain parcel of land with the buildings thereon, situate in said Portsmouth, and County of Rockingham and State of New Hampshire, on the northerly side of Boyd Road, so -called, and bounded and described as follows:

DEED

Beginning on said Road at the southwesterly corner of land formerly owned by one Taccetta at a stake in the ground and thence running in a northerly direction in part by said land formerly of said Taccetta and in part by Tract IV in this deed one hundred and fifty (150) feet to a stake in the ground at land formerly of Joseph Cohen, (now Tract III in this deed); thence turning and running in a generally westerly direction by said land (Tract III herein) one hundred and twelve (112) feet to a stake in the ground; thence turning and running still by land formerly of said Hazel E. Wood (Tract I in this deed) in a generally southerly direction one hundred and fifty (150) feet to said Boyd Road to a stake in the ground; thence turning and running by said Boyd Road in a generally easterly direction one hundred and twelve (112) feet to said stake in the ground at said southwesterly corner of said land formerly of said Taccetta to the place begun at.

Tract II above described being the same premises as Tract II conveyed by deed of Frederick J. Bailey and Seron W. Bailey dated June 30, 1976, recorded Rockingham County Registry of Deeds, Book 2261, Page 0479.

TRACT IV.

A certain lot or parcel of land with the buildings thereon, situated on the westerly side of Woodbury Avenue, in said Portsmouth, and County of Rockingham and State of New Hampshire, and more particularly bounded and described as follows:

Beginning at the northeasterly side of the premises herein described at the southeast corner of land now or formerly of Priscilla Hamilton; thence running by said Woodbury Avenue, S 21 degrees 30' E, 85.0 feet, to land formerly of Vincent Taccetta, Jr.; thence turning and running by said Taccetta, Jr. land S 68 degrees 30' W, 99.2 feet to a point at said Taccetta Jr., land; thence turning and running still by said Taccetta, Jr. land S 85 degrees 23' W, 203.8 feet to land formerly of Parkwood, Inc., (now Tract II in this deed), thence turning and running by said land (Tracts II and III in this deed and other land formerly of Colony Motor Hotel, Inc.) N 14 degrees 50' W, 86.5 feet to land formerly of said Hamilton; thence turning and running by said Hamilton land, N 80 degrees 24' E, 290.4 feet to Woodbury Avenue and the point of the beginning.

Reserving and excepting from the above described premises a strip of land along the southerly side thereof conveyed to Vincent Taccetta, Jr. et al by deed dated June 21, 1966, recorded in the Rockingham County Registry of Deeds, Book 1833, Page 435.

Tract IV being the same premises as Tract IV conveyed by deed of Frederick J. Bailey and Seron W. Bailey, dated June 30, 1976, and recorded in the Rockingham County Registry of Deeds, Book 2261, Page 0479.

DEED

The foregoing premises all being that portion of the same premises conveyed by deed of Colony Motor Hotel, Inc. dated December 15, 1986, recorded in the Rockingham County Registry of Deeds, Book 2652, Page 550.

The foregoing premises all being conveyed to by deed of Frederick J. Bailey and Frederick J. Bailey III as co-executors Estate of Seron W. Bailey dated January 1, 1987, recorded in the Rockingham County Registry of Deeds, Book , Page and by Frederick J. Bailey, Frederick J. Bailey III, and Joyce S. Nelson as Trustees of Seron W. Bailey Trust A by Deed dated December 31, 1989 and recorded in Book 2823 Page 1009.

The premises hereby conveyed, namely Tracts I-VII inclusive, are also conveyed subject to any and all existing rights or easements or record with respect to poles, wires or other facilities of public utilities and to any and all existing access, view and other rights and easements of the State of New Hampshire and/or others for highway or right of way purposes.

TRACT VIII.

Beginning at the intersection of the Easterly Sideline of said By-Pass and the Southerly sideline of Boyd Road; thence running Easterly by said Road Forty-five (45) feet, more or less, to the Westerly sideline of a proposed street known as Center Street; thence turning and running Southeasterly by said proposed street Two Hundred Forty-nine (249) feet to the Northerly sideline of a proposed street known as Garden Street; thence continuing in a straight line across said Garden Street Fifty (50) feet and continuing further in a straight line Fifty (50) feet to land now, or formerly of, one Regan; thence turning and running Westerly by land of said Regan and land of another Two Hundred (200) feet, more or less, to the Easterly sideline of said By-Pass One Hundred (100) feet, more or less, to land of Harry E. Yoken, et. al or Darley Realty Company; thence continuing in a general Northeasterly direction Three Hundred Nine (309) feet, more or less, by the Easterly sideline of said By-Pass to the point of beginning; subject , however, to such rights, if any, as the public or adjoining owners may have in that portion of Garden and Inland Street , so called, included in the above description, and meaning and intending to convey all right of the grantor in Center Street, Garden Street, and Inland Street as shown on Plan of Land belonging to Frank Jones, recorded in Rockingham County Records, Book 584, Page 481, and also shown on Plan of Spadea Lots, Garden and Center Streets, Portsmouth, New Hampshire, by John W. Durgin, C. E. , recorded in Rockingham Records, Plat 53, page 10, excepting, however, from the above description a parcel of land one hundred twenty (120) feet in length and twenty-five (25) feet in depth extending from the Northerly sideline of Garden Street Northeasterly along the Easterly sideline of said By-Pass, all as shown on said Plan.

To have and to hold the same, with all the rights, privileges, and appurtenances thereunto appertaining unto and to the use of the said Frederick J. Bailey III, and Joyce S. Nelson, and their successors and assigns forever.

DEED

Either statutory minimum or no Documentary Stamps are required, as this is a release and disclaimer of an interest. Non capital transfer.

IN WITNESS WHEREOF Seron E. Nelson and Peter A. Nelson have affixed their hands under seal this 27th day of December, 2002.

In the presence of:

Sheila Castelley-Cook

Seron E. Nelson

Sheila Castelley-Cook

Peter A. Nelson

STATE OF NEW HAMPSHIRE
ROCKINGHAM, SS.

December 27, 2002

Personally appeared the above named, Seron E. Nelson and acknowledges the foregoing instrument be of her free act and deed.

Before me,

Notary Public

JANE H. DODGE, Notary Public
My Commission Expires September 25, 2007

JANE H. DODGE NOTARY PUBLIC NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
ROCKINGHAM, SS.

December 27, 2002

Personally appeared the above named Peter A. Nelson and acknowledges the foregoing instrument to of his free act and deed.

Before me,

Notary Public

JANE H. DODGE, Notary Public
My Commission Expires September 25, 2007

JANE H. DODGE NOTARY PUBLIC NEW HAMPSHIRE

WARRANTY DEED

We, Mitchell A. Hyder, Edward A. Hyder, Henry K. Hyder, Jr., A. Robert McGuire, and Henry K. Hyder III, all as Trustee's of the Mitchell A. Hyder and Edward A. Hyder Irrevocable Trust of 1993, of One Raynes Avenue, Portsmouth, Rockingham County, New Hampshire

FOR CONSIDERATION PAID GRANT TO / Frederick J. Bailey, III and Joyce S. Nelson with a mailing address of 27 Kirriemuir Road, Stratham, New Hampshire 03885, as tenants in partnership in accordance with the Bailey Nelson Partnership.

with **Warranty Covenants**

085503

A certain tract or parcel of land, with the buildings thereon, situate in Portsmouth, County of Rockingham and State of New Hampshire, and more particularly bounded and described as follows:

Beginning on the Westerly side of Woodbury Avenue at the Northeasterly corner of land now or formerly of James and Mary Verna; thence running S 68° 30' W, by said Verna land, ninety-nine and two-tenths (99.2) feet, more or less, to other land of said Verna; thence N 21° 30' W by said Verna land, ten (10) feet, thence S 68° 30' W by said Verna land, seventy-two (72) feet, thence S 80° 24' W, by said Verna land in part, and by land of John F. and Gloria C. Collins in part sixty-eight and three-tenths (68.3) feet; thence N 84° 6' N by said Collins land, seventy-four and five-tenths (74.5) feet to land formerly of Edward C. Berry; thence by said Berry land in part and by land of Parkwood, Inc. in part, N 14° 50' W, eighty-six and five-tenths (86.5) feet to land formerly of Vincent Taccetta; thence by land formerly of Vincent Taccetta, N 85° 23' E. one hundred sixteen and nine-tenths (116.9) feet; thence still by land formerly of Vincent Taccetta, N 70° 23' 30" W, one hundred eighty-two and four-tenths (182.4) feet to Woodbury Avenue; thence S 21° 30' E, by said Woodbury Avenue, one hundred four and four-tenths (104.4) feet to the point of beginning.

2005 NOV 18 AM 8:08

Being parcel No. 6 as described in Deed at Registry of Deeds in Book 3005, Page 1883 dated August 31, 1993.

Executed as a sealed instrument this 16 day of Nov. 2005.

MITCHELL A. HYDER
EDWARD A. HYDER
IRREVOCABLE TRUST OF 1993

Mitchell A. Hyder, Trustee

Edward A. Hyder, Trustee

A. Robert McGuire, Jr. Trustee

Henry K. Hyder, Jr. Trustee

Henry K. Hyder, Jr., Trustee

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
6 THOUSAND 7 HUNDRED AND 50 DOLLARS
111805 751521 $6750.00

State of New Hampshire
~~THE COMMONWEALTH OF MASSACHUSETTS~~

Rockingham
~~ESSEX~~, ss

November 16 2005

On this 16 day of November 2005, before me, the undersigned notary public, personally appeared Henry K. Hyder III proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose,

Susan Covey
Notary Public
My Commission Expires:

Susan Covey NOTARY PUBLIC New Hampshire My Commission Expires

STATE of New Hampshire
~~THE COMMONWEALTH OF MASSACHUSETTS~~

Rockingham
~~ESSEX~~, ss

NOV 16, 2005

On this 16th day of NOV. 2005, before me, the undersigned notary public, personally appeared Henry K. Hyder, Jr., proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose,

Pamela J. Starkey
Notary Public
My Commission Expires:

PAMELA J. STARKEY, Commissioner of ~~Commission~~ My Commission Expires August

State of New Hampshire
County of Rockingham

On this the 16th day of November, 2005, before me, Michael Sandell, the undersigned officer, personally appeared Mitchell A. Hyder, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

MICHAEL P. SANDELL MY COMMISSION EXPIRES APR. 21, 2009 NOTARY PUBLIC NEW HAMPSHIRE

Michael A. Sandell
Notary Public
My Commission Expires: 4/21/09

State of New Hampshire
County of Rockingham

On this the 16 day of November, 2005, before me, the undersigned officer, personally appeared Edward A. Hyder, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.



Michael A Sanderell
Notary Public
My Commission Expires: 4/21/09

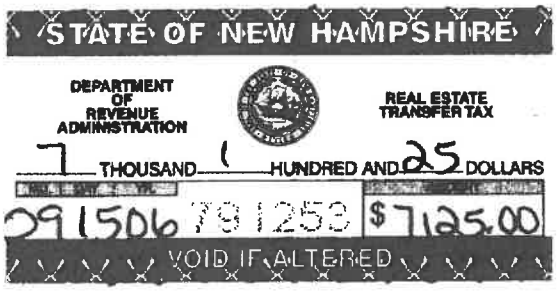
State of New Hampshire
County of Rockingham

On this the 16 day of NOVEMBER, 2005, before me, the undersigned officer, personally appeared A. Robert McGuire, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

Michael A Sanderell
Notary Public
My Commission Expires: 4/21/09

c:\documents\hyder\edward\214 woodbury road, portsmouth to bailey\deed.doc



057606

2006 SEP 15 PM 2:09

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, that JOSEPH M. VERNA, married, of 347 Meadow Road, Portsmouth, Rockingham County, New Hampshire, and GLORIA C. COLLINS, an unremarried widow, of 6 Boyd Road, Portsmouth, New Hampshire,

for consideration paid, grants to FREDERICK J. BAILEY, III, and JOYCE NELSON, of 27 Kirriemuir Road, Stratham, Rockingham County, New Hampshire, as tenants in partnership in accordance with the Bailey Nelson Partnership, with WARRANTY COVENANTS, the following described premises:

A certain tract or parcel of land with the buildings thereon situate in Portsmouth, County of Rockingham, State of New Hampshire, being shown as Lot 1 on a plan entitled "Lot Line Adjustment Plan for John & Gloria Collins in Portsmouth, NH" dated October 27, 1988, Scale 1"=20', prepared by Seacoast Engineering Associates, Inc., recorded at the Rockingham County Registry of Deeds as Plan D#18914, and being more particularly bounded and described as follows:

Beginning on Woodbury Avenue at land now or formerly of Margaret H. Taccetta, and running by said Woodbury Avenue South 21°30"East 141.9 feet to a point; thence by a curve whose radius is 12.97 feet, Southerly and Westerly to a point on Boyd Road; thence by said last named road North 86°8'West 240.56 feet to land now or formerly of John F. and Gloria C. Collins; thence turning and running North 01°16'23" West, by land now or formerly of said Collins, a distance of 74.00 feet to a point; thence turning and running North 80°24'02" East, by land now or formerly of Hyder Management, a distance of 36.83 feet to a point; thence turning and running North 68°30'00" East, by land now or formerly of said Hyder Management a distance of 72.00 feet to a point; thence turning and running South 21°30'01" East by land of said Hyder Management, a distance of 10.0 feet to a point; thence turning and running North 68°30'00"East, a distance of 99.20 feet to the point of beginning.

Together with a right of way for all purposes to and from said conveyed premises and Woodbury Avenue over adjoining land now or formerly of Margaret H. Taccetta ten feet wide and carrying that width back 99.2 feet from said Avenue; and subject to a similar right of way, as appurtenant to said land of Margaret H. Taccetta over the land conveyed,

to and from said premises now or formerly of said Margaret H. Taccetta and said Woodbury Avenue, adjoining the aforementioned right of way and similarly ten feet wide and carrying that width back 99.2 feet form said Avenue; the two rights of way together constituting a strip of land 20 feet wide and 99.2 feet deep, over which the two adjoining properties have mutual rights of way. Being a part of the premises described in the deed from Guisseppe Vincini to Croce Taccetta, dated October, 5, 1923, and recording in the Rockingham County Registry of Deeds in Book 781, Page 24.

SUBJECT TO all plans, easements, covenants and restrictions of record, if any.

The is not homestead property of the Grantors and the Grantors release all other interest in the property.

Meaning and intending to describe and convey the same premises conveyed by Corrective Quitclaim Deed to Christine V. Harris, having a life estate, and remainder interest of Joseph M. Verna, and Gloria C. Collins, from Christine V. Harris, Trustee under the Trust created under the Will of James Verna, dated September 15, 2006, and recorded contemporaneously with this deed at the Rockingham County Registry of Deeds.

IN WITNESS WHEREOF, signed this 15th day of September, 2006.

Joseph M. Verna
JOSEPH M. VERNA

Gloria C. Collins
GLORIA C. COLLINS

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

Personally appeared this 15th day of September, 2006, the above-named Joseph M. Verna and Gloria C. Collins, acknowledged the foregoing instrument to be their voluntary act and deed. Before me,

Victoria Lynn Knight
Notary Public
My commission expires: 06/15/2011

VICTORIA LYNN KNIGHT NOTARY PUBLIC NEW HAMPSHIRE

JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE MANUAL

"Grapevine Run"
212, 214, & 216 Woodbury Ave.
Portsmouth, NH 03801
Tax Map 175, Lots 1, 2, & 3

Prepared for:

Tuck Realty Corp.
ATTN: Turner Porter
P.O. Box 190
Exeter, NH 03833

Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
June 21, 2022
REVISED July 27, 2022
REVISED September 20, 2022
REVISED November 30, 2022
JBE Project No. 21254

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. The Condominium Association, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Association shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form.

B. General Inspection and Maintenance Requirements

1. Permanent stormwater and sediment and erosion control facilities to be maintained on the site include, but are not limited to, the following:

    a. Roadway and driveways
    b. Vegetation and landscaping
    c. Bioretention systems
    d. Sediment Forebays
    e. Permeable Paver Driveways
    f. Stone Drip Edge
    g. Subsurface Stone Infiltration Areas
    h. Pre-Tx Curb Inlet Structure
    i. Culverts
    j. Rip-Rap Outlet Protection Aprons

2. Maintenance of permanent measures shall follow the following schedule:

    a. Normal winter roadway maintenance including plowing and snow removal. Road sweeping at the end of every winter, preferably at the start of the spring rain season.

    b. **Annual inspection** of the site for erosion, destabilization, settling, and sloughing. Any needed repairs are to be conducted immediately. **Annual inspection** of site's vegetation and landscaping. Any areas that are bare shall be reseeded and mulched with hay or, if the case is extreme, loamed and seeded or sodded to ensure adequate vegetative cover. Landscape specimens shall be replaced in kind, if they are found to be dead or dying.

    c. Bioretention Systems:

        - Visually inspect monthly and repair erosion. Use small stones to stabilize erosion along drainage paths.
        - Check the pH once a year if grass is not surviving. Apply an alkaline product, such as limestone, if needed.
        - Re-seed any bare areas by hand as needed.

- Immediately after the completion of cell construction, water grass for 14 consecutive days unless there is sufficient natural rainfall.
- Once a month (more frequently in the summer), residents are encouraged to visually inspect vegetation for disease or pest problems and treat as required.
- During times of extended drought, look for physical features of stress. Water in the early morning as needed.
- Weed regularly, if needed.
- After rainstorms, inspect the cell and make sure that drainage paths are clear and that ponding water dissipates over 4-6 hours. (Water may pond for longer times during the winter and early spring.)
- Twice annually, inspect the outlet control structures to ensure that they are not clogged and correct any clogging found as needed.
- KEEP IN MIND, THE BIORETENTION CELL IS NOT A POND. IT SHOULD NOT PROVIDE A BREEDING GROUND FOR MOSQUITOES. MOSQUITOES NEED AT LEAST FOUR (4) DAYS OF STANDING WATER TO DEVELOP AS LARVA.

d. Cleaning Criteria for all Sedimentation Forebays: Sediment should be removed from the sedimentation chamber (forebay) when it accumulates to a depth of more than 12 inches (30 cm) or 10 percent of the pretreatment volume. The sedimentation forebay should be cleaned of vegetation if persistent standing water and wetland vegetation becomes dominant. The cleaning interval is once every year. A dry sedimentation forebay is the optimal condition while in practice this condition is rarely achieved. The sedimentation chamber, forebay, and treatment cell outlet devices should be cleaned when drawdown times exceed 60 to 72 hours. Materials can be removed with heavy construction equipment; however, this equipment should not track on the wetland surface. Revegetate disturbed areas as necessary. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.

e. Permeable paver driveways:

Units 6-8 feature permeable paver driveways for stormwater management; the remainder of road surface on site is constructed from standard asphalt. The following recommendations will help assure that the pavement is maintained to preserve its hydrologic effectiveness.

Winter maintenance:

- Sanding for winter traction is prohibited. Deicing is permitted (NaCl, $MgCl_2$, or equivalent). Reduced salt application is possible and can be a cost savings for winter maintenance. Nontoxic, organic deicers, applied either as blended, magnesium chloride-based liquid products or as pretreated salt, are preferable.
- Plowing is allowed, blade should be set approximately 1" above the paver surface. Ice and light snow accumulation are generally not as problematic as

for standard asphalt. Snow will accumulate during heavier storms and should be plowed. (more than usual, about an inch).

Routine maintenance:

- Seal coating is absolutely forbidden. Surface seal coating is not reversible.
- The paver surface should be vacuumed 2 or 3 times per year, and at any additional times sediment is spilled, eroded, or tracked onto the surface.
- Planted areas adjacent to permeable pavers should be well maintained to prevent soil washout onto the pavers. If any bare spots or eroded areas are observed within the planted areas, they should be replanted and/or stabilized at once.
- Immediately clean any soil deposited on pavers. Superficial dirt does not necessarily clog the paver voids. However, dirt that is ground in repeatedly by tires can lead to clogging. Therefore, trucks or other heavy vehicles should be prevented from tracking or spilling dirt onto the pavers.
- Do not allow construction staging, soil/mulch storage, etc. on unprotected paver surface. Contractor to lay down tarps, plywood or removable item and take care not to track material onto unprotected pavers.
- Repairs: Potholes or other surface blemishes shall be replaced in kind. Any required repair of drainage structures should be done promptly to ensure continued proper functioning of the system.
- Written and verbal communication to the future owner should make clear the pavement's special purpose and special maintenance requirements such as those listed here.

f. Stone Drip Edge:

A stone drip edge is behind Units 3 & 4 to collect roof runoff into a pipe in order to direct it into a subsurface stone infiltration bed. This practice shall be lined and is not intended for infiltration. The following recommendations will help assure that the roof drip edges are maintained to preserve its effectiveness.

In the spring and fall, visually inspect the area around the edges and repair any erosion. Use small stones to stabilize erosion along drainage paths. Inspect stone area to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock should be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation should not be allowed to become established in stone areas, and/or any debris removed from the void spaces between the stones.

g. Subsurface Stone Infiltration Beds:

The following recommendations will help assure that the stone areas are maintained to preserve their effectiveness. These are located between Units 4 and the road, and between Units 5&6.

In the spring and fall, visually inspect the area around these underground systems and repair any erosion. Use small stones to stabilize erosion along drainage paths. Twice a year open the cleanout and check for signs of debris, sediment build-up, or standing water. If more than 12" of sediment is observed, plug the outlet and flush the system thoroughly. Pump water into system until at least 1" of standing water covers the system bottom. Capture sediment-laden water for proper disposal according to local state, and EPA regulation. **If the practice cannot be remediated as noted, it shall be replaced, and the City of Portsmouth shall be notified that the system has failed.**

h. Pre-Tx Curb Inlet Structure
See attached Pre-Tx operations and maintenance guidelines.

i. **Inspection** of culvert inlets and outlets at least **once per month** during the rainy season (March to November). Any debris is to be removed and disposed of properly.

j. Rock riprap should be **inspected annually** in order to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock should be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation should not be allowed to become established in riprap areas, and/or any debris removed from the void spaces between the rocks. If the riprap is adjacent to a stream or other waterbody, the water should be kept clear of obstructions, debris, and sediment deposits

See attached sample forms as a guideline.

Any inquiries in regards to the design, function, and/or maintenance of any one of the above-mentioned facilities or tasks shall be directed to the project engineer:

Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885

T#: (603) 772-4746
F#: (603) 772-0227

Commitment to maintenance requirements

I agree to complete and/or observe all of the required maintenance practices and their respective schedules as outlined above.

_____

Signature

_____

Print Name

_____

Title

_____

Date

Annual Operations and Maintenance Report

The Condominium Association, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Association shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form.

Construction Activity	Date of Inspection	Who Inspected	Findings of Inspector
Roadway and Driveways			
Vegetation and Landscaping			
Bioretention #1			
Bioretention #2			
Permeable Paver Driveways (Units 6-8)			

Sediment Forebay			
Stone Drip Edge			
Subsurface Stone Infiltration Beds			
Pre-Tx Curb Inlet Structure			
Culverts			
Rip Rap Outlet Protection			
Other (please note):			

Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters

Maintenance of bioretention systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of bioretention systems and tree filters to insure they remain clear of leaves and debris and free draining. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and the upstream land use.

ACTIVITIES

The most common maintenance activity is the removal of leaves from the system and bypass structure. Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Mulch and/or vegetation coverage is integral to the performance of the system, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then biannually.
Check to insure the filter surface remains well draining after storm event. **Remedy**: If filter bed is clogged, draining poorly, or standing water covers more than 15% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
Check for animal burrows and short circuiting in the system **Remedy**: Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted.	
Check to insure the filter bed does not contain more than 2 inches accumulated material **Remedy**: Remove sediment as necessary. If 2 inches or more of filter bed has been removed, replace media with either mulch or a (50% sand, 20% woodchips, 20% compost, 10% soil) mixture.	
During extended periods without rainfall, inspect plants for signs of distress. **Remedy**: Plants should be watered until established (typical only for first few months) or as needed thereafter.	
Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy**: Repair or replace any damaged structural parts, inlets, outlets, sidewalls.	Annually
Check for robust vegetation coverage throughout the system. **Remedy**: If at least 50% vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
Check for dead or dying plants, and general long term plant health. **Remedy**: This vegetation should be cut and removed from the system. If woody vegetation is present, care should be taken to remove dead or decaying plant Material. Separation of Herbaceous vegetation rootstock should occur when overcrowding is observed.	As needed

1/15/2011, University of New Hampshire Stormwater Center

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location: Inspector:

Date: Time: Site Conditions:

Date Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1. Initial Inspection After Planting and Mulching			
Plants are stable, roots not exposed	S	U	
Surface is at design level, typically 4" below overpass	S	U	
Overflow bypass / inlet (if available) is functional	S	U	
2. Debris Cleanup (2 times a year minimum, Spring & Fall)			
Litter, leaves, and dead vegetation removed from the system	S	U	
Prune perennial vegetation	S	U	
3. Standing Water (1 time a year, After large storm events)			
No evidence of standing water after 72 hours	S	U	
4. Short Circuiting & Erosion (1 time a year, After large storm events)			
No evidence of animal burrows or other holes	S	U	
No evidence of erosion	S	U	
5. Drought Conditions (As needed)			
Water plants as needed	S	U	
Dead or dying plants			
6. Overflow Bypass / Inlet Inspection (1 time a year, After large storm events)			
No evidence of blockage or accumulated leaves	S	U	
Good condition, no need for repair	S	U	
7. Vegetation Coverage (once a year)			
50% coverage established throughout system by first year	S	U	
Robust coverage by year 2 or later	S	U	
8. Mulch Depth (if applicable)(once every 2 years)			
Mulch at original design depth after tilling or replacement	S	U	
9. Vegetation Health (once every 3 years)			
Dead or decaying plants removed from the system	S	U	
10. Tree Pruning (once every 3 years)			
Prune dead, diseased, or crossing branches	S	U	
Corrective Action Needed			**Due Date**
1.			
2.			
3.			

1/15/2011, University of New Hampshire Stormwater Center

JONES&BEACH ENGINEERS INC.

CONVERGENT
WATER TECHNOLOGIES

PRETX OPERATION AND MAINTENANCE GUIDE

February 2020

PRETX™ BIOFILTER PRETREATMENT OPERATION AND MAINTENANCE GUIDANCE

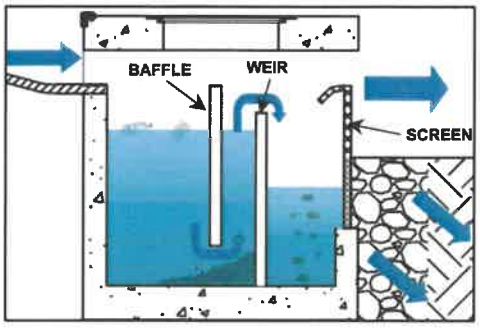
PRETX systems provide pretreatment of sediment and debris prior to filtration and infiltration. Maintenance of PRETX pretreatment catch basins is simple and typically uses a standard vactor truck for cleaning. Simply remove the manhole cover and vactor out debris from within the sump and clean internal components by pressure washing. PRETX units are comprised of an outer precast concrete shell and consist of HDPE and stainless-steel internals that are resistant to rust and rot from corrosive winter runoff. Ideal tools include camera, shovel, hoe/rake, manhole pick, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local authority or company procedures.

Routine annual inspections and periodic maintenance is required for the effective operation of PRETX systems. The Responsible Parties should maintain PRETX systems in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for PRETX systems, along with a suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending upon a variety of factors including land use intensity, seasonality, the occurrence of large storm events, overly wet or dry (i.e., drought) regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

Activity	Frequency
NOTE: A properly functioning PRETX system will trap floatables such as bottles, cups, and leaves within the first sump area behind the baffle. Settleables such as sand, saturated leaves and trash will fall to the bottom of the sump area behind the weir wall. Lastly, removal of smaller debris such as cigarettes, grass clippings, etc. will be removed by the screened outlet.	Annual Inspection
Cleaning of PRETX systems is best conducted by a vactor truck with pressure washing for removal of accumulated sediment, trash, and debris.	
Remove maintenance cover and inspect for accumulation of trash and debris.	
Inspect for floatables behind baffle wall and remove as needed by vactor.	
Inspect for settleable behind weir wall and remove as needed by vactor.	
Inspect outlet screen for accumulated debris and clean as needed by pressure wash.	
Check the inlet area (curb throat or drop inlet grate) and surrounding pavement area immediately upstream for sediment deposition, weed growth, etc. Remove as needed with a broom and shovel or by vactor.	
Check to insure the PRETX system drains to the outvert level completely after storm events.	
This process is to be repeated until proper drainage and function has been restored.	As Needed
Repair or replace any damaged structural parts, inlets, outlets, grates.	



TOP VIEW WITH COVER REMOVED



SIDE VIEW OF TRASH AND DEBRIS ACCUMULATION



REAR VIEW OF OUTLET SCREEN

February 2020

CHECKLIST FOR OPERATION & MAINTENANCE
PRETX™ BIOFILTER PRETREATMENT

Location:
Inspector:
Date: Time: Site Conditions:
Date Since Last Rain Event:

NOTE: A properly functioning PRETX system will trap floatables such as bottles, cups, and leaves within the first sump area behind the baffle. Settleables such as sand, saturated leaves and trash will fall to the bottom of the sump area behind the weir wall. Lastly, removal of smaller debris such as cigarettes, grass clippings, etc. will be removed by the screened outlet.

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1. Remove maintenance cover to allow for visual inspection	S	U	
2. Complete drainage of PRETX system to outvert elevation after storm flow ceases	S	U	
3. Proper grading and drainage to PRETX inlet and outlet, no evidence of short-circuit or bypass of flow around or under structure	S	U	
4. Accumulation of settleable trash and debris within PRETX sump is 6" or less	S	U	
5. Sump area is empty of floatable trash and debris. Excessive accumulation of floatables will bypass baffle wall.	S	U	
6. Outlet screen is clear of debris	S	U	
7. Clogging and function of inlet/outlet components	S	U	
8. Cracking, spalling, or deterioration of concrete	S	U	
9. Nuisance vegetation, animal burrows, or settling of structure	S	U	
10. Undesirable odors	S	U	
11. Complaints from residents	S	U	
12. Public hazards noted	S	U	
13.	S	U	
14.	S	U	
15.	S	U	

Corrective Action Needed	Due Date
1.	
2.	
3.	
4.	
5.	

NOTES:

1. THE INTENT OF THIS PLAN IS TO GUIDE REQUIRED INSPECTIONS AND MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM. THIS PLAN IS NOT FOR CONSTRUCTION.

CULVERT OUTLET WITH RIP RAP OUTLET PROTECTION APRON
PRE-TX CURB INLET STRUCTURE
BIORETENTION SYSTEM #2
OVERFLOW RISER
EMERGENCY SPILLWAY
PERMEABLE ECO-PAVER DRIVEWAY
PERMEABLE ECO-PAVER DRIVEWAYS
SUBSURFACE STONE INFILTRATION BED
SUBSURFACE STONE INFILTRATION BED
DETENTION POND WITH RISER
STONE DRIP EDGE
SUBSURFACE STONE INFILTRATION BED
SUBSURFACE STONE INFILTRATION BED
OUTLET STRUCTURE (SIMILAR TO OVERFLOW RISER)
OVERFLOW RISER
SEDIMENT FOREBAY #1
BIORETENTION SYSTEM #1
CB 2248
RIM=51.41
INVERT NOT FOUND
CB 2235
RIM=51.84
INVout=48.44 - 4" PVC
L = 33', SLOPE UNKNOWN
UNIT 1
UNIT 2
UNIT 3
UNIT 4
UNIT 5
UNIT 6
UNIT 7
UNIT 8
WOODBURY AVENUE
THORTON STREET
BOYD ROAD
MANOR DRIVE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **OPERATIONS AND MAINTENANCE PLAN**

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
OM1
SHEET 1 OF 1
JBE PROJECT NO. 21254

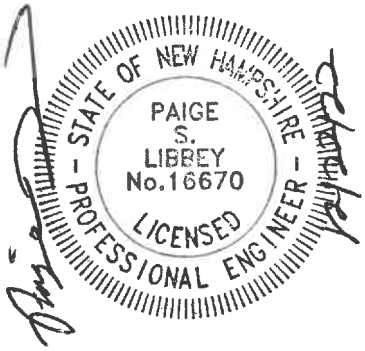
DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

Grapevine Run
212, 214, & 216 Woodbury Ave.
Portsmouth, NH 03801
Tax Map 175, Lots 1, 2, & 3

Prepared for:

Tuck Realty Corp
ATTN: Turner Porter
P.O. Box 190
Exeter, NH 03833



Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
June 21, 2022
REVISED August 1, 2022
REVISED September 20, 2022
REVISED October 18, 2022
REVISED December 15, 2022
JBE Project No. 21254

EXECUTIVE SUMMARY

Tuck Realty Corp proposes to construct eight (8) residential condominium units along a 338' proposed private driveway on a 1.38-acre parcel of land (after lot line adjustment) located at 212, 214, & 216 Woodbury Avenue (Tax Map 175, Lots 1-3 respectively) in Portsmouth, NH, with access from Boyd Rd. In the existing condition, Lots 1-3 each contain a single-family residence with a paved driveway, and there is a detached garage on Lot 1. The house, garage, driveway, and other site features on Lot 1 are to be removed to make available land for the proposed development.

A drainage analysis of the entire site was conducted for the purpose of estimating the peak rate of stormwater runoff and to subsequently design adequate drainage structures. Two models were compiled, one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. The analysis was conducted using data for the 2 Year – 24 Hour (3.21"), 10 Year – 24 Hour (4.87"), 25 Year – 24 Hour (6.17"), and 50 Year – 24 Hour (7.39") storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC). A summary of the existing and proposed conditions peak rates of runoff in units of cubic feet per second (cfs) is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	1.37	1.29	2.79	2.24	3.99	2.99	5.04	3.69
Analysis Point #2	0.06	0.06	0.12	0.12	0.17	0.17	0.21	0.21
Analysis Point #3	0.50	0.16	1.33	0.46	2.00	0.73	2.63	1.57
Analysis Point #4	0.14	0.13	0.28	0.24	0.40	0.34	0.51	0.43
Analysis Point #5	0.15	0.13	0.37	0.28	0.55	0.41	0.74	0.53

A similar summary of the existing and proposed peak volumes in units of acre-feet is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.145	0.112	0.282	0.198	0.395	0.268	0.504	0.334
Analysis Point #2	0.005	0.005	0.009	0.009	0.013	0.013	0.016	0.016
Analysis Point #3	0.071	0.022	0.161	0.050	0.240	0.093	0.318	0.172
Analysis Point #4	0.011	0.010	0.023	0.020	0.032	0.028	0.042	0.035
Analysis Point #5	0.015	0.010	0.033	0.021	0.050	0.031	0.066	0.041

The subject parcels are located in the General Residence A (GRA) Zoning District. The subject parcels currently consist of the aforementioned single-family residences with associated driveways, sheds, and a detached garage, all of which is proposed to be demolished. The topography of the site as well as a stretch of Woodbury Ave. and Boyd Rd. that is considered in this analysis define nine (9) subcatchments, which drain to five (5) analysis points. Subcatchments 1S-4S drain directly toward their respective analysis points while subcatchments 5S-8S drains toward four separate depressions, modelled as 1P-4P respectively. When the aforementioned depressions fills with water, the runoff crests over the berms and drains toward one of the five analysis points. Depressions 2P, 3P, and 4P drain overland toward the catch basin represented as Analysis Point 1, while depression 1P drains over land toward Analysis Point 3.

The proposed site development consists of the aforementioned eight (8) condominium units with an associated shared private driveway and individual driveways coming off of it. The addition of the proposed impervious paved areas and buildings causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the net result being a potential increase in peak rates of runoff from the site. A stormwater management system was designed in order to mitigate this possibility. The proposed site development divides the site into fifteen (15) subcatchments, representing both the periphery of the site that will continue its existing flow pattern toward the aforementioned analysis points as well as the developed portions that will be routed into the site's stormwater management system for treatment and reduction of peak flows. Additionally, four links are included in the model to represent the discharge from the sump pumps of units 5, 6, 7, and 8. The proposed stormwater management system consists of two bioretention systems designed for treatment and infiltration of road and roof water up to the 10-Year storm, individual permeable Eco-Paver driveways for Units 6-8, four subsurface stone infiltration areas, and a small detention area. Through the use of these practices, the peak rates and volumes of runoff are reduced toward Analysis Points #1-5 during all analyzed storm events. All runoff from proposed paved areas and some of the runoff from proposed roofs will be treated, while some of the runoff from the proposed roofs will be piped into the stone underneath the aforementioned permeable pavers for infiltration and a small section of proposed roofs simply allowed to runoff.

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this drainage system and will be observed during all stages of construction. All land disturbed during construction will be stabilized within thirty days of groundbreaking and abutting property owners will suffer minimal adversity resultant of this development.

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1.0 RAINFALL CHARACTERISTICS

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.21"), 10 Year – 24 Hour (4.87"), 25 Year – 24 Hour (6.17"), and 50 Year – 24 Hour (7.39") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC).

The peak rates and volumes of runoff will be reduced from the existing condition and stormwater treatment will exceed requirements in the proposed condition, thereby minimizing the potential for a negative impact on abutting properties or downstream waterbodies.

2.0 EXISTING CONDITIONS ANALYSIS

The three existing single-family residential properties each feature a single-family house with a paved driveway, and Lot 1 also includes a detached garage. Otherwise, the undeveloped areas of the three parcels are covered by both woods and grass, and no wetlands were observed on site. The abutting properties include several residential uses as well as two hotels.

In the existing condition, the topography of the subject parcel as well as a stretch of Woodbury Ave. and Boyd Rd. that was considered is such that the study area is split into 9 Subcatchments draining toward 5 Analysis Points.

Analysis Point 1 is a catch basin just off of Woodbury Ave along the driveway leading to the house on Lot 2, which receives runoff from part of the study area in both the existing and proposed condition. This is near the northeast area of the study area. Analysis Point 2 represents a slope adjacent to what appears to be a single-family residence that is apparently in the southeastern corner of Tax Map 175, Lot 11 per Portsmouth tax maps, abutting Boyd Rd. This analysis point receives a small amount of runoff from a section of the study area in the existing and proposed conditions. Analysis Point 3 represents a catch basin in the parking lot on Tax Map 174, Lot 11, which is home to a Best Western Plus hotel, and receives a fair amount of runoff from the site in the existing condition. In the proposed condition, steps are being taken to eliminate this situation to the extent practicable. Runoff directed toward Analysis Point 3 ultimately drains into a catch basin in the center of the Best Western Plus parking lot. Analysis Point 4 represents the Boyd Rd. drainage system. This receives a small amount of runoff from the study area in both the existing and proposed conditions, mostly from abutting Tax Map 175, Lot 13, although it is modelled because a small part of the subcatchment draining toward this Analysis Point is on the subject property and therefore is affected by this development. Finally, Analysis Point 5 represents a yard area between the home that is apparently on Tax Map 175, Lot 11 and the Best Western Plus parking lot. This receives some runoff from the subject parcel in the existing condition as well.

Subcatchments 1S-4S drain directly toward Analysis Points AP1-AP4, while Subcatchments 5S-8S drain toward shallow depressions which fill up with water and eventually overflow toward the analysis points. Subcatchment 9S drains directly toward Analysis Point 5. Peak rates and volumes of runoff are reduced in the proposed condition during all analyzed storm events.

The existing soil type for the entire subject parcel is 29B – Woodbridge Fine Sandy Loam, as classified by a Certified Soil Scientist. This soil type is classified by Hydrologic Soil Group "C". According to "Ksat Values for New Hampshire Soils" sponsored by the Society of Soil Scientists of Northern New England SSSNNE Special Publication No. 5, this soil type has a saturated hydraulic conductivity (Ksat) of 0.6-2.0 in/hr in the B Horizon and a Ksat of 0.0-0.6 in/hr in the C horizon.
To further determine the appropriate Ksat to use for design, infiltration testing was performed on site using a Compact Constant Head Permeameter (CCHP, also known as an amoozemeter) on July 19, 2022. Two (2) pits were dug using a shovel in the soil and three (3) infiltration tests were performed in each pit. The two pits were dug in the footprints of the two proposed bioretention systems, further discussed in the proposed conditions analysis. "Pit #1" refers to the pit that was dug in the footprint of proposed bioretention system #1 in the south end of the site near Boyd Rd., and "Pit #2" refers to the pit that was dug in the footprint of proposed bioretention system #2 in the north end of the site.

Standard size auger holes, 4 cm in diameter were dug within each pit to the depth of the bottom of each respective practice to obtain an accurate permeability reading below the bottom of the proposed systems. Water was then discharged through the soil and the drop in water level on the tube in which the water was stored before being discharged was recorded at several time intervals. The comparison between the drop in water level and the elapsed time from the start of the test was used to calculate the Ksat value. For example, if the water level dropped 3 cm after 5 minutes and 5 cm after 10 minutes, this was recorded and used as data to calculate the Ksat using the formulas listed in the data spreadsheets in Appendix VII. The Ksat values from each time increment were then averaged to determine the mean Ksat, and this value divided by a factor of safety of two to determine the saturated hydraulic conductivity to use for design purposes.

The permeability tests were performed. The results of the permeability testing are as summarized below:

Test	Ksat (in/hr)
Pit #1 – Test #1	3.69
Pit #1 – Test #2	6.83
Pit #1 – Test #3	1.77
Pit #1 – Mean Ksat	**4.10**
Pit #2 – Test #1	0.73
Pit #2 – Test #2	0.69
Pit #2 – Test #3	0.48
Pit #2 – Mean Ksat	**0.63**

A further breakdown of the data used to arrive at the final Ksat values is included in Appendix VII.

For Pit #1, the Ksat from Test #3 was utilized for design because the raw number obtained from this test is below the result of averaging the three tests performed in Pit #1 and dividing by a factor of safety of two (4.1/2 = 2.05, and 1.77 in/hr is lower than 2.05 in/hr). For this reason, it seems that the average may be skewed by the high result obtained in Test #2. Therefore, the third test is a better representation of the true permeability of the soil and is the most conservative rate to use for design. The infiltration rate obtained from Test #3 was divided by a factor of safety of two to arrive at a Ksat of **0.89 in/hr** to use for design of stormwater features in the south end of the site.

For Pit #2, the mean Ksat of all three tests was utilized and divided by a factor of safety of two to arrive at a design Ksat of 0.315 in/hr, rounded down to **0.3 in/hr** which is the same as the published value after providing a factor of safety and is below the raw result of the most conservative test. This value was used to design stormwater features in the north end of the site and, because a factor of safety of two was used, it happens to be below even the lowest raw infiltration rate obtained from any of the tests performed in Pit #2. Therefore, this is a valid Ksat to use for design purposes.

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the proposed impervious paved areas and buildings causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the net result being a potential increase in peak rates of runoff from the site. A stormwater management system was designed in order to mitigate this potential. The proposed development, consisting of the aforementioned eight (8) condominium units with an associated paved shared driveway as well as individual unit driveways and stormwater management features divide the same study area from the existing conditions analysis into fifteen (15) subcatchments, all still draining toward the five same analysis points. Although there are 15 subcatchments, the subcatchment numbers go up to 17 because three subcatchments (including 18S) have been removed but the subcatchment numbers that remain have been kept the same for consistency.

Subcatchments 1S-4S drain directly toward corresponding Analysis Points AP1-AP4, and Subcatchment 5S drains toward the offsite depression modelled as 1P in which water puddles and eventually overflows toward Analysis Point AP3; so far identical to the existing conditions analysis routing. However, the remainder of the isolated depressions from the existing conditions analysis are proposed to be developed over. Subcatchment 6S represents the watershed of bioretention system #2, modelled as Pond 2P. Subcatchment 7S represents a roof area that drains toward the subsurface stone infiltration bed modelled as Ponds 4P. The runoff from Subcatchment 7S first falls on to lined stone drip edge 3P so that water will enter an underdrain and be carried through a pipe into stone infiltration bed 4P, where a gutter and downspout system would not be feasible due to shape the of the proposed roofline. Subcatchment 9S represents the watershed of bioretention system #1, modelled as Pond 6P. Overflow from Pond 6P is routed toward a subsurface stone infiltration area modelled as Pond 12P. Subcatchments 10S-12S represent the watersheds directed toward Ponds 7P-9P, which are the permeable Eco-Paver driveways of Units 6-8, respectively. These Eco-Paver driveways provide treatment for runoff before discharge to groundwater by way of a filter course. These features treat direct run-on, and also a portion of the roofs of the corresponding units is piped into each permeable driveway.

Additionally, a swale leading to a small detention pond is proposed along the property line with 6 Boyd Road. The subcatchments draining toward the swale is represented as Subcatchments 13S, and the swale is represented as 1R. The subcatchment draining toward the detention pond is modelled as 14S and the detention pond itself is modelled as 10P. The detention pond provides some attenuation, and flows from the detention pond are then routed through a closed drainage system to bioretention pond #2 for further detention, treatment, and infiltration.

Subcatchment 16S represents a small area of the periphery of the site that runs off directly toward Analysis Point #5. Subcatchment 17S represents the area that drains toward a vee channel that is created by the intersection of the proposed grading for bioretention pond #2 with the existing topography. The vee channel itself is modelled as Reach 3R, which drains toward Analysis Point 3.

Units 5-8 will have basements in the groundwater table and therefore will require sump pumps. Estimated sump pump discharge rates and volumes were calculated based on the footprint and depth of each foundation as well as the void ratio and permeability rate of the soil. The finished floor elevation of each unit was subtracted by 8 feet to determine the bottom of foundation for each unit. Then the average seasonal high water table elevation throughout the foundation footprint was calculated. The difference between the depth of foundation and the average SHWT depth is effectively the depth by which the foundation is within the water table. This resultant depth was then multiplied by the footprint area of the foundation to determine the volume of the foundation, and this was multiplied by a conservative void ratio of 0.5 to determine the volume of groundwater displaced by each unit's foundation in a worst-case scenario in which the water table elevation is equal to the SHWT.

The sump pump discharge rate lags from the beginning of operation to peak discharge, at which time the highest point of groundwater displaced by the foundation has reached the sump pump. The permeability rate of the soil was determined by the aforementioned infiltration tests and multiplied by a factor of safety of two. The depth of the bottom of the foundation below the seasonal high water table elevation was then divided by the permeability rate of the soil with the factor of safety applied in order to determine the lag time to peak sump pump discharge in units of seconds.

Finally, the volume was divided by the lag time to determine the peak flow rate of sump pump discharge. These calculations are located in Appendix X within this drainage report.

The peak discharge rate and lag time were then used to manually generate a 24-hour hydrograph for each sump pump at one-hour increments. The peak discharge rate that was calculated was placed on the hydrograph at the lag time that was calculated and instantaneous flow rates at 1-hour increments were determined by interpolating between 0 cfs at 0 hours and at the end of the cycle, and the peak flow rate at the lag time. For example, if the peak flow rate was calculated to be 0.05 cfs and the lag time 5 hours, 0.05 cfs was put into the hydrograph at 5 hours, and each 1-hour increment would add 0.05/5 = 0.01 cfs. The flow rate at 2 hours would be 0.02 cfs, the flow rate at 3 hours would be 0.03 cfs, etc. Then flows would be subtracted by the same increment for each subsequent hour and the flow would again be zero at 10 hours. This results in a representation of the discharge rate over time and the volume of sump pump discharge that can be modelled into a 24-hour storm modelling software.

The resulting per-hour flows were then modelled into HydroCAD as four separate links; one representing the sump pump discharge for each respective unit. Two subsurface infiltration systems were designed to fully infiltrate the 24-hour discharge from the sump pumps, and each was designed with an overflow fully above the calculated peak elevation of discharge water within the system. Pond 5P is a subsurface stone infiltration bed designed to infiltrate the sump pump discharge from units 5&6, and Pond 11P is a subsurface stone infiltration bed designed to infiltrate the sump pump discharge from units 7&8. Any overflow would be piped into bioretention system #2, though as modelled the sump pump discharge appears to fully infiltrate.

As explained in the executive summary, the proposed stormwater management features help to reduce peak rates and volumes of runoff toward AP1-AP5 to below the existing condition in the 2-, 10-, 25-, and 50-Year storm events. The two bioretention ponds are designed to treat and infiltrate all runoff directed to them up to the at least the 10-Year storm event. Each bioretention pond has a proposed mechanism for positive overflow in extreme storm events. Overflow risers are additionally incorporated just above the elevation of the water quality volume on each of the bioretention ponds in order to maintain infiltration during winter. This exceeds the requirements of the City of Portsmouth,

which state, among other things, that peak flows and volumes must be reduced and that the water quality volume must be treated to achieve certain removal efficiencies as discussed at the end of the proposed conditions analysis. However, this design approach was used so that abutting properties would not be inundated by runoff from the subject parcel.

The methodology described in the existing conditions analysis was used to determine the design infiltration rates for each infiltration practice. The design Ksat that was used was half of the mean Ksat determined via the field tests. Pit #1 delivered the results that were used for the design of bioretention #1 (6P) and two of the subsurface stone infiltration systems (4P and 11P). A design Ksat value of 0.89 in/hr was used for these practices per the results of the infiltration tests performed using the CCHP. Pit #2 delivered the results that were used for the design of the remainder of the practices, giving a design Ksat value of 0.3 in/hr.

The seasonal high water table (SHWT) beneath each infiltration and filtration practice was determined based off nearby test pits. The SHWT depth from the test pit was subtracted from the highest existing ground elevation within the footprint of the practice. For the subsurface stone infiltration bed next to Units 3 & 4, Test Pit 8 was used, where SHWT was found at 22" below ground and the highest existing ground elevation was slightly below 56.3. Therefore, the groundwater elevation used for design was 56.3 - 22/12 = 54.47. For the subsurface stone infiltration bed next to Units 5 & 6, Test Pit 9 was used, where SHWT was found at 27". Highest existing ground elevation within this footprint of this practice is 53.0 so the groundwater elevation was modelled is 50.75. Test Pit #11 was used for the subsurface stone infiltration bed between units 7&8, where SHWT was also found at 37". Highest existing ground elevation within the footprint of this practice is 52.20, so the groundwater elevation was modelled at 49.12.

Test Pit 6 is located within the footprint of the proposed bioretention system #1. SHWT on this test pit was found at a depth of 26". Where the filter course and infiltration components of the system are located in an area where the highest existing ground elevation is 53.3, the modelled groundwater elevation is 51.13. The bioretention system is designed so that the bottom of the filter course is at least 1' above the SHWT. The same test pit was used to design the subsurface stone infiltration basin toward which overflwos from the bioretention pond are routed. The groundwater elevation beneath this practice was modelled at 51.2 because the highest existing ground elevation in the footprint of the practice is 53.2.

Test Pit 1 is located within the footprint of the proposed bioretention system #2. SHWT on this test pit was found at a depth of 21". Where the filter course and infiltration components are located in an area where the highest existing ground elevation is 48.0, the modelled groundwater elevation is 46.25. The bioretention system is designed so that the bottom of the filter course is at least 1' above the SHWT.

For the three proposed permeable paver driveways, proposed grade is variable, so the SHWT at the highest ground elevation was not necessarily the one used for design. Rather, the location at which proposed grade is closest to existing grade and by extension closest to SHWT was used to determine both the design SHWT and the elevations to use for the overall profile of the system to model. The permeable paver driveways were designed based on the following data:

Unit #	Test Pit #	SHWT Depth	Existing Grade	Design SHWT
6	2	30"	51.9	49.4
7	3	27"	53.5	51.25
8	1	21"	50.8	49.05

According to the NH Stormwater Manual, bioretention systems provide a pollutant removal efficiency of 90% for TSS and 65% for nitrogen, and permeable pavers provide a pollutant removal efficiency of 90% for TSS and 60% for nitrogen. The City of Portsmouth Site Plan Review Regulations stipulate that stormwater BMPs should either be designed for 80% TSS removal and 50% nitrogen removal, or to retain and treat the Water Quality Volume. Per the pollutant removal efficiency calculation worksheet included in Appendix IX, the proposed stormwater management system provides a removal efficiency of 84% TSS, 60% total phosphorous, and 61% total nitrogen. This plan exceeds the requirements for pollutant removal because appropriate treatment / groundwater recharge systems are utilized and all runoff from paved surfaces is treated and infiltrated up to the 10-Year storm event, exceeding the water quality volume requirement.

5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures, and properties by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, bioretention systems with associated pre-treatment practices, permeable pavers with a filter course, and subsurface stone infiltration beds, as well as temporary erosion control measures including but not limited to silt fence and the use of a stabilized construction entrance. The peak rate and volumes of runoff will be reduced toward all analysis points during all analyzed storm events in the post-construction condition and the bioretention systems are designed to treat and infiltrate runoff up to at least the 25-Year storm, exceeding requirements. Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process.

This project disturbs less than 100,000 S.F. and does not require a NHDES Alteration of Terrain Permit.

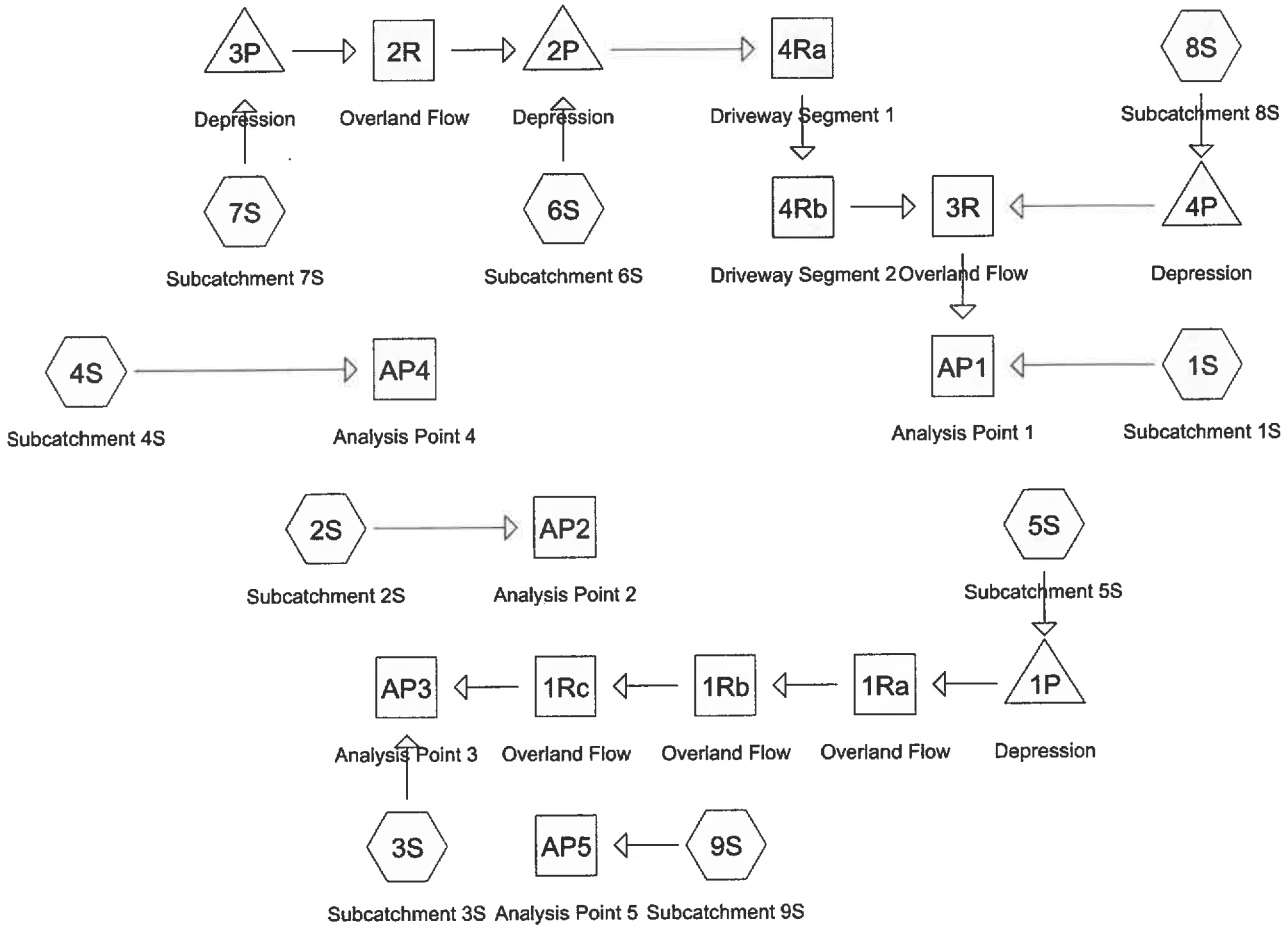
Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

Daniel Meditz, E.I.T
Project Engineer

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Subcat Reach Pond Link

Routing Diagram for 21254-EXISTING
Prepared by Jones & Beach Engineers Inc, Printed 12/2/2022
HydroCAD® 10.20-2g s/n 00762 © 2022 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.258	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S)
0.369	98	Paved parking, HSG C (1S, 4S, 8S)
0.174	98	Roofs, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 8S, 9S)
0.582	70	Woods, Good, HSG C (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S)
2.382	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.382	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S
0.000	HSG D	
0.000	Other	
2.382		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=30,350 sf 51.45% Impervious Runoff Depth>1.84"
Flow Length=254' Tc=19.4 min CN=86 Runoff=1.03 cfs 0.107 af

Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>1.41"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.06 cfs 0.005 af

Subcatchment3S: Subcatchment3S Runoff Area=35,181 sf 4.23% Impervious Runoff Depth>0.98"
Flow Length=187' Tc=29.1 min CN=73 Runoff=0.50 cfs 0.066 af

Subcatchment4S: Subcatchment4S Runoff Area=4,408 sf 26.97% Impervious Runoff Depth>1.34"
Flow Length=55' Slope=0.0500 '/' Tc=9.1 min CN=79 Runoff=0.14 cfs 0.011 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>1.22"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.10 cfs 0.009 af

Subcatchment6S: Subcatchment6S Runoff Area=2,101 sf 15.37% Impervious Runoff Depth>1.22"
Flow Length=76' Slope=0.0260 '/' Tc=9.4 min CN=77 Runoff=0.06 cfs 0.005 af

Subcatchment7S: Subcatchment7S Runoff Area=4,509 sf 0.00% Impervious Runoff Depth>0.99"
Flow Length=42' Slope=0.0240 '/' Tc=9.6 min CN=73 Runoff=0.10 cfs 0.009 af

Subcatchment8S: Subcatchment8S Runoff Area=13,227 sf 27.07% Impervious Runoff Depth>1.41"
Flow Length=136' Tc=12.3 min CN=80 Runoff=0.40 cfs 0.036 af

Subcatchment9S: Subcatchment9S Runoff Area=8,332 sf 4.42% Impervious Runoff Depth>0.93"
Flow Length=164' Tc=12.9 min CN=72 Runoff=0.15 cfs 0.015 af

Reach 1Ra: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.11 fps Inflow=0.05 cfs 0.005 af
n=0.150 L=35.0' S=0.0100 '/' Capacity=0.54 cfs Outflow=0.03 cfs 0.005 af

Reach 1Rb: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.23 fps Inflow=0.03 cfs 0.005 af
n=0.150 L=122.0' S=0.0443 '/' Capacity=0.43 cfs Outflow=0.02 cfs 0.005 af

Reach 1Rc: Overland Flow Avg. Flow Depth=0.01' Max Vel=0.16 fps Inflow=0.02 cfs 0.005 af
n=0.150 L=30.0' S=0.1167 '/' Capacity=74.58 cfs Outflow=0.02 cfs 0.005 af

Reach 2R: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.10 fps Inflow=0.01 cfs 0.004 af
n=0.150 L=37.0' S=0.0297 '/' Capacity=1.78 cfs Outflow=0.01 cfs 0.004 af

Reach 3R: Overland Flow Avg. Flow Depth=0.20' Max Vel=0.21 fps Inflow=0.43 cfs 0.039 af
n=0.150 L=171.0' S=0.0068 '/' Capacity=0.14 cfs Outflow=0.13 cfs 0.031 af Overflow=0.29 cfs 0.007 af

Reach 4Ra: Driveway Segment 1 Avg. Flow Depth=0.01' Max Vel=0.61 fps Inflow=0.06 cfs 0.008 af
n=0.016 L=50.0' S=0.0260 '/' Capacity=56.25 cfs Outflow=0.06 cfs 0.008 af

Reach 4Rb: Driveway Segment 2 Avg. Flow Depth=0.01' Max Vel=0.49 fps Inflow=0.06 cfs 0.008 af
n=0.016 L=72.0' S=0.0139 '/' Capacity=41.11 cfs Outflow=0.05 cfs 0.008 af

Reach AP1: Analysis Point 1		Inflow=1.37 cfs 0.145 af Outflow=1.37 cfs 0.145 af
Reach AP2: Analysis Point 2		Inflow=0.06 cfs 0.005 af Outflow=0.06 cfs 0.005 af
Reach AP3: Analysis Point 3		Inflow=0.50 cfs 0.071 af Outflow=0.50 cfs 0.071 af
Reach AP4: Analysis Point 4		Inflow=0.14 cfs 0.011 af Outflow=0.14 cfs 0.011 af
Reach AP5: Analysis Point 5		Inflow=0.15 cfs 0.015 af Outflow=0.15 cfs 0.015 af
Pond 1P: Depression	Peak Elev=51.31' Storage=167 cf	Inflow=0.10 cfs 0.009 af Outflow=0.05 cfs 0.005 af
Pond 2P: Depression	Peak Elev=55.31' Storage=33 cf	Inflow=0.06 cfs 0.009 af Outflow=0.06 cfs 0.008 af
Pond 3P: Depression	Peak Elev=56.21' Storage=189 cf	Inflow=0.10 cfs 0.009 af Outflow=0.01 cfs 0.004 af
Pond 4P: Depression	Peak Elev=53.11' Storage=236 cf	Inflow=0.40 cfs 0.036 af Outflow=0.38 cfs 0.030 af

Total Runoff Area = 2.382 ac Runoff Volume = 0.262 af Average Runoff Depth = 1.32"
77.22% Pervious = 1.840 ac 22.78% Impervious = 0.543 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

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Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>2.78"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.12 cfs 0.009 af

Subcatchment3S: Subcatchment3S Runoff Area=35,181 sf 4.23% Impervious Runoff Depth>2.16"
Flow Length=187' Tc=29.1 min CN=73 Runoff=1.17 cfs 0.146 af

Subcatchment4S: Subcatchment4S Runoff Area=4,408 sf 26.97% Impervious Runoff Depth>2.69"
Flow Length=55' Slope=0.0500 '/' Tc=9.1 min CN=79 Runoff=0.28 cfs 0.023 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>2.51"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.21 cfs 0.019 af

Subcatchment6S: Subcatchment6S Runoff Area=2,101 sf 15.37% Impervious Runoff Depth>2.51"
Flow Length=76' Slope=0.0260 '/' Tc=9.4 min CN=77 Runoff=0.12 cfs 0.010 af

Subcatchment7S: Subcatchment7S Runoff Area=4,509 sf 0.00% Impervious Runoff Depth>2.17"
Flow Length=42' Slope=0.0240 '/' Tc=9.6 min CN=73 Runoff=0.23 cfs 0.019 af

Subcatchment8S: Subcatchment8S Runoff Area=13,227 sf 27.07% Impervious Runoff Depth>2.77"
Flow Length=136' Tc=12.3 min CN=80 Runoff=0.80 cfs 0.070 af

Subcatchment9S: Subcatchment9S Runoff Area=8,332 sf 4.42% Impervious Runoff Depth>2.09"
Flow Length=164' Tc=12.9 min CN=72 Runoff=0.37 cfs 0.033 af

Reach 1Ra: Overland Flow Avg. Flow Depth=0.12' Max Vel=0.20 fps Inflow=0.21 cfs 0.015 af
n=0.150 L=35.0' S=0.0100 '/' Capacity=0.54 cfs Outflow=0.20 cfs 0.015 af

Reach 1Rb: Overland Flow Avg. Flow Depth=0.13' Max Vel=0.42 fps Inflow=0.20 cfs 0.015 af
n=0.150 L=122.0' S=0.0443 '/' Capacity=0.43 cfs Outflow=0.17 cfs 0.015 af

Reach 1Rc: Overland Flow Avg. Flow Depth=0.03' Max Vel=0.31 fps Inflow=0.17 cfs 0.015 af
n=0.150 L=30.0' S=0.1167 '/' Capacity=74.58 cfs Outflow=0.17 cfs 0.015 af

Reach 2R: Overland Flow Avg. Flow Depth=0.07' Max Vel=0.22 fps Inflow=0.22 cfs 0.014 af
n=0.150 L=37.0' S=0.0297 '/' Capacity=1.78 cfs Outflow=0.19 cfs 0.014 af

Reach 3R: Overland Flow Avg. Flow Depth=0.20' Max Vel=0.21 fps Inflow=0.96 cfs 0.089 af
n=0.150 L=171.0' S=0.0068 '/' Capacity=0.14 cfs Outflow=0.14 cfs 0.056 af Overflow=0.82 cfs 0.032 af

Reach 4Ra: Driveway Segment 1 Avg. Flow Depth=0.02' Max Vel=1.10 fps Inflow=0.26 cfs 0.024 af
n=0.016 L=50.0' S=0.0260 '/' Capacity=56.25 cfs Outflow=0.26 cfs 0.024 af

Reach 4Rb: Driveway Segment 2 Avg. Flow Depth=0.02' Max Vel=0.91 fps Inflow=0.26 cfs 0.024 af
n=0.016 L=72.0' S=0.0139 '/' Capacity=41.11 cfs Outflow=0.26 cfs 0.024 af

Reach AP1: Analysis Point 1		Inflow=2.79 cfs 0.282 af Outflow=2.79 cfs 0.282 af
Reach AP2: Analysis Point 2		Inflow=0.12 cfs 0.009 af Outflow=0.12 cfs 0.009 af
Reach AP3: Analysis Point 3		Inflow=1.33 cfs 0.161 af Outflow=1.33 cfs 0.161 af
Reach AP4: Analysis Point 4		Inflow=0.28 cfs 0.023 af Outflow=0.28 cfs 0.023 af
Reach AP5: Analysis Point 5		Inflow=0.37 cfs 0.033 af Outflow=0.37 cfs 0.033 af
Pond 1P: Depression	Peak Elev=51.31' Storage=167 cf	Inflow=0.21 cfs 0.019 af Outflow=0.21 cfs 0.015 af
Pond 2P: Depression	Peak Elev=55.31' Storage=33 cf	Inflow=0.28 cfs 0.024 af Outflow=0.26 cfs 0.024 af
Pond 3P: Depression	Peak Elev=56.21' Storage=189 cf	Inflow=0.23 cfs 0.019 af Outflow=0.22 cfs 0.014 af
Pond 4P: Depression	Peak Elev=53.11' Storage=236 cf	Inflow=0.80 cfs 0.070 af Outflow=0.78 cfs 0.065 af

Total Runoff Area = 2.382 ac Runoff Volume = 0.522 af Average Runoff Depth = 2.63"
77.22% Pervious = 1.840 ac 22.78% Impervious = 0.543 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.85 cfs @ 12.26 hrs, Volume= 0.194 af, Depth> 3.34"
Routed to Reach AP1 : Analysis Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
12,369	98	Paved parking, HSG C
3,246	98	Roofs, HSG C
14,735	74	>75% Grass cover, Good, HSG C
30,350	86	Weighted Average
14,735		48.55% Pervious Area
15,615		51.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	78	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
2.4	22	0.0330	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
4.5	48	0.0330	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	66	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	18	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
19.4	254	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.12 cfs @ 12.11 hrs, Volume= 0.009 af, Depth> 2.78"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
836	74	>75% Grass cover, Good, HSG C
478	98	Roofs, HSG C
388	70	Woods, Good, HSG C
1,702	80	Weighted Average
1,224		71.92% Pervious Area
478		28.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	26	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.3	16	0.0750	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.7	13	0.1900	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.3	7	0.1140	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.5	5	0.5000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
7.6	67	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.17 cfs @ 12.42 hrs, Volume= 0.146 af, Depth> 2.16"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
1,489	98	Roofs, HSG C
19,916	74	>75% Grass cover, Good, HSG C
13,776	70	Woods, Good, HSG C
35,181	73	Weighted Average
33,692		95.77% Pervious Area
1,489		4.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	48	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
9.8	41	0.0240	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
2.5	11	0.0520	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.3	22	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	45	0.0670	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	20	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.1	187	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.28 cfs @ 12.13 hrs, Volume= 0.023 af, Depth> 2.69"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
1,661	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
1,558	70	Woods, Good, HSG C
4,408	79	Weighted Average
3,219		73.03% Pervious Area
1,189		26.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	5	0.0500	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
8.5	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
9.1	55	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.21 cfs @ 12.19 hrs, Volume= 0.019 af, Depth> 2.51"
Routed to Pond 1P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
10.3	40	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	67	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 0.12 cfs @ 12.14 hrs, Volume= 0.010 af, Depth> 2.51"
Routed to Pond 2P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
323	98	Roofs, HSG C
1,641	74	>75% Grass cover, Good, HSG C
137	70	Woods, Good, HSG C
2,101	77	Weighted Average
1,778		84.63% Pervious Area
323		15.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	10	0.0260	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
6.3	66	0.0260	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
9.4	76	Total			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 0.23 cfs @ 12.14 hrs, Volume= 0.019 af, Depth> 2.17"
Routed to Pond 3P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
3,271	74	>75% Grass cover, Good, HSG C
1,238	70	Woods, Good, HSG C
4,509	73	Weighted Average
4,509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	34	0.0240	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.2	8	0.0240	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
9.6	42	Total			

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 0.80 cfs @ 12.17 hrs, Volume= 0.070 af, Depth> 2.77"
Routed to Pond 4P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
324	98	Roofs, HSG C
3,257	98	Paved parking, HSG C
9,288	74	>75% Grass cover, Good, HSG C
358	70	Woods, Good, HSG C
13,227	80	Weighted Average
9,646		72.93% Pervious Area
3,581		27.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	30	0.0330	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.3	10	0.0330	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.6	27	0.0100	0.80		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
3.2	33	0.0360	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.5	36	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	136	Total			

Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 0.37 cfs @ 12.19 hrs, Volume= 0.033 af, Depth> 2.09"
Routed to Reach AP5 : Analysis Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
1,091	74	>75% Grass cover, Good, HSG C
368	98	Roofs, HSG C
6,873	70	Woods, Good, HSG C
8,332	72	Weighted Average
7,964		95.58% Pervious Area
368		4.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	38	0.0370	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
8.5	62	0.0770	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.2	14	0.0857	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	50	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.9	164	Total			

Summary for Reach 1Ra: Overland Flow

[80] Warning: Exceeded Pond 1P by 1.05' @ 0.00 hrs (2.56 cfs 5.434 af)

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 2.00" for 10 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.21 hrs, Volume= 0.015 af
Outflow = 0.20 cfs @ 12.27 hrs, Volume= 0.015 af, Atten= 4%, Lag= 3.3 min
Routed to Reach 1Rb : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.20 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 8.0 min

Peak Storage= 35 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 10.73'
Bank-Full Depth= 0.20' Flow Area= 2.0 sf, Capacity= 0.54 cfs

6.00' x 0.20' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 20.0 '/' Top Width= 14.00'
Length= 35.0' Slope= 0.0100 '/'
Inlet Invert= 51.55', Outlet Invert= 51.20'



‡

Summary for Reach 1Rb: Overland Flow

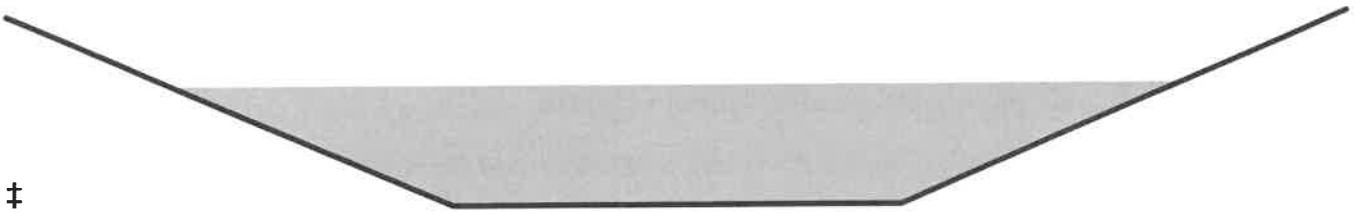
[62] Hint: Exceeded Reach 1Ra OUTLET depth by 0.02' @ 12.45 hrs

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 1.99" for 10 Yr 24 Hr event
Inflow = 0.20 cfs @ 12.27 hrs, Volume= 0.015 af
Outflow = 0.17 cfs @ 12.36 hrs, Volume= 0.015 af, Atten= 14%, Lag= 5.4 min
Routed to Reach 1Rc : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.42 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 12.0 min

Peak Storage= 50 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 4.51'
Bank-Full Depth= 0.20' Flow Area= 0.8 sf, Capacity= 0.43 cfs

2.00' x 0.20' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 10.0 '/' Top Width= 6.00'
Length= 122.0' Slope= 0.0443 '/'
Inlet Invert= 51.20', Outlet Invert= 45.80'



‡

Summary for Reach 1Rc: Overland Flow

[61] Hint: Exceeded Reach 1Rb outlet invert by 0.03' @ 12.35 hrs

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 1.98" for 10 Yr 24 Hr event
Inflow = 0.17 cfs @ 12.36 hrs, Volume= 0.015 af
Outflow = 0.17 cfs @ 12.37 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.9 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.31 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 3.1 min

Peak Storage= 17 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 20.28'
Bank-Full Depth= 1.00' Flow Area= 25.0 sf, Capacity= 74.58 cfs

20.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 30.0' Slope= 0.1167 '/'
Inlet Invert= 45.80', Outlet Invert= 42.30'



‡

Summary for Reach 2R: Overland Flow

[80] Warning: Exceeded Pond 3P by 0.50' @ 0.00 hrs (1.16 cfs 2.439 af)

Inflow Area = 0.104 ac, 0.00% Impervious, Inflow Depth > 1.67" for 10 Yr 24 Hr event
Inflow = 0.22 cfs @ 12.21 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.27 hrs, Volume= 0.014 af, Atten= 13%, Lag= 3.1 min
Routed to Pond 2P : Depression

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.22 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 6.8 min

Peak Storage= 32 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.07' , Surface Width= 17.93'
Bank-Full Depth= 0.20' Flow Area= 4.0 sf, Capacity= 1.78 cfs

30.00' x 0.20' deep Parabolic Channel, n= 0.150 Sheet flow over Short Grass
Length= 37.0' Slope= 0.0297 '/'
Inlet Invert= 56.40', Outlet Invert= 55.30'



‡

Summary for Reach 3R: Overland Flow

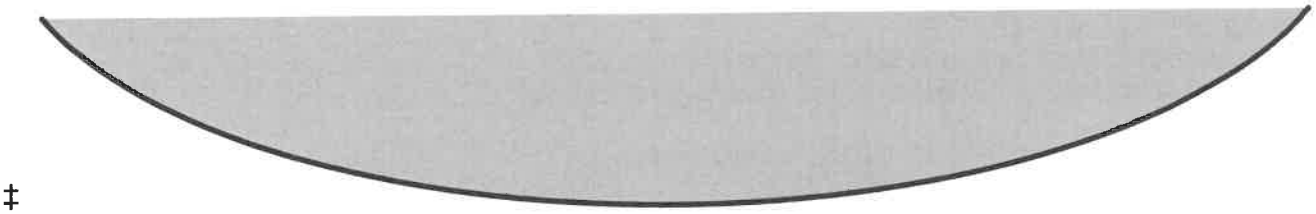
[62] Hint: Exceeded Reach 4Rb OUTLET depth by 0.19' @ 13.15 hrs
[80] Warning: Exceeded Pond 4P by 0.09' @ 13.10 hrs (0.81 cfs 0.184 af)

Inflow Area = 0.455 ac, 19.68% Impervious, Inflow Depth > 2.34" for 10 Yr 24 Hr event
Inflow = 0.96 cfs @ 12.23 hrs, Volume= 0.089 af
Outflow = 0.14 cfs @ 13.10 hrs, Volume= 0.056 af, Atten= 85%, Lag= 52.0 min
Routed to Reach AP1 : Analysis Point 1
Overflow = 0.82 cfs @ 12.23 hrs, Volume= 0.032 af
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.21 fps, Min. Travel Time= 13.4 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 19.1 min

Peak Storage= 114 cf @ 13.10 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 5.00'
Bank-Full Depth= 0.20' Flow Area= 0.7 sf, Capacity= 0.14 cfs
Any excess flow will be diverted to the secondary overflow

5.00' x 0.20' deep Parabolic Channel, n= 0.150 Sheet flow over Short Grass
Length= 171.0' Slope= 0.0068 '/'
Inlet Invert= 53.00', Outlet Invert= 51.84'



‡

Summary for Reach 4Ra: Driveway Segment 1

[80] Warning: Exceeded Pond 2P by 0.01' @ 12.30 hrs (0.06 cfs 0.002 af)

Inflow Area = 0.152 ac, 4.89% Impervious, Inflow Depth > 1.88" for 10 Yr 24 Hr event
Inflow = 0.26 cfs @ 12.29 hrs, Volume= 0.024 af
Outflow = 0.26 cfs @ 12.30 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 4Rb : Driveway Segment 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.10 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 1.8 min

Peak Storage= 12 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 12.04'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 56.25 cfs

12.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 1.0 '/' Top Width= 13.00'
Length= 50.0' Slope= 0.0260 '/'
Inlet Invert= 55.30', Outlet Invert= 54.00'



‡

Summary for Reach 4Rb: Driveway Segment 2

[61] Hint: Exceeded Reach 4Ra outlet invert by 0.02' @ 12.30 hrs

Inflow Area = 0.152 ac, 4.89% Impervious, Inflow Depth > 1.87" for 10 Yr 24 Hr event
Inflow = 0.26 cfs @ 12.30 hrs, Volume= 0.024 af
Outflow = 0.26 cfs @ 12.31 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.9 min
Routed to Reach 3R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.91 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 3.3 min

Peak Storage= 21 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 12.05'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 41.11 cfs

12.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 1.0 '/' Top Width= 13.00'
Length= 72.0' Slope= 0.0139 '/'
Inlet Invert= 54.00', Outlet Invert= 53.00'



Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	1.152 ac,	38.89% Impervious,	Inflow Depth >	2.93" for 10 Yr 24 Hr event
Inflow =	2.79 cfs @	12.25 hrs, Volume=	0.282 af	
Outflow =	2.79 cfs @	12.25 hrs, Volume=	0.282 af,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.039 ac,	28.08% Impervious,	Inflow Depth >	2.78" for 10 Yr 24 Hr event
Inflow =	0.12 cfs @	12.11 hrs, Volume=	0.009 af	
Outflow =	0.12 cfs @	12.11 hrs, Volume=	0.009 af,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.899 ac,	5.33% Impervious,	Inflow Depth >	2.15" for 10 Yr 24 Hr event
Inflow =	1.33 cfs @	12.41 hrs, Volume=	0.161 af	
Outflow =	1.33 cfs @	12.41 hrs, Volume=	0.161 af,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.101 ac, 26.97% Impervious, Inflow Depth > 2.69" for 10 Yr 24 Hr event
Inflow = 0.28 cfs @ 12.13 hrs, Volume= 0.023 af
Outflow = 0.28 cfs @ 12.13 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP5: Analysis Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.191 ac, 4.42% Impervious, Inflow Depth > 2.09" for 10 Yr 24 Hr event
Inflow = 0.37 cfs @ 12.19 hrs, Volume= 0.033 af
Outflow = 0.37 cfs @ 12.19 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Depression

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 2.51" for 10 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.19 hrs, Volume= 0.019 af
Outflow = 0.21 cfs @ 12.21 hrs, Volume= 0.015 af, Atten= 1%, Lag= 1.7 min
Primary = 0.21 cfs @ 12.21 hrs, Volume= 0.015 af
Routed to Reach 1Ra : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 12.15 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 114.8 min calculated for 0.015 af (80% of inflow)
Center-of-Mass det. time= 37.3 min (873.3 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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=0.00 cfs @ 12.21 hrs HW=51.31' TW=51.66' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 2P: Depression

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.01' @ 11.80 hrs

Inflow Area = 0.152 ac, 4.89% Impervious, Inflow Depth > 1.93" for 10 Yr 24 Hr event
Inflow = 0.28 cfs @ 12.26 hrs, Volume= 0.024 af
Outflow = 0.26 cfs @ 12.29 hrs, Volume= 0.024 af, Atten= 5%, Lag= 1.8 min
Primary = 0.26 cfs @ 12.29 hrs, Volume= 0.024 af
Routed to Reach 4Ra : Driveway Segment 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.31' @ 11.80 hrs Surf.Area= 126 sf Storage= 33 cf

Plug-Flow detention time= 24.2 min calculated for 0.024 af (97% of inflow)
Center-of-Mass det. time= 7.8 min (874.2 - 866.4)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	33 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	88	0	0
55.30	126	32	32
55.31	126	1	33

Device	Routing	Invert	Outlet Devices
#0	Primary	55.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	55.30'	**45.0 deg x 8.0' long x 0.20' rise Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)

Primary OutFlow Max=0.00 cfs @ 12.29 hrs HW=55.31' TW=55.32' (Dynamic Tailwater)
↑—**1=Sharp-Crested Vee/Trap Weir**(Controls 0.00 cfs)

Summary for Pond 3P: Depression

Inflow Area = 0.104 ac, 0.00% Impervious, Inflow Depth > 2.17" for 10 Yr 24 Hr event
Inflow = 0.23 cfs @ 12.14 hrs, Volume= 0.019 af
Outflow = 0.22 cfs @ 12.21 hrs, Volume= 0.014 af, Atten= 4%, Lag= 4.3 min
Primary = 0.22 cfs @ 12.21 hrs, Volume= 0.014 af
Routed to Reach 2R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 56.21' @ 12.15 hrs Surf.Area= 1,071 sf Storage= 189 cf

Plug-Flow detention time= 127.5 min calculated for 0.014 af (77% of inflow)

Center-of-Mass det. time= 42.7 min (886.2 - 843.5)

Volume	Invert	Avail.Storage	Storage Description
#1	55.90'	189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.90	52	0	0
56.00	456	25	25
56.20	1,071	153	178
56.21	1,071	11	189

Device	Routing	Invert	Outlet Devices
#0	Primary	56.21'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	56.20'	**45.0 deg x 4.0' long x 0.20' rise Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)

Primary OutFlow Max=0.00 cfs @ 12.21 hrs HW=56.21' TW=56.46' (Dynamic Tailwater)
↑—**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 4P: Depression

Inflow Area = 0.304 ac, 27.07% Impervious, Inflow Depth > 2.77" for 10 Yr 24 Hr event
Inflow = 0.80 cfs @ 12.17 hrs, Volume= 0.070 af
Outflow = 0.78 cfs @ 12.20 hrs, Volume= 0.065 af, Atten= 2%, Lag= 1.8 min
Primary = 0.78 cfs @ 12.20 hrs, Volume= 0.065 af
Routed to Reach 3R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 53.11' @ 11.55 hrs Surf.Area= 1,846 sf Storage= 236 cf

Plug-Flow detention time= 56.0 min calculated for 0.065 af (92% of inflow)
Center-of-Mass det. time= 18.5 min (846.0 - 827.4)

Volume	Invert	Avail.Storage	Storage Description
#1	52.82'	236 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.82	5	0	0
53.00	889	80	80
53.10	1,846	137	217
53.11	1,846	18	236

Device	Routing	Invert	Outlet Devices
#0	Primary	53.11'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	53.10'	**45.0 deg x 8.0' long x 0.20' rise Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)

Primary OutFlow Max=0.00 cfs @ 12.20 hrs HW=53.11' TW=53.20' (Dynamic Tailwater)
↑—**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=30,350 sf 51.45% Impervious Runoff Depth>4.56"
Flow Length=254' Tc=19.4 min CN=86 Runoff=2.49 cfs 0.265 af

Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>3.93"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.17 cfs 0.013 af

Subcatchment3S: Subcatchment3S Runoff Area=35,181 sf 4.23% Impervious Runoff Depth>3.21"
Flow Length=187' Tc=29.1 min CN=73 Runoff=1.75 cfs 0.216 af

Subcatchment4S: Subcatchment4S Runoff Area=4,408 sf 26.97% Impervious Runoff Depth>3.83"
Flow Length=55' Slope=0.0500 '/' Tc=9.1 min CN=79 Runoff=0.40 cfs 0.032 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>3.62"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.31 cfs 0.027 af

Subcatchment6S: Subcatchment6S Runoff Area=2,101 sf 15.37% Impervious Runoff Depth>3.62"
Flow Length=76' Slope=0.0260 '/' Tc=9.4 min CN=77 Runoff=0.18 cfs 0.015 af

Subcatchment7S: Subcatchment7S Runoff Area=4,509 sf 0.00% Impervious Runoff Depth>3.22"
Flow Length=42' Slope=0.0240 '/' Tc=9.6 min CN=73 Runoff=0.34 cfs 0.028 af

Subcatchment8S: Subcatchment8S Runoff Area=13,227 sf 27.07% Impervious Runoff Depth>3.93"
Flow Length=136' Tc=12.3 min CN=80 Runoff=1.13 cfs 0.099 af

Subcatchment9S: Subcatchment9S Runoff Area=8,332 sf 4.42% Impervious Runoff Depth>3.13"
Flow Length=164' Tc=12.9 min CN=72 Runoff=0.55 cfs 0.050 af

Reach 1Ra: Overland Flow Avg. Flow Depth=0.15' Max Vel=0.23 fps Inflow=0.30 cfs 0.024 af
n=0.150 L=35.0' S=0.0100 '/' Capacity=0.54 cfs Outflow=0.29 cfs 0.024 af

Reach 1Rb: Overland Flow Avg. Flow Depth=0.16' Max Vel=0.48 fps Inflow=0.29 cfs 0.024 af
n=0.150 L=122.0' S=0.0443 '/' Capacity=0.43 cfs Outflow=0.28 cfs 0.023 af

Reach 1Rc: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.37 fps Inflow=0.28 cfs 0.023 af
n=0.150 L=30.0' S=0.1167 '/' Capacity=74.58 cfs Outflow=0.28 cfs 0.023 af

Reach 2R: Overland Flow Avg. Flow Depth=0.09' Max Vel=0.26 fps Inflow=0.33 cfs 0.023 af
n=0.150 L=37.0' S=0.0297 '/' Capacity=1.78 cfs Outflow=0.32 cfs 0.023 af

Reach 3R: Overland Flow Avg. Flow Depth=0.20' Max Vel=0.21 fps Inflow=1.58 cfs 0.131 af
n=0.150 L=171.0' S=0.0068 '/' Capacity=0.14 cfs Outflow=0.14 cfs 0.074 af Overflow=1.44 cfs 0.057 af

Reach 4Ra: Driveway Segment 1 Avg. Flow Depth=0.03' Max Vel=1.39 fps Inflow=0.48 cfs 0.037 af
n=0.016 L=50.0' S=0.0260 '/' Capacity=56.25 cfs Outflow=0.48 cfs 0.037 af

Reach 4Rb: Driveway Segment 2 Avg. Flow Depth=0.03' Max Vel=1.15 fps Inflow=0.48 cfs 0.037 af
n=0.016 L=72.0' S=0.0139 '/' Capacity=41.11 cfs Outflow=0.48 cfs 0.037 af

Reach AP1: Analysis Point 1		Inflow=3.99 cfs 0.395 af Outflow=3.99 cfs 0.395 af
Reach AP2: Analysis Point 2		Inflow=0.17 cfs 0.013 af Outflow=0.17 cfs 0.013 af
Reach AP3: Analysis Point 3		Inflow=2.00 cfs 0.240 af Outflow=2.00 cfs 0.240 af
Reach AP4: Analysis Point 4		Inflow=0.40 cfs 0.032 af Outflow=0.40 cfs 0.032 af
Reach AP5: Analysis Point 5		Inflow=0.55 cfs 0.050 af Outflow=0.55 cfs 0.050 af
Pond 1P: Depression	Peak Elev=51.31' Storage=167 cf	Inflow=0.31 cfs 0.027 af Outflow=0.30 cfs 0.024 af
Pond 2P: Depression	Peak Elev=55.31' Storage=33 cf	Inflow=0.49 cfs 0.038 af Outflow=0.48 cfs 0.037 af
Pond 3P: Depression	Peak Elev=56.21' Storage=189 cf	Inflow=0.34 cfs 0.028 af Outflow=0.33 cfs 0.023 af
Pond 4P: Depression	Peak Elev=53.11' Storage=236 cf	Inflow=1.13 cfs 0.099 af Outflow=1.11 cfs 0.094 af

Total Runoff Area = 2.382 ac Runoff Volume = 0.745 af Average Runoff Depth = 3.75"
77.22% Pervious = 1.840 ac 22.78% Impervious = 0.543 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=30,350 sf 51.45% Impervious Runoff Depth>5.72"
Flow Length=254' Tc=19.4 min CN=86 Runoff=3.10 cfs 0.332 af

Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>5.05"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.21 cfs 0.016 af

Subcatchment3S: Subcatchment3S Runoff Area=35,181 sf 4.23% Impervious Runoff Depth>4.25"
Flow Length=187' Tc=29.1 min CN=73 Runoff=2.32 cfs 0.286 af

Subcatchment4S: Subcatchment4S Runoff Area=4,408 sf 26.97% Impervious Runoff Depth>4.94"
Flow Length=55' Slope=0.0500 '/' Tc=9.1 min CN=79 Runoff=0.51 cfs 0.042 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>4.71"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.40 cfs 0.036 af

Subcatchment6S: Subcatchment6S Runoff Area=2,101 sf 15.37% Impervious Runoff Depth>4.71"
Flow Length=76' Slope=0.0260 '/' Tc=9.4 min CN=77 Runoff=0.23 cfs 0.019 af

Subcatchment7S: Subcatchment7S Runoff Area=4,509 sf 0.00% Impervious Runoff Depth>4.27"
Flow Length=42' Slope=0.0240 '/' Tc=9.6 min CN=73 Runoff=0.45 cfs 0.037 af

Subcatchment8S: Subcatchment8S Runoff Area=13,227 sf 27.07% Impervious Runoff Depth>5.05"
Flow Length=136' Tc=12.3 min CN=80 Runoff=1.44 cfs 0.128 af

Subcatchment9S: Subcatchment9S Runoff Area=8,332 sf 4.42% Impervious Runoff Depth>4.15"
Flow Length=164' Tc=12.9 min CN=72 Runoff=0.74 cfs 0.066 af

Reach 1Ra: Overland Flow Avg. Flow Depth=0.17' Max Vel=0.24 fps Inflow=0.39 cfs 0.032 af
n=0.150 L=35.0' S=0.0100 '/' Capacity=0.54 cfs Outflow=0.38 cfs 0.032 af

Reach 1Rb: Overland Flow Avg. Flow Depth=0.18' Max Vel=0.52 fps Inflow=0.38 cfs 0.032 af
n=0.150 L=122.0' S=0.0443 '/' Capacity=0.43 cfs Outflow=0.36 cfs 0.032 af

Reach 1Rc: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.42 fps Inflow=0.36 cfs 0.032 af
n=0.150 L=30.0' S=0.1167 '/' Capacity=74.58 cfs Outflow=0.36 cfs 0.032 af

Reach 2R: Overland Flow Avg. Flow Depth=0.10' Max Vel=0.29 fps Inflow=0.44 cfs 0.032 af
n=0.150 L=37.0' S=0.0297 '/' Capacity=1.78 cfs Outflow=0.43 cfs 0.032 af

Reach 3R: Overland Flow Avg. Flow Depth=0.20' Max Vel=0.21 fps Inflow=2.04 cfs 0.173 af
n=0.150 L=171.0' S=0.0068 '/' Capacity=0.14 cfs Outflow=0.14 cfs 0.089 af Overflow=1.90 cfs 0.083 af

Reach 4Ra: Driveway Segment 1 Avg. Flow Depth=0.03' Max Vel=1.56 fps Inflow=0.63 cfs 0.051 af
n=0.016 L=50.0' S=0.0260 '/' Capacity=56.25 cfs Outflow=0.63 cfs 0.051 af

Reach 4Rb: Driveway Segment 2 Avg. Flow Depth=0.04' Max Vel=1.29 fps Inflow=0.63 cfs 0.051 af
n=0.016 L=72.0' S=0.0139 '/' Capacity=41.11 cfs Outflow=0.63 cfs 0.051 af

Reach AP1: Analysis Point 1 Inflow=5.04 cfs 0.504 af
Outflow=5.04 cfs 0.504 af

Reach AP2: Analysis Point 2 Inflow=0.21 cfs 0.016 af
Outflow=0.21 cfs 0.016 af

Reach AP3: Analysis Point 3 Inflow=2.63 cfs 0.318 af
Outflow=2.63 cfs 0.318 af

Reach AP4: Analysis Point 4 Inflow=0.51 cfs 0.042 af
Outflow=0.51 cfs 0.042 af

Reach AP5: Analysis Point 5 Inflow=0.74 cfs 0.066 af
Outflow=0.74 cfs 0.066 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.40 cfs 0.036 af
Outflow=0.39 cfs 0.032 af

Pond 2P: Depression Peak Elev=55.31' Storage=33 cf Inflow=0.64 cfs 0.051 af
Outflow=0.63 cfs 0.051 af

Pond 3P: Depression Peak Elev=56.21' Storage=189 cf Inflow=0.45 cfs 0.037 af
Outflow=0.44 cfs 0.032 af

Pond 4P: Depression Peak Elev=53.11' Storage=236 cf Inflow=1.44 cfs 0.128 af
Outflow=1.41 cfs 0.122 af

Total Runoff Area = 2.382 ac Runoff Volume = 0.962 af Average Runoff Depth = 4.84"
77.22% Pervious = 1.840 ac 22.78% Impervious = 0.543 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 3.10 cfs @ 12.26 hrs, Volume= 0.332 af, Depth> 5.72"
Routed to Reach AP1 : Analysis Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
12,369	98	Paved parking, HSG C
3,246	98	Roofs, HSG C
14,735	74	>75% Grass cover, Good, HSG C
30,350	86	Weighted Average
14,735		48.55% Pervious Area
15,615		51.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	78	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
2.4	22	0.0330	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
4.5	48	0.0330	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	66	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	18	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
19.4	254	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af, Depth> 5.05"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
836	74	>75% Grass cover, Good, HSG C
478	98	Roofs, HSG C
388	70	Woods, Good, HSG C
1,702	80	Weighted Average
1,224		71.92% Pervious Area
478		28.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	26	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.3	16	0.0750	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.7	13	0.1900	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.3	7	0.1140	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.5	5	0.5000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
7.6	67	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 2.32 cfs @ 12.41 hrs, Volume= 0.286 af, Depth> 4.25"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
1,489	98	Roofs, HSG C
19,916	74	>75% Grass cover, Good, HSG C
13,776	70	Woods, Good, HSG C
35,181	73	Weighted Average
33,692		95.77% Pervious Area
1,489		4.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	48	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
9.8	41	0.0240	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
2.5	11	0.0520	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.3	22	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	45	0.0670	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	20	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.1	187	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.51 cfs @ 12.13 hrs, Volume= 0.042 af, Depth> 4.94"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
1,661	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
1,558	70	Woods, Good, HSG C
4,408	79	Weighted Average
3,219		73.03% Pervious Area
1,189		26.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	5	0.0500	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
8.5	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
9.1	55	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.40 cfs @ 12.18 hrs, Volume= 0.036 af, Depth> 4.71"
Routed to Pond 1P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
10.3	40	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	67	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 0.23 cfs @ 12.13 hrs, Volume= 0.019 af, Depth> 4.71"
Routed to Pond 2P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
323	98	Roofs, HSG C
1,641	74	>75% Grass cover, Good, HSG C
137	70	Woods, Good, HSG C
2,101	77	Weighted Average
1,778		84.63% Pervious Area
323		15.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	10	0.0260	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
6.3	66	0.0260	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
9.4	76	Total			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 0.45 cfs @ 12.14 hrs, Volume= 0.037 af, Depth> 4.27"
Routed to Pond 3P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
3,271	74	>75% Grass cover, Good, HSG C
1,238	70	Woods, Good, HSG C
4,509	73	Weighted Average
4,509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	34	0.0240	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.2	8	0.0240	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
9.6	42	Total			

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 1.44 cfs @ 12.17 hrs, Volume= 0.128 af, Depth> 5.05"
Routed to Pond 4P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
324	98	Roofs, HSG C
3,257	98	Paved parking, HSG C
9,288	74	>75% Grass cover, Good, HSG C
358	70	Woods, Good, HSG C
13,227	80	Weighted Average
9,646		72.93% Pervious Area
3,581		27.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	30	0.0330	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.3	10	0.0330	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.6	27	0.0100	0.80		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
3.2	33	0.0360	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.5	36	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	136	Total			

Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 0.74 cfs @ 12.18 hrs, Volume= 0.066 af, Depth> 4.15"
Routed to Reach AP5 : Analysis Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
1,091	74	>75% Grass cover, Good, HSG C
368	98	Roofs, HSG C
6,873	70	Woods, Good, HSG C
8,332	72	Weighted Average
7,964		95.58% Pervious Area
368		4.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	38	0.0370	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
8.5	62	0.0770	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.2	14	0.0857	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	50	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.9	164	Total			

Summary for Reach 1Ra: Overland Flow

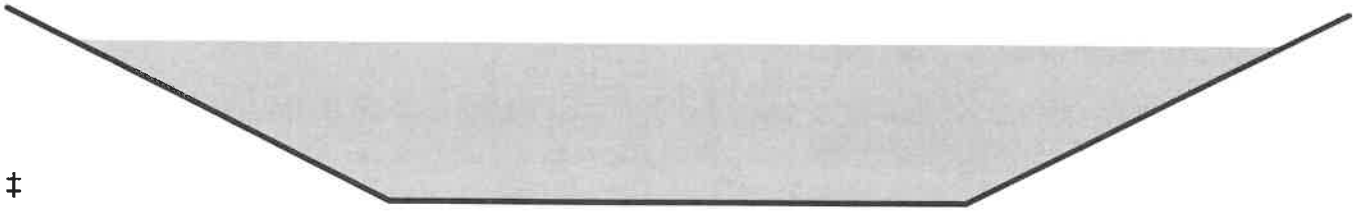
[80] Warning: Exceeded Pond 1P by 1.05' @ 0.00 hrs (2.56 cfs 5.636 af)

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 4.20" for 50 Yr 24 Hr event
Inflow = 0.39 cfs @ 12.21 hrs, Volume= 0.032 af
Outflow = 0.38 cfs @ 12.24 hrs, Volume= 0.032 af, Atten= 2%, Lag= 1.9 min
Routed to Reach 1Rb : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.24 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 6.4 min

Peak Storage= 54 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 12.67'
Bank-Full Depth= 0.20' Flow Area= 2.0 sf, Capacity= 0.54 cfs

6.00' x 0.20' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 20.0 '/' Top Width= 14.00'
Length= 35.0' Slope= 0.0100 '/'
Inlet Invert= 51.55', Outlet Invert= 51.20'



‡

Summary for Reach 1Rb: Overland Flow

[62] Hint: Exceeded Reach 1Ra OUTLET depth by 0.03' @ 12.40 hrs

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 4.19" for 50 Yr 24 Hr event
Inflow = 0.38 cfs @ 12.24 hrs, Volume= 0.032 af
Outflow = 0.36 cfs @ 12.29 hrs, Volume= 0.032 af, Atten= 5%, Lag= 3.0 min
Routed to Reach 1Rc : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.52 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 9.8 min

Peak Storage= 85 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 5.66'
Bank-Full Depth= 0.20' Flow Area= 0.8 sf, Capacity= 0.43 cfs

2.00' x 0.20' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 10.0 '/' Top Width= 6.00'
Length= 122.0' Slope= 0.0443 '/'
Inlet Invert= 51.20', Outlet Invert= 45.80'



‡

Summary for Reach 1Rc: Overland Flow

[61] Hint: Exceeded Reach 1Rb outlet invert by 0.04' @ 12.30 hrs

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 4.18" for 50 Yr 24 Hr event
Inflow = 0.36 cfs @ 12.29 hrs, Volume= 0.032 af
Outflow = 0.36 cfs @ 12.30 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.8 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.42 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 2.9 min

Peak Storage= 26 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 20.43'
Bank-Full Depth= 1.00' Flow Area= 25.0 sf, Capacity= 74.58 cfs

20.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 30.0' Slope= 0.1167 '/'
Inlet Invert= 45.80', Outlet Invert= 42.30'



‡

Summary for Reach 2R: Overland Flow

[80] Warning: Exceeded Pond 3P by 0.50' @ 0.00 hrs (1.16 cfs 2.485 af)

Inflow Area = 0.104 ac, 0.00% Impervious, Inflow Depth > 3.76" for 50 Yr 24 Hr event
Inflow = 0.44 cfs @ 12.16 hrs, Volume= 0.032 af
Outflow = 0.43 cfs @ 12.19 hrs, Volume= 0.032 af, Atten= 3%, Lag= 1.8 min
Routed to Pond 2P : Depression

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.29 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 5.6 min

Peak Storage= 55 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.10' , Surface Width= 21.60'
Bank-Full Depth= 0.20' Flow Area= 4.0 sf, Capacity= 1.78 cfs

30.00' x 0.20' deep Parabolic Channel, n= 0.150 Sheet flow over Short Grass
Length= 37.0' Slope= 0.0297 '/'
Inlet Invert= 56.40', Outlet Invert= 55.30'



‡

Summary for Reach 3R: Overland Flow

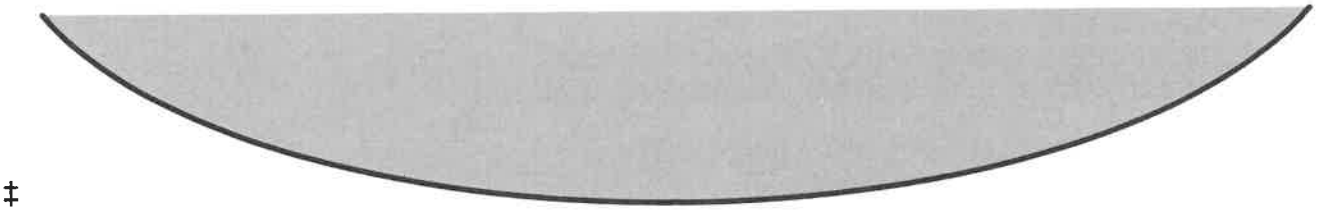
[62] Hint: Exceeded Reach 4Rb OUTLET depth by 0.19' @ 14.40 hrs
[80] Warning: Exceeded Pond 4P by 0.09' @ 14.35 hrs (0.81 cfs 0.360 af)

Inflow Area = 0.455 ac, 19.68% Impervious, Inflow Depth > 4.55" for 50 Yr 24 Hr event
Inflow = 2.04 cfs @ 12.20 hrs, Volume= 0.173 af
Outflow = 0.14 cfs @ 14.35 hrs, Volume= 0.089 af, Atten= 93%, Lag= 128.8 min
Routed to Reach AP1 : Analysis Point 1
Overflow = 1.90 cfs @ 12.20 hrs, Volume= 0.083 af
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.21 fps, Min. Travel Time= 13.4 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 16.9 min

Peak Storage= 114 cf @ 14.35 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 5.00'
Bank-Full Depth= 0.20' Flow Area= 0.7 sf, Capacity= 0.14 cfs
Any excess flow will be diverted to the secondary overflow

5.00' x 0.20' deep Parabolic Channel, n= 0.150 Sheet flow over Short Grass
Length= 171.0' Slope= 0.0068 '/'
Inlet Invert= 53.00', Outlet Invert= 51.84'



‡

Summary for Reach 4Ra: Driveway Segment 1

[80] Warning: Exceeded Pond 2P by 0.02' @ 12.20 hrs (0.15 cfs 0.006 af)

Inflow Area = 0.152 ac, 4.89% Impervious, Inflow Depth > 4.00" for 50 Yr 24 Hr event
Inflow = 0.63 cfs @ 12.20 hrs, Volume= 0.051 af
Outflow = 0.63 cfs @ 12.20 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 4Rb : Driveway Segment 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.56 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 1.6 min

Peak Storage= 20 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 12.07'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 56.25 cfs

12.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 1.0 '/' Top Width= 13.00'
Length= 50.0' Slope= 0.0260 '/'
Inlet Invert= 55.30', Outlet Invert= 54.00'



‡

Summary for Reach 4Rb: Driveway Segment 2

[62] Hint: Exceeded Reach 4Ra OUTLET depth by 0.01' @ 12.25 hrs

Inflow Area = 0.152 ac, 4.89% Impervious, Inflow Depth > 4.00" for 50 Yr 24 Hr event
Inflow = 0.63 cfs @ 12.20 hrs, Volume= 0.051 af
Outflow = 0.63 cfs @ 12.21 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 3R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.29 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 3.0 min

Peak Storage= 35 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 12.08'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 41.11 cfs

12.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 1.0 '/' Top Width= 13.00'
Length= 72.0' Slope= 0.0139 '/'
Inlet Invert= 54.00', Outlet Invert= 53.00'



Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.152 ac, 38.89% Impervious, Inflow Depth > 5.25" for 50 Yr 24 Hr event
Inflow = 5.04 cfs @ 12.23 hrs, Volume= 0.504 af
Outflow = 5.04 cfs @ 12.23 hrs, Volume= 0.504 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.039 ac, 28.08% Impervious, Inflow Depth > 5.05" for 50 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af
Outflow = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.899 ac, 5.33% Impervious, Inflow Depth > 4.24" for 50 Yr 24 Hr event
Inflow = 2.63 cfs @ 12.39 hrs, Volume= 0.318 af
Outflow = 2.63 cfs @ 12.39 hrs, Volume= 0.318 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.101 ac, 26.97% Impervious, Inflow Depth > 4.94" for 50 Yr 24 Hr event
Inflow = 0.51 cfs @ 12.13 hrs, Volume= 0.042 af
Outflow = 0.51 cfs @ 12.13 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP5: Analysis Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.191 ac, 4.42% Impervious, Inflow Depth > 4.15" for 50 Yr 24 Hr event
Inflow = 0.74 cfs @ 12.18 hrs, Volume= 0.066 af
Outflow = 0.74 cfs @ 12.18 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Depression

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 4.71" for 50 Yr 24 Hr event
Inflow = 0.40 cfs @ 12.18 hrs, Volume= 0.036 af
Outflow = 0.39 cfs @ 12.21 hrs, Volume= 0.032 af, Atten= 1%, Lag= 1.6 min
Primary = 0.39 cfs @ 12.21 hrs, Volume= 0.032 af
Routed to Reach 1Ra : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 11.60 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 74.2 min calculated for 0.032 af (89% of inflow)
Center-of-Mass det. time= 24.4 min (842.6 - 818.1)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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=0.00 cfs @ 12.21 hrs HW=51.31' TW=51.71' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Depression

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.01' @ 11.60 hrs

Inflow Area = 0.152 ac, 4.89% Impervious, Inflow Depth > 4.06" for 50 Yr 24 Hr event
Inflow = 0.64 cfs @ 12.17 hrs, Volume= 0.051 af
Outflow = 0.63 cfs @ 12.20 hrs, Volume= 0.051 af, Atten= 2%, Lag= 1.7 min
Primary = 0.63 cfs @ 12.20 hrs, Volume= 0.051 af
Routed to Reach 4Ra : Driveway Segment 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.31' @ 11.60 hrs Surf.Area= 126 sf Storage= 33 cf

Plug-Flow detention time= 13.6 min calculated for 0.050 af (98% of inflow)
Center-of-Mass det. time= 5.3 min (843.3 - 838.0)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	33 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	88	0	0
55.30	126	32	32
55.31	126	1	33

Device	Routing	Invert	Outlet Devices
#0	Primary	55.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	55.30'	**45.0 deg x 8.0' long x 0.20' rise Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)

Primary OutFlow Max=0.00 cfs @ 12.20 hrs HW=55.31' TW=55.33' (Dynamic Tailwater)
↑—**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Depression

Inflow Area = 0.104 ac, 0.00% Impervious, Inflow Depth > 4.27" for 50 Yr 24 Hr event
Inflow = 0.45 cfs @ 12.14 hrs, Volume= 0.037 af
Outflow = 0.44 cfs @ 12.16 hrs, Volume= 0.032 af, Atten= 2%, Lag= 1.5 min
Primary = 0.44 cfs @ 12.16 hrs, Volume= 0.032 af
Routed to Reach 2R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 56.21' @ 11.80 hrs Surf.Area= 1,071 sf Storage= 189 cf

Plug-Flow detention time= 77.9 min calculated for 0.032 af (88% of inflow)

Center-of-Mass det. time= 24.3 min (848.5 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	55.90'	189 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.90	52	0	0
56.00	456	25	25
56.20	1,071	153	178
56.21	1,071	11	189

Device	Routing	Invert	Outlet Devices
#0	Primary	56.21'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	56.20'	**45.0 deg x 4.0' long x 0.20' rise Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=56.21' TW=56.50' (Dynamic Tailwater)
↑—**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 4P: Depression

Inflow Area = 0.304 ac, 27.07% Impervious, Inflow Depth > 5.05" for 50 Yr 24 Hr event
Inflow = 1.44 cfs @ 12.17 hrs, Volume= 0.128 af
Outflow = 1.41 cfs @ 12.20 hrs, Volume= 0.122 af, Atten= 2%, Lag= 1.7 min
Primary = 1.41 cfs @ 12.20 hrs, Volume= 0.122 af
Routed to Reach 3R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 53.11' @ 10.10 hrs Surf.Area= 1,846 sf Storage= 236 cf

Plug-Flow detention time= 37.1 min calculated for 0.122 af (96% of inflow)
Center-of-Mass det. time= 13.9 min (824.4 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1	52.82'	236 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.82	5	0	0
53.00	889	80	80
53.10	1,846	137	217
53.11	1,846	18	236

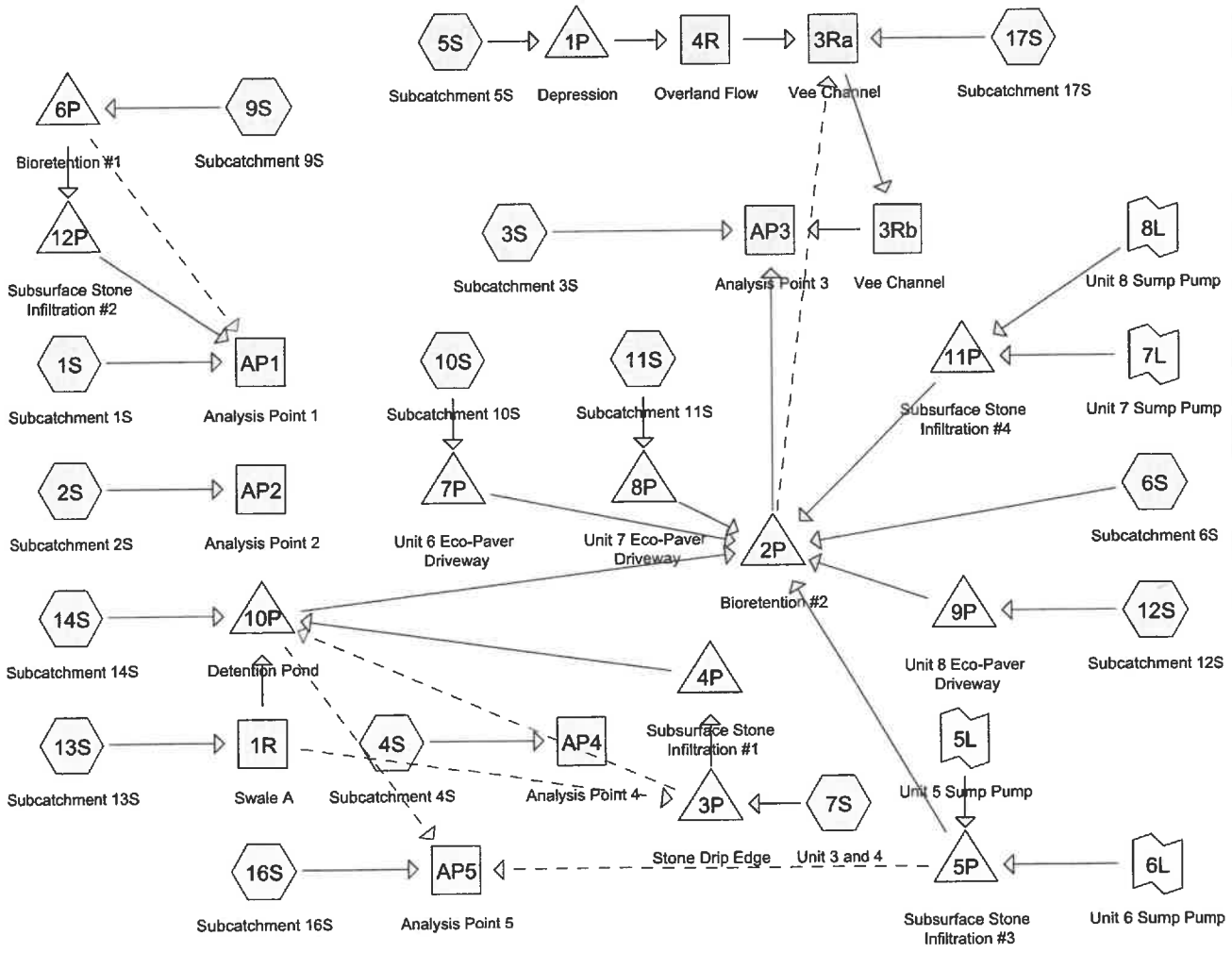
Device	Routing	Invert	Outlet Devices
#0	Primary	53.11'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	53.10'	**45.0 deg x 8.0' long x 0.20' rise Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)

Primary OutFlow Max=0.00 cfs @ 12.20 hrs HW=53.11' TW=53.20' (Dynamic Tailwater)
↑—**1=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Routing Diagram for 21254-PROPOSED
Prepared by Jones & Beach Engineers Inc, Printed 12/21/2022
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.169	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 9S, 12S, 13S, 14S, 16S, 17S)
0.652	98	Paved parking, HSG C (1S, 4S, 6S, 9S, 10S, 11S, 12S, 17S)
0.406	98	Roofs, HSG C (1S, 2S, 4S, 5S, 6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 16S, 17S)
0.006	98	Water Surface, HSG C (7S)
0.149	70	Woods, Good, HSG C (2S, 3S, 4S, 5S, 6S, 9S, 13S, 14S, 16S, 17S)
2.382	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.382	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 16S, 17S
0.000	HSG D	
0.000	Other	
2.382		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,271 sf 57.36% Impervious Runoff Depth>2.00"
Flow Length=221' Tc=11.9 min CN=88 Runoff=1.29 cfs 0.112 af

Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>1.41"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.06 cfs 0.005 af

Subcatchment3S: Subcatchment3S Runoff Area=1,237 sf 0.00% Impervious Runoff Depth>0.99"
Flow Length=34' Tc=6.0 min CN=73 Runoff=0.03 cfs 0.002 af

Subcatchment4S: Subcatchment4S Runoff Area=3,492 sf 34.05% Impervious Runoff Depth>1.54"
Flow Length=47' Slope=0.0250 '/' Tc=9.4 min CN=82 Runoff=0.13 cfs 0.010 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>1.22"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.10 cfs 0.009 af

Subcatchment6S: Subcatchment6S Runoff Area=28,965 sf 45.86% Impervious Runoff Depth>1.76"
Flow Length=133' Tc=19.6 min CN=85 Runoff=0.93 cfs 0.097 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>2.98"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

Subcatchment9S: Subcatchment9S Runoff Area=10,560 sf 57.77% Impervious Runoff Depth>2.00"
Flow Length=72' Slope=0.0100 '/' Tc=6.0 min CN=88 Runoff=0.56 cfs 0.040 af

Subcatchment10S: Subcatchment10S Runoff Area=1,309 sf 100.00% Impervious Runoff Depth>2.98"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

Subcatchment11S: Subcatchment11S Runoff Area=1,297 sf 100.00% Impervious Runoff Depth>2.98"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

Subcatchment12S: Subcatchment12S Runoff Area=1,970 sf 66.04% Impervious Runoff Depth>2.18"
Tc=6.0 min CN=90 Runoff=0.11 cfs 0.008 af

Subcatchment13S: Subcatchment13S Runoff Area=1,624 sf 4.99% Impervious Runoff Depth>1.04"
Flow Length=43' Tc=7.1 min CN=74 Runoff=0.04 cfs 0.003 af

Subcatchment14S: Subcatchment14S Runoff Area=6,327 sf 19.36% Impervious Runoff Depth>1.34"
Flow Length=50' Slope=0.0230 '/' Tc=6.0 min CN=79 Runoff=0.22 cfs 0.016 af

Subcatchment16S: Subcatchment16S Runoff Area=4,616 sf 12.56% Impervious Runoff Depth>1.16"
Flow Length=64' Tc=7.8 min CN=76 Runoff=0.13 cfs 0.010 af

Subcatchment17S: Subcatchment17S Runoff Area=6,175 sf 14.35% Impervious Runoff Depth>1.21"
Flow Length=95' Slope=0.0050 '/' Tc=16.3 min CN=77 Runoff=0.14 cfs 0.014 af

Reach 1R: Swale A Avg. Flow Depth=0.22' Max Vel=0.22 fps Inflow=0.04 cfs 0.003 af
n=0.150 L=100.0' S=0.0100 '/' Capacity=0.70 cfs Outflow=0.03 cfs 0.003 af Overflow=0.00 cfs 0.000 af

Reach 3Ra: Vee Channel Avg. Flow Depth=0.30' Max Vel=0.54 fps Inflow=0.14 cfs 0.020 af
n=0.150 L=50.0' S=0.0400 '/' Capacity=3.62 cfs Outflow=0.14 cfs 0.020 af

Reach 3Rb: Vee Channel Avg. Flow Depth=0.27' Max Vel=0.67 fps Inflow=0.14 cfs 0.020 af
n=0.150 L=35.0' S=0.0714 '/' Capacity=4.83 cfs Outflow=0.14 cfs 0.020 af

Reach 4R: Overland Flow Avg. Flow Depth=0.12' Max Vel=0.10 fps Inflow=0.05 cfs 0.005 af
n=0.150 L=83.0' S=0.0047 '/' Capacity=1.01 cfs Outflow=0.02 cfs 0.005 af

Reach AP1: Analysis Point 1 Inflow=1.29 cfs 0.112 af
Outflow=1.29 cfs 0.112 af

Reach AP2: Analysis Point 2 Inflow=0.06 cfs 0.005 af
Outflow=0.06 cfs 0.005 af

Reach AP3: Analysis Point 3 Inflow=0.16 cfs 0.022 af
Outflow=0.16 cfs 0.022 af

Reach AP4: Analysis Point 4 Inflow=0.13 cfs 0.010 af
Outflow=0.13 cfs 0.010 af

Reach AP5: Analysis Point 5 Inflow=0.13 cfs 0.010 af
Outflow=0.13 cfs 0.010 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.10 cfs 0.009 af
Outflow=0.05 cfs 0.005 af

Pond 2P: Bioretention #2 Peak Elev=49.85' Storage=2,206 cf Inflow=1.08 cfs 0.117 af
Discarded=0.18 cfs 0.112 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.112 af

Pond 3P: Stone Drip Edge Peak Elev=55.29' Storage=20 cf Inflow=0.09 cfs 0.007 af
Primary=0.08 cfs 0.007 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.007 af

Pond 4P: Subsurface Stone Infiltration #1 Peak Elev=54.97' Storage=0.001 af Inflow=0.08 cfs 0.007 af
Discarded=0.03 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.007 af

Pond 5P: Subsurface Stone Infiltration #3 Peak Elev=51.38' Storage=0.002 af Inflow=0.05 cfs 0.051 af
Discarded=0.04 cfs 0.050 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.050 af

Pond 6P: Bioretention #1 Peak Elev=53.87' Storage=384 cf Inflow=0.56 cfs 0.040 af
Discarded=0.26 cfs 0.040 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.26 cfs 0.040 af

Pond 7P: Unit 6 Eco-Paver Driveway Peak Elev=50.44' Storage=131 cf Inflow=0.09 cfs 0.007 af
Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond 8P: Unit 7 Eco-Paver Driveway Peak Elev=51.91' Storage=97 cf Inflow=0.09 cfs 0.007 af
Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

Pond 9P: Unit 8 Eco-Paver Driveway Peak Elev=49.83' Storage=117 cf Inflow=0.11 cfs 0.008 af
Discarded=0.03 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.008 af

Pond 10P: Detention Pond Peak Elev=53.06' Storage=14 cf Inflow=0.24 cfs 0.019 af
Primary=0.24 cfs 0.019 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.019 af

Pond 11P: Subsurface Stone Infiltration #4 Peak Elev=50.59' Storage=0.006 af Inflow=0.06 cfs 0.056 af
Discarded=0.06 cfs 0.056 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.056 af

Pond 12P: Subsurface Stone Infiltration #2 Peak Elev=51.30' Storage=0.000 af Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Link 5L: Unit 5 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.044 af
Primary=0.04 cfs 0.044 af

Link 6L: Unit 6 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.007 af
Primary=0.04 cfs 0.007 af

Link 7L: Unit 7 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.036 af
Primary=0.04 cfs 0.036 af

Link 8L: Unit 8 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.020 af
Primary=0.04 cfs 0.020 af

Total Runoff Area = 2.382 ac Runoff Volume = 0.351 af Average Runoff Depth = 1.77"
55.32% Pervious = 1.318 ac 44.68% Impervious = 1.064 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,271 sf 57.36% Impervious Runoff Depth>3.54"
Flow Length=221' Tc=11.9 min CN=88 Runoff=2.24 cfs 0.198 af

Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>2.78"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.12 cfs 0.009 af

Subcatchment3S: Subcatchment3S Runoff Area=1,237 sf 0.00% Impervious Runoff Depth>2.18"
Flow Length=34' Tc=6.0 min CN=73 Runoff=0.07 cfs 0.005 af

Subcatchment4S: Subcatchment4S Runoff Area=3,492 sf 34.05% Impervious Runoff Depth>2.96"
Flow Length=47' Slope=0.0250 '/' Tc=9.4 min CN=82 Runoff=0.24 cfs 0.020 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>2.51"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.21 cfs 0.019 af

Subcatchment6S: Subcatchment6S Runoff Area=28,965 sf 45.86% Impervious Runoff Depth>3.24"
Flow Length=133' Tc=19.6 min CN=85 Runoff=1.71 cfs 0.179 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=98 Runoff=0.13 cfs 0.011 af

Subcatchment9S: Subcatchment9S Runoff Area=10,560 sf 57.77% Impervious Runoff Depth>3.54"
Flow Length=72' Slope=0.0100 '/' Tc=6.0 min CN=88 Runoff=0.96 cfs 0.072 af

Subcatchment10S: Subcatchment10S Runoff Area=1,309 sf 100.00% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment11S: Subcatchment11S Runoff Area=1,297 sf 100.00% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.011 af

Subcatchment12S: Subcatchment12S Runoff Area=1,970 sf 66.04% Impervious Runoff Depth>3.75"
Tc=6.0 min CN=90 Runoff=0.19 cfs 0.014 af

Subcatchment13S: Subcatchment13S Runoff Area=1,624 sf 4.99% Impervious Runoff Depth>2.26"
Flow Length=43' Tc=7.1 min CN=74 Runoff=0.09 cfs 0.007 af

Subcatchment14S: Subcatchment14S Runoff Area=6,327 sf 19.36% Impervious Runoff Depth>2.69"
Flow Length=50' Slope=0.0230 '/' Tc=6.0 min CN=79 Runoff=0.45 cfs 0.033 af

Subcatchment16S: Subcatchment16S Runoff Area=4,616 sf 12.56% Impervious Runoff Depth>2.43"
Flow Length=64' Tc=7.8 min CN=76 Runoff=0.28 cfs 0.021 af

Subcatchment17S: Subcatchment17S Runoff Area=6,175 sf 14.35% Impervious Runoff Depth>2.51"
Flow Length=95' Slope=0.0050 '/' Tc=16.3 min CN=77 Runoff=0.30 cfs 0.030 af

Reach 1R: Swale A Avg. Flow Depth=0.31' Max Vel=0.27 fps Inflow=0.09 cfs 0.007 af
n=0.150 L=100.0' S=0.0100 '/' Capacity=0.70 cfs Outflow=0.08 cfs 0.007 af Overflow=0.00 cfs 0.000 af

Reach 3Ra: Vee Channel Avg. Flow Depth=0.45' Max Vel=0.71 fps Inflow=0.42 cfs 0.045 af
n=0.150 L=50.0' S=0.0400 '/' Capacity=3.62 cfs Outflow=0.42 cfs 0.045 af

Reach 3Rb: Vee Channel Avg. Flow Depth=0.40' Max Vel=0.88 fps Inflow=0.42 cfs 0.045 af
n=0.150 L=35.0' S=0.0714 '/' Capacity=4.83 cfs Outflow=0.43 cfs 0.045 af

Reach 4R: Overland Flow Avg. Flow Depth=0.25' Max Vel=0.17 fps Inflow=0.21 cfs 0.015 af
n=0.150 L=83.0' S=0.0047 '/' Capacity=1.01 cfs Outflow=0.15 cfs 0.015 af

Reach AP1: Analysis Point 1 Inflow=2.24 cfs 0.198 af
Outflow=2.24 cfs 0.198 af

Reach AP2: Analysis Point 2 Inflow=0.12 cfs 0.009 af
Outflow=0.12 cfs 0.009 af

Reach AP3: Analysis Point 3 Inflow=0.46 cfs 0.050 af
Outflow=0.46 cfs 0.050 af

Reach AP4: Analysis Point 4 Inflow=0.24 cfs 0.020 af
Outflow=0.24 cfs 0.020 af

Reach AP5: Analysis Point 5 Inflow=0.28 cfs 0.021 af
Outflow=0.28 cfs 0.021 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.21 cfs 0.019 af
Outflow=0.21 cfs 0.015 af

Pond 2P: Bioretention #2 Peak Elev=50.65' Storage=4,756 cf Inflow=2.01 cfs 0.219 af
Discarded=0.23 cfs 0.205 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.205 af

Pond 3P: Stone Drip Edge Peak Elev=55.34' Storage=25 cf Inflow=0.13 cfs 0.011 af
Primary=0.12 cfs 0.011 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.011 af

Pond 4P: Subsurface Stone Infiltration #1 Peak Elev=55.21' Storage=0.002 af Inflow=0.12 cfs 0.011 af
Discarded=0.05 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.011 af

Pond 5P: Subsurface Stone Infiltration #3 Peak Elev=51.38' Storage=0.002 af Inflow=0.05 cfs 0.051 af
Discarded=0.04 cfs 0.050 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.050 af

Pond 6P: Bioretention #1 Peak Elev=54.43' Storage=787 cf Inflow=0.96 cfs 0.072 af
Discarded=0.32 cfs 0.072 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.072 af

Pond 7P: Unit 6 Eco-Paver Driveway Peak Elev=51.73' Storage=201 cf Inflow=0.14 cfs 0.012 af
Discarded=0.03 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.012 af

Pond 8P: Unit 7 Eco-Paver Driveway Peak Elev=52.98' Storage=130 cf Inflow=0.14 cfs 0.011 af
Discarded=0.06 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.011 af

Pond 9P: Unit 8 Eco-Paver Driveway Peak Elev=50.37' Storage=209 cf Inflow=0.19 cfs 0.014 af
Discarded=0.05 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.014 af

Pond 10P: Detention Pond Peak Elev=53.10' Storage=23 cf Inflow=0.51 cfs 0.040 af
Primary=0.51 cfs 0.039 af Secondary=0.00 cfs 0.000 af Outflow=0.51 cfs 0.039 af

Pond 11P: Subsurface Stone Infiltration #4 Peak Elev=50.59' Storage=0.006 af Inflow=0.06 cfs 0.056 af
Discarded=0.06 cfs 0.056 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.056 af

Pond 12P: Subsurface Stone Infiltration #2 Peak Elev=51.30' Storage=0.000 af Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Link 5L: Unit 5 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.044 af
Primary=0.04 cfs 0.044 af

Link 6L: Unit 6 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.007 af
Primary=0.04 cfs 0.007 af

Link 7L: Unit 7 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.036 af
Primary=0.04 cfs 0.036 af

Link 8L: Unit 8 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.020 af
Primary=0.04 cfs 0.020 af

Total Runoff Area = 2.382 ac Runoff Volume = 0.641 af Average Runoff Depth = 3.23"
55.32% Pervious = 1.318 ac 44.68% Impervious = 1.064 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 2.24 cfs @ 12.16 hrs, Volume= 0.198 af, Depth> 3.54"
Routed to Reach AP1 : Analysis Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
14,174	98	Paved parking, HSG C
2,616	98	Roofs, HSG C
12,481	74	>75% Grass cover, Good, HSG C
29,271	88	Weighted Average
12,481		42.64% Pervious Area
16,790		57.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0220	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.3	15	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	84	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.9	221	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.12 cfs @ 12.11 hrs, Volume= 0.009 af, Depth> 2.78"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
836	74	>75% Grass cover, Good, HSG C
478	98	Roofs, HSG C
388	70	Woods, Good, HSG C
1,702	80	Weighted Average
1,224		71.92% Pervious Area
478		28.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	26	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.3	16	0.0750	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.7	13	0.1900	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.3	7	0.1140	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.5	5	0.5000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
7.6	67	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.07 cfs @ 12.10 hrs, Volume= 0.005 af, Depth> 2.18"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
951	74	>75% Grass cover, Good, HSG C
286	70	Woods, Good, HSG C
1,237	73	Weighted Average
1,237		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	17	0.3300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.5	11	0.3300	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.0	6	0.1670	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
3.2	34	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.24 cfs @ 12.13 hrs, Volume= 0.020 af, Depth> 2.96"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
1,717	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
586	70	Woods, Good, HSG C
3,492	82	Weighted Average
2,303		65.95% Pervious Area
1,189		34.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
6.9	27	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
9.4	47	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.21 cfs @ 12.19 hrs, Volume= 0.019 af, Depth> 2.51"
Routed to Pond 1P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
10.3	40	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	67	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 1.71 cfs @ 12.27 hrs, Volume= 0.179 af, Depth> 3.24"
Routed to Pond 2P : Bioretention #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
8,011	98	Paved parking, HSG C
5,272	98	Roofs, HSG C
14,477	74	>75% Grass cover, Good, HSG C
1,205	70	Woods, Good, HSG C
28,965	85	Weighted Average
15,682		54.14% Pervious Area
13,283		45.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	22	0.0450	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
16.6	78	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.4	11	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	22	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.6	133	Total			

Summary for Subcatchment 7S: Unit 3 and 4

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 4.63"
Routed to Pond 3P : Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
984	98	Roofs, HSG C
248	98	Water Surface, HSG C
1,232	98	Weighted Average
1,232		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 0.96 cfs @ 12.09 hrs, Volume= 0.072 af, Depth> 3.54"
Routed to Pond 6P : Bioretention #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
4,178	98	Paved parking, HSG C
1,922	98	Roofs, HSG C
4,331	74	>75% Grass cover, Good, HSG C
129	70	Woods, Good, HSG C
10,560	88	Weighted Average
4,460		42.23% Pervious Area
6,100		57.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	14	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.8	45	0.0100	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
0.3	13	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	72	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 4.63"
Routed to Pond 7P : Unit 6 Eco-Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
876	98	Roofs, HSG C
433	98	Paved parking, HSG C
1,309	98	Weighted Average
1,309		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 4.63"
Routed to Pond 8P : Unit 7 Eco-Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
876	98	Roofs, HSG C
421	98	Paved parking, HSG C
1,297	98	Weighted Average
1,297		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 12S: Subcatchment 12S

Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Depth> 3.75"
Routed to Pond 9P : Unit 8 Eco-Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
876	98	Roofs, HSG C
425	98	Paved parking, HSG C
669	74	>75% Grass cover, Good, HSG C
1,970	90	Weighted Average
669		33.96% Pervious Area
1,301		66.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 13S: Subcatchment 13S

Runoff = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af, Depth> 2.26"
Routed to Reach 1R : Swale A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
1,013	74	>75% Grass cover, Good, HSG C
530	70	Woods, Good, HSG C
81	98	Roofs, HSG C
1,624	74	Weighted Average
1,543		95.01% Pervious Area
81		4.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	28	0.0210	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
3.3	10	0.0210	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.3	5	0.3300	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
7.1	43	Total			

Summary for Subcatchment 14S: Subcatchment 14S

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth> 2.69"
Routed to Pond 10P : Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
5,067	74	>75% Grass cover, Good, HSG C
35	70	Woods, Good, HSG C
1,225	98	Roofs, HSG C
6,327	79	Weighted Average
5,102		80.64% Pervious Area
1,225		19.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0230	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
5.3	50	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 16S: Subcatchment 16S

Runoff = 0.28 cfs @ 12.11 hrs, Volume= 0.021 af, Depth> 2.43"
Routed to Reach AP5 : Analysis Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
3,173	74	>75% Grass cover, Good, HSG C
863	70	Woods, Good, HSG C
580	98	Roofs, HSG C
4,616	76	Weighted Average
4,036		87.44% Pervious Area
580		12.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	41	0.0120	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.6	12	0.3300	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.6	5	0.0500	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.7	6	0.3300	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
7.8	64	Total			

Summary for Subcatchment 17S: Subcatchment 17S

Runoff = 0.30 cfs @ 12.23 hrs, Volume= 0.030 af, Depth> 2.51"
Routed to Reach 3Ra : Vee Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
3,861	74	>75% Grass cover, Good, HSG C
1,428	70	Woods, Good, HSG C
301	98	Paved parking, HSG C
585	98	Roofs, HSG C
6,175	77	Weighted Average
5,289		85.65% Pervious Area
886		14.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	95	0.0050	0.10		**Sheet Flow, Longest path to enter the Vee Channel** Grass: Short n= 0.150 P2= 3.21"

Summary for Reach 1R: Swale A

Inflow Area = 0.037 ac, 4.99% Impervious, Inflow Depth > 2.26" for 10 Yr 24 Hr event
Inflow = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af
Outflow = 0.08 cfs @ 12.17 hrs, Volume= 0.007 af, Atten= 18%, Lag= 4.0 min
Routed to Pond 10P : Detention Pond
Overflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 3P : Stone Drip Edge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.27 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 13.4 min

Peak Storage= 28 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.31' , Surface Width= 1.84'
Bank-Full Depth= 0.70' Flow Area= 1.5 sf, Capacity= 0.70 cfs
Any excess flow will be diverted to the secondary overflow

0.00' x 0.70' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 4.20'
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'



Summary for Reach 3Ra: Vee Channel

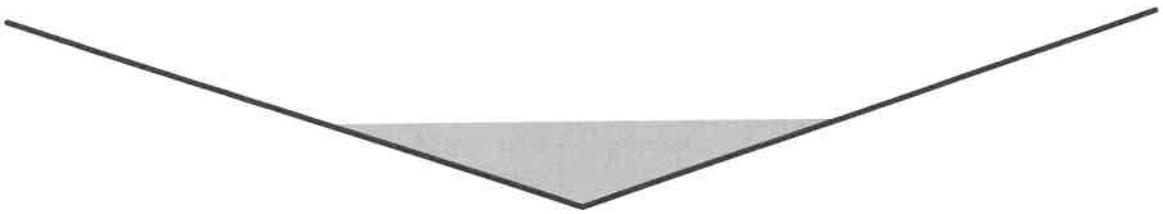
[62] Hint: Exceeded Reach 4R OUTLET depth by 0.33' @ 12.10 hrs

Inflow Area = 0.233 ac, 14.62% Impervious, Inflow Depth > 2.30" for 10 Yr 24 Hr event
Inflow = 0.42 cfs @ 12.28 hrs, Volume= 0.045 af
Outflow = 0.42 cfs @ 12.30 hrs, Volume= 0.045 af, Atten= 0%, Lag= 1.1 min
Routed to Reach 3Rb : Vee Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.71 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 2.5 min

Peak Storage= 30 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.45' , Surface Width= 2.69'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 3.62 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 51.00', Outlet Invert= 49.00'



Summary for Reach 3Rb: Vee Channel

[61] Hint: Exceeded Reach 3Ra outlet invert by 0.40' @ 12.30 hrs

Inflow Area = 0.233 ac, 14.62% Impervious, Inflow Depth > 2.30" for 10 Yr 24 Hr event
Inflow = 0.42 cfs @ 12.30 hrs, Volume= 0.045 af
Outflow = 0.43 cfs @ 12.31 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.5 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.88 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 1.4 min

Peak Storage= 17 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 2.41'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 4.83 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 35.0' Slope= 0.0714 '/'
Inlet Invert= 49.00', Outlet Invert= 46.50'



Summary for Reach 4R: Overland Flow

[80] Warning: Exceeded Pond 1P by 0.89' @ 0.00 hrs (0.55 cfs 2.092 af)

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 2.00" for 10 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.21 hrs, Volume= 0.015 af
Outflow = 0.15 cfs @ 12.36 hrs, Volume= 0.015 af, Atten= 26%, Lag= 8.9 min
Routed to Reach 3Ra : Vee Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.17 fps, Min. Travel Time= 8.2 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 16.4 min

Peak Storage= 76 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 7.40'
Bank-Full Depth= 0.50' Flow Area= 3.8 sf, Capacity= 1.01 cfs

0.00' x 0.50' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 15.0 '/' Top Width= 15.00'
Length= 83.0' Slope= 0.0047 '/'
Inlet Invert= 51.39', Outlet Invert= 51.00'



‡

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.914 ac, 57.47% Impervious, Inflow Depth > 2.60" for 10 Yr 24 Hr event
Inflow = 2.24 cfs @ 12.16 hrs, Volume= 0.198 af
Outflow = 2.24 cfs @ 12.16 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.039 ac, 28.08% Impervious, Inflow Depth > 2.78" for 10 Yr 24 Hr event
Inflow = 0.12 cfs @ 12.11 hrs, Volume= 0.009 af
Outflow = 0.12 cfs @ 12.11 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.242 ac, 39.21% Impervious, Inflow Depth > 0.48" for 10 Yr 24 Hr event
Inflow = 0.46 cfs @ 12.30 hrs, Volume= 0.050 af
Outflow = 0.46 cfs @ 12.30 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.080 ac, 34.05% Impervious, Inflow Depth > 2.96" for 10 Yr 24 Hr event
Inflow = 0.24 cfs @ 12.13 hrs, Volume= 0.020 af
Outflow = 0.24 cfs @ 12.13 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP5: Analysis Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.106 ac, 12.56% Impervious, Inflow Depth > 2.43" for 10 Yr 24 Hr event
Inflow = 0.28 cfs @ 12.11 hrs, Volume= 0.021 af
Outflow = 0.28 cfs @ 12.11 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Depression

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 2.51" for 10 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.19 hrs, Volume= 0.019 af
Outflow = 0.21 cfs @ 12.21 hrs, Volume= 0.015 af, Atten= 1%, Lag= 1.7 min
Primary = 0.21 cfs @ 12.21 hrs, Volume= 0.015 af
Routed to Reach 4R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 12.15 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 114.8 min calculated for 0.015 af (80% of inflow)
Center-of-Mass det. time= 37.3 min (873.3 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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=0.00 cfs @ 12.21 hrs HW=51.31' TW=51.58' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Bioretention #2

Inflow Area = 0.981 ac, 46.18% Impervious, Inflow Depth > 2.68" for 10 Yr 24 Hr event
Inflow = 2.01 cfs @ 12.25 hrs, Volume= 0.219 af
Outflow = 0.23 cfs @ 13.67 hrs, Volume= 0.205 af, Atten= 89%, Lag= 85.4 min
Discarded = 0.23 cfs @ 13.67 hrs, Volume= 0.205 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach AP3 : Analysis Point 3
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 3Ra : Vee Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 50.65' @ 13.67 hrs Surf.Area= 3,523 sf Storage= 4,756 cf

Plug-Flow detention time= 238.3 min calculated for 0.204 af (93% of inflow)
Center-of-Mass det. time= 204.2 min (1,025.2 - 821.0)

Volume	Invert	Avail.Storage	Storage Description
#1	46.41'	8,120 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.41	1,080	138.0	0.0	0	0	1,080
46.42	1,080	138.0	40.0	4	4	1,081
47.74	1,080	138.0	40.0	570	575	1,264
47.75	1,080	138.0	15.0	2	576	1,265
49.24	1,080	138.0	15.0	241	818	1,471
49.25	1,080	138.0	100.0	11	828	1,472
49.50	2,550	271.0	100.0	441	1,269	5,801
50.00	2,971	283.0	100.0	1,379	2,648	6,348
51.00	3,839	301.0	100.0	3,396	6,044	7,234
51.50	4,298	310.0	100.0	2,033	8,077	7,697
51.51	4,331	315.0	100.0	43	8,120	7,946

Device	Routing	Invert	Outlet Devices
#1	Secondary	51.50'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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
#2	Primary	51.00'	**2.0' long + 3.0 '/' SideZ x 28.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	46.41'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 46.25' Phase-In= 0.01'

Discarded OutFlow Max=0.23 cfs @ 13.67 hrs HW=50.65' (Free Discharge)
↑—**3=Exfiltration** (Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=46.41' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=46.41' TW=51.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Stone Drip Edge

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth > 4.63" for 10 Yr 24 Hr event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.12 cfs @ 12.12 hrs, Volume= 0.011 af, Atten= 5%, Lag= 1.7 min
Primary = 0.12 cfs @ 12.12 hrs, Volume= 0.011 af
Routed to Pond 4P : Subsurface Stone Infiltration #1
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 10P : Detention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.34' @ 12.12 hrs Surf.Area= 248 sf Storage= 25 cf

Plug-Flow detention time= 14.0 min calculated for 0.011 af (99% of inflow)
Center-of-Mass det. time= 9.5 min (757.5 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1	55.09'	93 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.09	248	0.0	0	0
55.10	248	40.0	1	1
56.00	248	40.0	89	90
56.01	248	100.0	2	93

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**6.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.10' / 54.98' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	55.10'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	56.00'	**72.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.12 cfs @ 12.12 hrs HW=55.34' TW=55.01' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.12 cfs @ 1.31 fps)
↑—**2=Orifice/Grate** (Passes 0.12 cfs of 0.15 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=55.09' TW=53.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4P: Subsurface Stone Infiltration #1

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth > 4.60" for 10 Yr 24 Hr event
Inflow = 0.12 cfs @ 12.12 hrs, Volume= 0.011 af
Outflow = 0.05 cfs @ 12.37 hrs, Volume= 0.011 af, Atten= 62%, Lag= 15.3 min
Discarded = 0.05 cfs @ 12.37 hrs, Volume= 0.011 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 10P : Detention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.21' @ 12.37 hrs Surf.Area= 0.009 ac Storage= 0.002 af

Plug-Flow detention time= 17.6 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 17.3 min (774.8 - 757.5)

Volume	Invert	Avail.Storage	Storage Description
#1	54.60'	0.004 af	**15.00'W x 27.00'L x 1.01'H Prismatoid** 0.009 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	54.60'	**0.890 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 54.47' Phase-In= 0.01'
#2	Primary	55.60'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 12.37 hrs HW=55.21' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.60' TW=53.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 5P: Subsurface Stone Infiltration #3

Inflow	=	0.05 cfs @	2.01 hrs, Volume=	0.051 af
Outflow	=	0.04 cfs @	15.05 hrs, Volume=	0.050 af, Atten= 21%, Lag= 782.5 min
Discarded	=	0.04 cfs @	15.05 hrs, Volume=	0.050 af
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Pond 2P : Bioretention #2				
Secondary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Reach AP5 : Analysis Point 5				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.38' @ 15.05 hrs Surf.Area= 0.010 ac Storage= 0.002 af

Plug-Flow detention time= 41.9 min calculated for 0.050 af (99% of inflow)
Center-of-Mass det. time= 34.1 min (753.2 - 719.2)

Volume	Invert	Avail.Storage	Storage Description
#1	50.80'	0.006 af	**10.00'W x 45.00'L x 1.41'H Prismatoid** 0.015 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	50.80'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 50.75' Phase-In= 0.01'
#2	Secondary	52.20'	**45.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

#3	Device 4	51.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	51.40'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 51.40' / 50.23' S= 0.0975 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.04 cfs @ 15.05 hrs HW=51.38' (Free Discharge)
└**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=50.80' TW=46.41' (Dynamic Tailwater)
└**4=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=50.80' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 6P: Bioretention #1

Inflow Area = 0.242 ac, 57.77% Impervious, Inflow Depth > 3.54" for 10 Yr 24 Hr event
Inflow = 0.96 cfs @ 12.09 hrs, Volume= 0.072 af
Outflow = 0.32 cfs @ 12.39 hrs, Volume= 0.072 af, Atten= 67%, Lag= 17.9 min
Discarded = 0.32 cfs @ 12.39 hrs, Volume= 0.072 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 12P : Subsurface Stone Infiltration #2
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 54.43' @ 12.39 hrs Surf.Area= 965 sf Storage= 787 cf

Plug-Flow detention time= 27.4 min calculated for 0.072 af (100% of inflow)
Center-of-Mass det. time= 27.1 min (825.4 - 798.4)

Volume	Invert	Avail.Storage	Storage Description
#1	51.24'	1,473 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.24	502	118.0	0.0	0	0	502
51.25	502	118.0	40.0	2	2	503
52.24	502	118.0	40.0	199	201	620
52.25	502	118.0	15.0	1	202	621
53.74	502	118.0	15.0	112	314	797
53.75	502	118.0	100.0	5	319	798
54.00	595	130.0	100.0	137	456	1,037
54.50	1,035	224.0	100.0	402	858	3,687
55.00	1,376	234.0	100.0	601	1,459	4,069
55.01	1,376	234.0	100.0	14	1,473	4,071

Device	Routing	Invert	Outlet Devices
#1	Primary	52.00'	**6.0" Round Culvert** L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.00' / 51.90' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	55.00'	**30.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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
#3	Device 1	54.70'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	51.24'	**0.890 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.13' Phase-In= 0.01'

Discarded OutFlow Max=0.32 cfs @ 12.39 hrs HW=54.43' (Free Discharge)
└**4=Exfiltration** (Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.24' TW=51.30' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.24' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 7P: Unit 6 Eco-Paver Driveway

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 4.63" for 10 Yr 24 Hr event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.03 cfs @ 12.53 hrs, Volume= 0.012 af, Atten= 81%, Lag= 26.5 min
Discarded = 0.03 cfs @ 12.53 hrs, Volume= 0.012 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.73' @ 12.53 hrs Surf.Area= 421 sf Storage= 201 cf

Plug-Flow detention time= 120.3 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 118.6 min (866.7 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1	49.66'	338 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.66	421	0.0	0	0
49.67	421	40.0	2	2
50.49	421	40.0	138	140
50.50	421	5.0	0	140
51.49	421	5.0	21	161
51.50	421	40.0	2	163
52.49	421	40.0	167	329
52.50	421	100.0	4	333
52.51	421	100.0	4	338

Device	Routing	Invert	Outlet Devices
#1	Primary	52.50'	**100.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Discarded	49.66'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 49.40' Phase-In= 0.01'

Discarded OutFlow Max=0.03 cfs @ 12.53 hrs HW=51.73' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.66' TW=46.41' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 8P: Unit 7 Eco-Paver Driveway

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 4.63" for 10 Yr 24 Hr event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.06 cfs @ 12.26 hrs, Volume= 0.011 af, Atten= 54%, Lag= 10.6 min
Discarded = 0.06 cfs @ 12.26 hrs, Volume= 0.011 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 52.98' @ 12.26 hrs Surf.Area= 421 sf Storage= 130 cf

Plug-Flow detention time= 41.2 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 40.2 min (788.2 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1	51.33'	225 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.33	421	0.0	0	0
51.34	421	40.0	2	2
51.91	421	40.0	96	98
51.92	421	5.0	0	98
52.91	421	5.0	21	119
52.92	421	40.0	2	120
53.49	421	40.0	96	216
53.50	421	100.0	4	221
53.51	421	100.0	4	225

Device	Routing	Invert	Outlet Devices
#1	Primary	53.50'	**100.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Discarded	51.33'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.25' Phase-In= 0.01'

Discarded OutFlow Max=0.06 cfs @ 12.26 hrs HW=52.97' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.33' TW=46.41' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 9P: Unit 8 Eco-Paver Driveway

Inflow Area = 0.045 ac, 66.04% Impervious, Inflow Depth > 3.75" for 10 Yr 24 Hr event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.05 cfs @ 12.46 hrs, Volume= 0.014 af, Atten= 74%, Lag= 22.5 min
Discarded = 0.05 cfs @ 12.46 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 50.37' @ 12.46 hrs Surf.Area= 421 sf Storage= 209 cf

Plug-Flow detention time= 56.1 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 55.0 min (846.2 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1	49.13'	393 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.13	421	0.0	0	0
49.14	421	40.0	2	2
50.71	421	40.0	264	266
50.72	421	5.0	0	266
51.71	421	5.0	21	287
51.72	421	40.0	2	289
52.29	421	40.0	96	385
52.30	421	100.0	4	389
52.31	421	100.0	4	393

Device	Routing	Invert	Outlet Devices
#1	Primary	52.30'	**100.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Discarded	49.13'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 49.05' Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 12.46 hrs HW=50.37' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.13' TW=46.41' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 10P: Detention Pond

Inflow Area = 0.211 ac, 27.64% Impervious, Inflow Depth > 2.25" for 10 Yr 24 Hr event
Inflow = 0.51 cfs @ 12.10 hrs, Volume= 0.040 af
Outflow = 0.51 cfs @ 12.11 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.5 min
Primary = 0.51 cfs @ 12.11 hrs, Volume= 0.039 af
Routed to Pond 2P : Bioretention #2
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach AP5 : Analysis Point 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 53.10' @ 12.11 hrs Surf.Area= 238 sf Storage= 23 cf

Plug-Flow detention time= 1.5 min calculated for 0.039 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (830.0 - 828.9)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	337 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	213	0	0
54.00	451	332	332
54.01	451	5	337

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**8.0" Round Culvert** L= 117.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 50.50' / 49.80' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	53.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	54.00'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** 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 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

Primary OutFlow Max=0.50 cfs @ 12.11 hrs HW=53.10' TW=49.63' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.50 cfs of 1.59 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.50 cfs @ 1.04 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 11P: Subsurface Stone Infiltration #4

Inflow	=	0.06 cfs @	6.13 hrs,	Volume=	0.056 af
Outflow	=	0.06 cfs @	8.24 hrs,	Volume=	0.056 af, Atten= 4%, Lag= 127.0 min
Discarded	=	0.06 cfs @	8.24 hrs,	Volume=	0.056 af
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 50.59' @ 8.24 hrs Surf.Area= 0.010 ac Storage= 0.006 af

Plug-Flow detention time= 69.2 min calculated for 0.056 af (100% of inflow)
Center-of-Mass det. time= 69.1 min (623.2 - 554.1)

Volume	Invert	Avail.Storage	Storage Description
#1	49.20'	0.009 af	**10.00'W x 45.00'L x 2.21'H Prismatoid** 0.023 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	49.20'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 49.12' Phase-In= 0.01'
#2	Primary	51.40'	**45.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 4	50.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	50.60'	**6.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 50.60' / 50.08' S= 0.0124 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.06 cfs @ 8.24 hrs HW=50.59' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.20' TW=46.41' (Dynamic Tailwater)
├**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)
└**4=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 12P: Subsurface Stone Infiltration #2

Inflow Area = 0.242 ac, 57.77% Impervious, Inflow Depth = 0.00" for 10 Yr 24 Hr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.30' @ 0.00 hrs Surf.Area= 0.008 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	51.30'	0.007 af	**17.00'W x 20.00'L x 2.21'H Prismatoid** 0.017 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.30'	**0.890 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.20' Phase-In= 0.01'
#2	Primary	53.50'	**14.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.30' (Free Discharge)
└**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.30' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link 5L: Unit 5 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 13.00 hrs, Volume= 0.044 af
Primary = 0.04 cfs @ 13.00 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Subsurface Stone Infiltration #3

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

29 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
0.03	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.03
0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	

Summary for Link 6L: Unit 6 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 2.00 hrs, Volume= 0.007 af
Primary = 0.04 cfs @ 2.00 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Subsurface Stone Infiltration #3

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

5 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.02	0.04	0.02	0.00

Summary for Link 7L: Unit 7 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 10.00 hrs, Volume= 0.036 af
Primary = 0.04 cfs @ 10.00 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 11P : Subsurface Stone Infiltration #4

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

23 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03
0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.01	0.01
0.01	0.00	0.00							

Summary for Link 8L: Unit 8 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 6.00 hrs, Volume= 0.020 af
Primary = 0.04 cfs @ 6.00 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 11P : Subsurface Stone Infiltration #4

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

16 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.03	0.03	0.02
0.01	0.01	0.00	0.00	0.00	0.00				

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,271 sf 57.36% Impervious Runoff Depth>4.78"
Flow Length=221' Tc=11.9 min CN=88 Runoff=2.99 cfs 0.268 af

Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>3.93"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.17 cfs 0.013 af

Subcatchment3S: Subcatchment3S Runoff Area=1,237 sf 0.00% Impervious Runoff Depth>3.23"
Flow Length=34' Tc=6.0 min CN=73 Runoff=0.11 cfs 0.008 af

Subcatchment4S: Subcatchment4S Runoff Area=3,492 sf 34.05% Impervious Runoff Depth>4.14"
Flow Length=47' Slope=0.0250 '/' Tc=9.4 min CN=82 Runoff=0.34 cfs 0.028 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>3.62"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.31 cfs 0.027 af

Subcatchment6S: Subcatchment6S Runoff Area=28,965 sf 45.86% Impervious Runoff Depth>4.45"
Flow Length=133' Tc=19.6 min CN=85 Runoff=2.32 cfs 0.247 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment9S: Subcatchment9S Runoff Area=10,560 sf 57.77% Impervious Runoff Depth>4.79"
Flow Length=72' Slope=0.0100 '/' Tc=6.0 min CN=88 Runoff=1.28 cfs 0.097 af

Subcatchment10S: Subcatchment10S Runoff Area=1,309 sf 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=0.18 cfs 0.015 af

Subcatchment11S: Subcatchment11S Runoff Area=1,297 sf 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=0.18 cfs 0.015 af

Subcatchment12S: Subcatchment12S Runoff Area=1,970 sf 66.04% Impervious Runoff Depth>5.01"
Tc=6.0 min CN=90 Runoff=0.25 cfs 0.019 af

Subcatchment13S: Subcatchment13S Runoff Area=1,624 sf 4.99% Impervious Runoff Depth>3.32"
Flow Length=43' Tc=7.1 min CN=74 Runoff=0.14 cfs 0.010 af

Subcatchment14S: Subcatchment14S Runoff Area=6,327 sf 19.36% Impervious Runoff Depth>3.83"
Flow Length=50' Slope=0.0230 '/' Tc=6.0 min CN=79 Runoff=0.64 cfs 0.046 af

Subcatchment16S: Subcatchment16S Runoff Area=4,616 sf 12.56% Impervious Runoff Depth>3.52"
Flow Length=64' Tc=7.8 min CN=76 Runoff=0.41 cfs 0.031 af

Subcatchment17S: Subcatchment17S Runoff Area=6,175 sf 14.35% Impervious Runoff Depth>3.62"
Flow Length=95' Slope=0.0050 '/' Tc=16.3 min CN=77 Runoff=0.44 cfs 0.043 af

Reach 1R: Swale A Avg. Flow Depth=0.36' Max Vel=0.30 fps Inflow=0.14 cfs 0.010 af
n=0.150 L=100.0' S=0.0100 '/' Capacity=0.70 cfs Outflow=0.12 cfs 0.010 af Overflow=0.00 cfs 0.000 af

Reach 3Ra: Vee Channel Avg. Flow Depth=0.53' Max Vel=0.79 fps Inflow=0.68 cfs 0.066 af
n=0.150 L=50.0' S=0.0400 '/' Capacity=3.62 cfs Outflow=0.68 cfs 0.066 af

Reach 3Rb: Vee Channel Avg. Flow Depth=0.48' Max Vel=0.98 fps Inflow=0.68 cfs 0.066 af
n=0.150 L=35.0' S=0.0714 '/' Capacity=4.83 cfs Outflow=0.68 cfs 0.066 af

Reach 4R: Overland Flow Avg. Flow Depth=0.30' Max Vel=0.19 fps Inflow=0.30 cfs 0.024 af
n=0.150 L=83.0' S=0.0047 '/' Capacity=1.01 cfs Outflow=0.26 cfs 0.023 af

Reach AP1: Analysis Point 1 Inflow=2.99 cfs 0.268 af
Outflow=2.99 cfs 0.268 af

Reach AP2: Analysis Point 2 Inflow=0.17 cfs 0.013 af
Outflow=0.17 cfs 0.013 af

Reach AP3: Analysis Point 3 Inflow=0.73 cfs 0.093 af
Outflow=0.73 cfs 0.093 af

Reach AP4: Analysis Point 4 Inflow=0.34 cfs 0.028 af
Outflow=0.34 cfs 0.028 af

Reach AP5: Analysis Point 5 Inflow=0.41 cfs 0.031 af
Outflow=0.41 cfs 0.031 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.31 cfs 0.027 af
Outflow=0.30 cfs 0.024 af

Pond 2P: Bioretention #2 Peak Elev=51.11' Storage=6,485 cf Inflow=2.75 cfs 0.303 af
Discarded=0.26 cfs 0.243 af Primary=0.23 cfs 0.019 af Secondary=0.00 cfs 0.000 af Outflow=0.49 cfs 0.262 af

Pond 3P: Stone Drip Edge Peak Elev=55.39' Storage=29 cf Inflow=0.17 cfs 0.014 af
Primary=0.16 cfs 0.014 af Secondary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.014 af

Pond 4P: Subsurface Stone Infiltration #1 Peak Elev=55.36' Storage=0.003 af Inflow=0.16 cfs 0.014 af
Discarded=0.06 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.014 af

Pond 5P: Subsurface Stone Infiltration #3 Peak Elev=51.38' Storage=0.002 af Inflow=0.05 cfs 0.051 af
Discarded=0.04 cfs 0.050 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.050 af

Pond 6P: Bioretention #1 Peak Elev=54.73' Storage=1,119 cf Inflow=1.28 cfs 0.097 af
Discarded=0.36 cfs 0.095 af Primary=0.10 cfs 0.001 af Secondary=0.00 cfs 0.000 af Outflow=0.46 cfs 0.097 af

Pond 7P: Unit 6 Eco-Paver Driveway Peak Elev=52.11' Storage=265 cf Inflow=0.18 cfs 0.015 af
Discarded=0.03 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.015 af

Pond 8P: Unit 7 Eco-Paver Driveway Peak Elev=53.19' Storage=167 cf Inflow=0.18 cfs 0.015 af
Discarded=0.07 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.015 af

Pond 9P: Unit 8 Eco-Paver Driveway Peak Elev=51.15' Storage=275 cf Inflow=0.25 cfs 0.019 af
Discarded=0.08 cfs 0.019 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.019 af

Pond 10P: Detention Pond Peak Elev=53.13' Storage=30 cf Inflow=0.73 cfs 0.057 af
Primary=0.73 cfs 0.057 af Secondary=0.00 cfs 0.000 af Outflow=0.73 cfs 0.057 af

Pond 11P: Subsurface Stone Infiltration #4 Peak Elev=50.59' Storage=0.006 af Inflow=0.06 cfs 0.056 af
Discarded=0.06 cfs 0.056 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.056 af

Pond 12P: Subsurface Stone Infiltration #2 Peak Elev=51.60' Storage=0.001 af Inflow=0.10 cfs 0.001 af
Discarded=0.03 cfs 0.001 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.001 af

Link 5L: Unit 5 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.044 af
Primary=0.04 cfs 0.044 af

Link 6L: Unit 6 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.007 af
Primary=0.04 cfs 0.007 af

Link 7L: Unit 7 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.036 af
Primary=0.04 cfs 0.036 af

Link 8L: Unit 8 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.020 af
Primary=0.04 cfs 0.020 af

Total Runoff Area = 2.382 ac Runoff Volume = 0.879 af Average Runoff Depth = 4.43"
55.32% Pervious = 1.318 ac 44.68% Impervious = 1.064 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,271 sf 57.36% Impervious Runoff Depth>5.96"
Flow Length=221' Tc=11.9 min CN=88 Runoff=3.69 cfs 0.334 af

Subcatchment2S: Subcatchment2S Runoff Area=1,702 sf 28.08% Impervious Runoff Depth>5.05"
Flow Length=67' Tc=7.6 min CN=80 Runoff=0.21 cfs 0.016 af

Subcatchment3S: Subcatchment3S Runoff Area=1,237 sf 0.00% Impervious Runoff Depth>4.27"
Flow Length=34' Tc=6.0 min CN=73 Runoff=0.14 cfs 0.010 af

Subcatchment4S: Subcatchment4S Runoff Area=3,492 sf 34.05% Impervious Runoff Depth>5.28"
Flow Length=47' Slope=0.0250 '/' Tc=9.4 min CN=82 Runoff=0.43 cfs 0.035 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>4.71"
Flow Length=67' Tc=13.1 min CN=77 Runoff=0.40 cfs 0.036 af

Subcatchment6S: Subcatchment6S Runoff Area=28,965 sf 45.86% Impervious Runoff Depth>5.61"
Flow Length=133' Tc=19.6 min CN=85 Runoff=2.90 cfs 0.311 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>7.15"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.017 af

Subcatchment9S: Subcatchment9S Runoff Area=10,560 sf 57.77% Impervious Runoff Depth>5.97"
Flow Length=72' Slope=0.0100 '/' Tc=6.0 min CN=88 Runoff=1.58 cfs 0.121 af

Subcatchment10S: Subcatchment10S Runoff Area=1,309 sf 100.00% Impervious Runoff Depth>7.15"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.018 af

Subcatchment11S: Subcatchment11S Runoff Area=1,297 sf 100.00% Impervious Runoff Depth>7.15"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.018 af

Subcatchment12S: Subcatchment12S Runoff Area=1,970 sf 66.04% Impervious Runoff Depth>6.20"
Tc=6.0 min CN=90 Runoff=0.30 cfs 0.023 af

Subcatchment13S: Subcatchment13S Runoff Area=1,624 sf 4.99% Impervious Runoff Depth>4.38"
Flow Length=43' Tc=7.1 min CN=74 Runoff=0.18 cfs 0.014 af

Subcatchment14S: Subcatchment14S Runoff Area=6,327 sf 19.36% Impervious Runoff Depth>4.94"
Flow Length=50' Slope=0.0230 '/' Tc=6.0 min CN=79 Runoff=0.82 cfs 0.060 af

Subcatchment16S: Subcatchment16S Runoff Area=4,616 sf 12.56% Impervious Runoff Depth>4.60"
Flow Length=64' Tc=7.8 min CN=76 Runoff=0.53 cfs 0.041 af

Subcatchment17S: Subcatchment17S Runoff Area=6,175 sf 14.35% Impervious Runoff Depth>4.70"
Flow Length=95' Slope=0.0050 '/' Tc=16.3 min CN=77 Runoff=0.57 cfs 0.056 af

Reach 1R: Swale A Avg. Flow Depth=0.40' Max Vel=0.33 fps Inflow=0.18 cfs 0.014 af
n=0.150 L=100.0' S=0.0100 '/' Capacity=0.70 cfs Outflow=0.16 cfs 0.014 af Overflow=0.00 cfs 0.000 af

Reach 3Ra: Vee Channel Avg. Flow Depth=0.59' Max Vel=0.85 fps Inflow=0.90 cfs 0.087 af
n=0.150 L=50.0' S=0.0400 '/' Capacity=3.62 cfs Outflow=0.90 cfs 0.087 af

Reach 3Rb: Vee Channel Avg. Flow Depth=0.53' Max Vel=1.06 fps Inflow=0.90 cfs 0.087 af
n=0.150 L=35.0' S=0.0714 '/' Capacity=4.83 cfs Outflow=0.90 cfs 0.087 af

Reach 4R: Overland Flow Avg. Flow Depth=0.33' Max Vel=0.21 fps Inflow=0.39 cfs 0.032 af
n=0.150 L=83.0' S=0.0047 '/' Capacity=1.01 cfs Outflow=0.34 cfs 0.032 af

Reach AP1: Analysis Point 1 Inflow=3.69 cfs 0.334 af
Outflow=3.69 cfs 0.334 af

Reach AP2: Analysis Point 2 Inflow=0.21 cfs 0.016 af
Outflow=0.21 cfs 0.016 af

Reach AP3: Analysis Point 3 Inflow=1.57 cfs 0.172 af
Outflow=1.57 cfs 0.172 af

Reach AP4: Analysis Point 4 Inflow=0.43 cfs 0.035 af
Outflow=0.43 cfs 0.035 af

Reach AP5: Analysis Point 5 Inflow=0.53 cfs 0.041 af
Outflow=0.53 cfs 0.041 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.40 cfs 0.036 af
Outflow=0.39 cfs 0.032 af

Pond 2P: Bioretention #2 Peak Elev=51.29' Storage=7,196 cf Inflow=3.44 cfs 0.384 af
Discarded=0.27 cfs 0.258 af Primary=1.13 cfs 0.074 af Secondary=0.00 cfs 0.000 af Outflow=1.40 cfs 0.333 af

Pond 3P: Stone Drip Edge Peak Elev=55.51' Storage=42 cf Inflow=0.20 cfs 0.017 af
Primary=0.18 cfs 0.017 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.017 af

Pond 4P: Subsurface Stone Infiltration #1 Peak Elev=55.50' Storage=0.003 af Inflow=0.18 cfs 0.017 af
Discarded=0.07 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.017 af

Pond 5P: Subsurface Stone Infiltration #3 Peak Elev=51.38' Storage=0.002 af Inflow=0.05 cfs 0.051 af
Discarded=0.04 cfs 0.050 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.050 af

Pond 6P: Bioretention #1 Peak Elev=54.81' Storage=1,214 cf Inflow=1.58 cfs 0.121 af
Discarded=0.36 cfs 0.110 af Primary=0.58 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.95 cfs 0.120 af

Pond 7P: Unit 6 Eco-Paver Driveway Peak Elev=52.47' Storage=326 cf Inflow=0.21 cfs 0.018 af
Discarded=0.03 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.017 af

Pond 8P: Unit 7 Eco-Paver Driveway Peak Elev=53.41' Storage=203 cf Inflow=0.21 cfs 0.018 af
Discarded=0.08 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.018 af

Pond 9P: Unit 8 Eco-Paver Driveway Peak Elev=51.91' Storage=320 cf Inflow=0.30 cfs 0.023 af
Discarded=0.10 cfs 0.023 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.023 af

Pond 10P: Detention Pond Peak Elev=53.16' Storage=36 cf Inflow=0.95 cfs 0.073 af
Primary=0.95 cfs 0.073 af Secondary=0.00 cfs 0.000 af Outflow=0.95 cfs 0.073 af

Pond 11P: Subsurface Stone Infiltration #4 Peak Elev=50.59' Storage=0.006 af Inflow=0.06 cfs 0.056 af
Discarded=0.06 cfs 0.056 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.056 af

Pond 12P: Subsurface Stone Infiltration #2 Peak Elev=53.46' Storage=0.007 af Inflow=0.58 cfs 0.010 af
Discarded=0.16 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.010 af

Link 5L: Unit 5 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.044 af
Primary=0.04 cfs 0.044 af

Link 6L: Unit 6 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.007 af
Primary=0.04 cfs 0.007 af

Link 7L: Unit 7 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.036 af
Primary=0.04 cfs 0.036 af

Link 8L: Unit 8 Sump Pump Manual Hydrograph Inflow=0.04 cfs 0.020 af
Primary=0.04 cfs 0.020 af

Total Runoff Area = 2.382 ac Runoff Volume = 1.108 af Average Runoff Depth = 5.58"
55.32% Pervious = 1.318 ac 44.68% Impervious = 1.064 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 3.69 cfs @ 12.16 hrs, Volume= 0.334 af, Depth> 5.96"
Routed to Reach AP1 : Analysis Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
14,174	98	Paved parking, HSG C
2,616	98	Roofs, HSG C
12,481	74	>75% Grass cover, Good, HSG C
29,271	88	Weighted Average
12,481		42.64% Pervious Area
16,790		57.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0220	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.3	15	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	84	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.9	221	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af, Depth> 5.05"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
836	74	>75% Grass cover, Good, HSG C
478	98	Roofs, HSG C
388	70	Woods, Good, HSG C
1,702	80	Weighted Average
1,224		71.92% Pervious Area
478		28.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	26	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.3	16	0.0750	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.7	13	0.1900	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
1.3	7	0.1140	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.5	5	0.5000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
7.6	67	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 4.27"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
951	74	>75% Grass cover, Good, HSG C
286	70	Woods, Good, HSG C
1,237	73	Weighted Average
1,237		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	17	0.3300	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.5	11	0.3300	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
1.0	6	0.1670	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
3.2	34	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.43 cfs @ 12.13 hrs, Volume= 0.035 af, Depth> 5.28"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
1,717	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
586	70	Woods, Good, HSG C
3,492	82	Weighted Average
2,303		65.95% Pervious Area
1,189		34.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
6.9	27	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
9.4	47	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.40 cfs @ 12.18 hrs, Volume= 0.036 af, Depth> 4.71"
Routed to Pond 1P : Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
10.3	40	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	67	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 2.90 cfs @ 12.26 hrs, Volume= 0.311 af, Depth> 5.61"
Routed to Pond 2P : Bioretention #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
8,011	98	Paved parking, HSG C
5,272	98	Roofs, HSG C
14,477	74	>75% Grass cover, Good, HSG C
1,205	70	Woods, Good, HSG C
28,965	85	Weighted Average
15,682		54.14% Pervious Area
13,283		45.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	22	0.0450	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
16.6	78	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.4	11	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	22	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.6	133	Total			

Summary for Subcatchment 7S: Unit 3 and 4

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 7.15"
Routed to Pond 3P : Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
984	98	Roofs, HSG C
248	98	Water Surface, HSG C
1,232	98	Weighted Average
1,232		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.121 af, Depth> 5.97"
Routed to Pond 6P : Bioretention #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
4,178	98	Paved parking, HSG C
1,922	98	Roofs, HSG C
4,331	74	>75% Grass cover, Good, HSG C
129	70	Woods, Good, HSG C
10,560	88	Weighted Average
4,460		42.23% Pervious Area
6,100		57.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	14	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.8	45	0.0100	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
0.3	13	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	72	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 7.15"
Routed to Pond 7P : Unit 6 Eco-Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
876	98	Roofs, HSG C
433	98	Paved parking, HSG C
1,309	98	Weighted Average
1,309		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 7.15"
Routed to Pond 8P : Unit 7 Eco-Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
876	98	Roofs, HSG C
421	98	Paved parking, HSG C
1,297	98	Weighted Average
1,297		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 12S: Subcatchment 12S

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 6.20"
Routed to Pond 9P : Unit 8 Eco-Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
876	98	Roofs, HSG C
425	98	Paved parking, HSG C
669	74	>75% Grass cover, Good, HSG C
1,970	90	Weighted Average
669		33.96% Pervious Area
1,301		66.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 13S: Subcatchment 13S

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 0.014 af, Depth> 4.38"
Routed to Reach 1R : Swale A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
1,013	74	>75% Grass cover, Good, HSG C
530	70	Woods, Good, HSG C
81	98	Roofs, HSG C
1,624	74	Weighted Average
1,543		95.01% Pervious Area
81		4.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	28	0.0210	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
3.3	10	0.0210	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
0.3	5	0.3300	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
7.1	43	Total			

Summary for Subcatchment 14S: Subcatchment 14S

Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 4.94"
Routed to Pond 10P : Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
5,067	74	>75% Grass cover, Good, HSG C
35	70	Woods, Good, HSG C
1,225	98	Roofs, HSG C
6,327	79	Weighted Average
5,102		80.64% Pervious Area
1,225		19.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0230	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
5.3	50	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 16S: Subcatchment 16S

Runoff = 0.53 cfs @ 12.11 hrs, Volume= 0.041 af, Depth> 4.60"
Routed to Reach AP5 : Analysis Point 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
3,173	74	>75% Grass cover, Good, HSG C
863	70	Woods, Good, HSG C
580	98	Roofs, HSG C
4,616	76	Weighted Average
4,036		87.44% Pervious Area
580		12.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	41	0.0120	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.6	12	0.3300	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.6	5	0.0500	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.7	6	0.3300	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.21"
7.8	64	Total			

Summary for Subcatchment 17S: Subcatchment 17S

Runoff = 0.57 cfs @ 12.22 hrs, Volume= 0.056 af, Depth> 4.70"
Routed to Reach 3Ra : Vee Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
3,861	74	>75% Grass cover, Good, HSG C
1,428	70	Woods, Good, HSG C
301	98	Paved parking, HSG C
585	98	Roofs, HSG C
6,175	77	Weighted Average
5,289		85.65% Pervious Area
886		14.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	95	0.0050	0.10		**Sheet Flow, Longest path to enter the Vee Channel** Grass: Short n= 0.150 P2= 3.21"

Summary for Reach 1R: Swale A

Inflow Area = 0.037 ac, 4.99% Impervious, Inflow Depth > 4.38" for 50 Yr 24 Hr event
Inflow = 0.18 cfs @ 12.10 hrs, Volume= 0.014 af
Outflow = 0.16 cfs @ 12.16 hrs, Volume= 0.014 af, Atten= 14%, Lag= 3.4 min
Routed to Pond 10P : Detention Pond
Overflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 3P : Stone Drip Edge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.33 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 11.9 min

Peak Storage= 48 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 2.39'
Bank-Full Depth= 0.70' Flow Area= 1.5 sf, Capacity= 0.70 cfs
Any excess flow will be diverted to the secondary overflow

0.00' x 0.70' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 4.20'
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'



Summary for Reach 3Ra: Vee Channel

[62] Hint: Exceeded Reach 4R OUTLET depth by 0.26' @ 12.25 hrs
[80] Warning: Exceeded Pond 2P by 1.21' @ 12.15 hrs (2.13 cfs 0.120 af)

Inflow Area = 0.233 ac, 14.62% Impervious, Inflow Depth > 4.50" for 50 Yr 24 Hr event
Inflow = 0.90 cfs @ 12.25 hrs, Volume= 0.087 af
Outflow = 0.90 cfs @ 12.26 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.8 min
Routed to Reach 3Rb : Vee Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.85 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 2.3 min

Peak Storage= 53 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 3.56'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 3.62 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 51.00', Outlet Invert= 49.00'



Summary for Reach 3Rb: Vee Channel

[61] Hint: Exceeded Reach 3Ra outlet invert by 0.53' @ 12.25 hrs

Inflow Area = 0.233 ac, 14.62% Impervious, Inflow Depth > 4.50" for 50 Yr 24 Hr event
Inflow = 0.90 cfs @ 12.26 hrs, Volume= 0.087 af
Outflow = 0.90 cfs @ 12.27 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.4 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.06 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 1.3 min

Peak Storage= 30 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.53' , Surface Width= 3.19'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 4.83 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 35.0' Slope= 0.0714 '/'
Inlet Invert= 49.00', Outlet Invert= 46.50'



Summary for Reach 4R: Overland Flow

[80] Warning: Exceeded Pond 1P by 0.89' @ 0.00 hrs (0.55 cfs 2.484 af)

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 4.20" for 50 Yr 24 Hr event
Inflow = 0.39 cfs @ 12.21 hrs, Volume= 0.032 af
Outflow = 0.34 cfs @ 12.29 hrs, Volume= 0.032 af, Atten= 12%, Lag= 4.8 min
Routed to Reach 3Ra : Vee Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.21 fps, Min. Travel Time= 6.7 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 14.1 min

Peak Storage= 138 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 10.00'
Bank-Full Depth= 0.50' Flow Area= 3.8 sf, Capacity= 1.01 cfs

0.00' x 0.50' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 15.0 '/' Top Width= 15.00'
Length= 83.0' Slope= 0.0047 '/'
Inlet Invert= 51.39', Outlet Invert= 51.00'



‡

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.914 ac, 57.47% Impervious, Inflow Depth > 4.38" for 50 Yr 24 Hr event
Inflow = 3.69 cfs @ 12.16 hrs, Volume= 0.334 af
Outflow = 3.69 cfs @ 12.16 hrs, Volume= 0.334 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.039 ac, 28.08% Impervious, Inflow Depth > 5.05" for 50 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af
Outflow = 0.21 cfs @ 12.11 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.242 ac, 39.21% Impervious, Inflow Depth > 1.66" for 50 Yr 24 Hr event
Inflow = 1.57 cfs @ 12.60 hrs, Volume= 0.172 af
Outflow = 1.57 cfs @ 12.60 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.080 ac, 34.05% Impervious, Inflow Depth > 5.28" for 50 Yr 24 Hr event
Inflow = 0.43 cfs @ 12.13 hrs, Volume= 0.035 af
Outflow = 0.43 cfs @ 12.13 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP5: Analysis Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.106 ac, 12.56% Impervious, Inflow Depth > 4.60" for 50 Yr 24 Hr event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.041 af
Outflow = 0.53 cfs @ 12.11 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Depression

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 4.71" for 50 Yr 24 Hr event
Inflow = 0.40 cfs @ 12.18 hrs, Volume= 0.036 af
Outflow = 0.39 cfs @ 12.21 hrs, Volume= 0.032 af, Atten= 1%, Lag= 1.6 min
Primary = 0.39 cfs @ 12.21 hrs, Volume= 0.032 af
Routed to Reach 4R : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 11.60 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 74.2 min calculated for 0.032 af (89% of inflow)
Center-of-Mass det. time= 24.4 min (842.6 - 818.1)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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=0.00 cfs @ 12.21 hrs HW=51.31' TW=51.71' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Bioretention #2

[80] Warning: Exceeded Pond 11P by 1.18' @ 18.30 hrs (0.00 cfs 0.120 af)

Inflow Area = 0.981 ac, 46.18% Impervious, Inflow Depth > 4.70" for 50 Yr 24 Hr event
Inflow = 3.44 cfs @ 12.24 hrs, Volume= 0.384 af
Outflow = 1.40 cfs @ 12.65 hrs, Volume= 0.333 af, Atten= 59%, Lag= 24.4 min
Discarded = 0.27 cfs @ 12.65 hrs, Volume= 0.258 af
Primary = 1.13 cfs @ 12.65 hrs, Volume= 0.074 af
Routed to Reach AP3 : Analysis Point 3
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 3Ra : Vee Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 51.29' @ 12.65 hrs Surf.Area= 4,102 sf Storage= 7,196 cf

Plug-Flow detention time= 212.3 min calculated for 0.332 af (86% of inflow)
Center-of-Mass det. time= 154.3 min (959.7 - 805.4)

Volume	Invert	Avail.Storage	Storage Description
#1	46.41'	8,120 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.41	1,080	138.0	0.0	0	0	1,080
46.42	1,080	138.0	40.0	4	4	1,081
47.74	1,080	138.0	40.0	570	575	1,264
47.75	1,080	138.0	15.0	2	576	1,265
49.24	1,080	138.0	15.0	241	818	1,471
49.25	1,080	138.0	100.0	11	828	1,472
49.50	2,550	271.0	100.0	441	1,269	5,801
50.00	2,971	283.0	100.0	1,379	2,648	6,348
51.00	3,839	301.0	100.0	3,396	6,044	7,234
51.50	4,298	310.0	100.0	2,033	8,077	7,697
51.51	4,331	315.0	100.0	43	8,120	7,946

Device	Routing	Invert	Outlet Devices
#1	Secondary	51.50'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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
#2	Primary	51.00'	**2.0' long + 3.0 '/' SideZ x 28.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	46.41'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 46.25' Phase-In= 0.01'

Discarded OutFlow Max=0.27 cfs @ 12.65 hrs HW=51.29' (Free Discharge)
↑—**3=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=1.13 cfs @ 12.65 hrs HW=51.29' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.13 cfs @ 1.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=46.41' TW=51.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Stone Drip Edge

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth > 7.15" for 50 Yr 24 Hr event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.18 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 9%, Lag= 0.5 min
Primary = 0.18 cfs @ 12.09 hrs, Volume= 0.017 af
Routed to Pond 4P : Subsurface Stone Infiltration #1
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 10P : Detention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.51' @ 12.37 hrs Surf.Area= 248 sf Storage= 42 cf

Plug-Flow detention time= 12.3 min calculated for 0.017 af (99% of inflow)
Center-of-Mass det. time= 8.9 min (750.7 - 741.8)

Volume	Invert	Avail.Storage	Storage Description
#1	55.09'	93 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.09	248	0.0	0	0
55.10	248	40.0	1	1
56.00	248	40.0	89	90
56.01	248	100.0	2	93

Device	Routing	Invert	Outlet Devices
#1	Primary	55.10'	**6.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.10' / 54.98' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	55.10'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	56.00'	**72.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.18 cfs @ 12.09 hrs HW=55.41' TW=55.25' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.18 cfs @ 2.03 fps)
↑—**2=Orifice/Grate** (Passes 0.18 cfs of 0.25 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=55.09' TW=53.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4P: Subsurface Stone Infiltration #1

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth > 7.11" for 50 Yr 24 Hr event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.07 cfs @ 12.37 hrs, Volume= 0.017 af, Atten= 64%, Lag= 16.6 min
Discarded = 0.07 cfs @ 12.37 hrs, Volume= 0.017 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 10P : Detention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 55.50' @ 12.37 hrs Surf.Area= 0.009 ac Storage= 0.003 af

Plug-Flow detention time= 21.1 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 20.8 min (771.5 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	54.60'	0.004 af	**15.00'W x 27.00'L x 1.01'H Prismatoid** 0.009 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	54.60'	**0.890 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 54.47' Phase-In= 0.01'
#2	Primary	55.60'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 12.37 hrs HW=55.50' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.60' TW=53.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 5P: Subsurface Stone Infiltration #3

Inflow	=	0.05 cfs @	2.01 hrs, Volume=	0.051 af
Outflow	=	0.04 cfs @	15.05 hrs, Volume=	0.050 af, Atten= 21%, Lag= 782.5 min
Discarded	=	0.04 cfs @	15.05 hrs, Volume=	0.050 af
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Pond 2P : Bioretention #2				
Secondary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Routed to Reach AP5 : Analysis Point 5				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.38' @ 15.05 hrs Surf.Area= 0.010 ac Storage= 0.002 af

Plug-Flow detention time= 41.9 min calculated for 0.050 af (99% of inflow)
Center-of-Mass det. time= 34.1 min (753.2 - 719.2)

Volume	Invert	Avail.Storage	Storage Description
#1	50.80'	0.006 af	**10.00'W x 45.00'L x 1.41'H Prismatoid** 0.015 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	50.80'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 50.75' Phase-In= 0.01'
#2	Secondary	52.20'	**45.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

#3	Device 4	51.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	51.40'	**6.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 51.40' / 50.23' S= 0.0975 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.04 cfs @ 15.05 hrs HW=51.38' (Free Discharge)
└**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=50.80' TW=46.41' (Dynamic Tailwater)
└**4=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=50.80' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 6P: Bioretention #1

Inflow Area = 0.242 ac, 57.77% Impervious, Inflow Depth > 5.97" for 50 Yr 24 Hr event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 0.121 af
Outflow = 0.95 cfs @ 12.22 hrs, Volume= 0.120 af, Atten= 40%, Lag= 7.7 min
Discarded = 0.36 cfs @ 12.22 hrs, Volume= 0.110 af
Primary = 0.58 cfs @ 12.22 hrs, Volume= 0.010 af
Routed to Pond 12P : Subsurface Stone Infiltration #2
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 54.81' @ 12.22 hrs Surf.Area= 1,243 sf Storage= 1,214 cf

Plug-Flow detention time= 30.3 min calculated for 0.120 af (100% of inflow)
Center-of-Mass det. time= 28.7 min (812.8 - 784.1)

Volume	Invert	Avail.Storage	Storage Description
#1	51.24'	1,473 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
51.24	502	118.0	0.0	0	0	502
51.25	502	118.0	40.0	2	2	503
52.24	502	118.0	40.0	199	201	620
52.25	502	118.0	15.0	1	202	621
53.74	502	118.0	15.0	112	314	797
53.75	502	118.0	100.0	5	319	798
54.00	595	130.0	100.0	137	456	1,037
54.50	1,035	224.0	100.0	402	858	3,687
55.00	1,376	234.0	100.0	601	1,459	4,069
55.01	1,376	234.0	100.0	14	1,473	4,071

Device	Routing	Invert	Outlet Devices
#1	Primary	52.00'	**6.0" Round Culvert** L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.00' / 51.90' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	55.00'	**30.0' long x 2.0' breadth Broad-Crested Rectangular Weir** 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
#3	Device 1	54.70'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	51.24'	**0.890 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.13' Phase-In= 0.01'

Discarded OutFlow Max=0.36 cfs @ 12.22 hrs HW=54.81' (Free Discharge)
↑└**4=Exfiltration** (Controls 0.36 cfs)

Primary OutFlow Max=0.54 cfs @ 12.22 hrs HW=54.81' TW=52.14' (Dynamic Tailwater)
↑└**1=Culvert** (Passes 0.54 cfs of 1.19 cfs potential flow)
↑└**3=Orifice/Grate** (Weir Controls 0.54 cfs @ 1.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.24' TW=0.00' (Dynamic Tailwater)
↑└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 7P: Unit 6 Eco-Paver Driveway

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 7.15" for 50 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.03 cfs @ 12.56 hrs, Volume= 0.017 af, Atten= 84%, Lag= 28.5 min
Discarded = 0.03 cfs @ 12.56 hrs, Volume= 0.017 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 52.47' @ 12.56 hrs Surf.Area= 421 sf Storage= 326 cf

Plug-Flow detention time= 131.5 min calculated for 0.017 af (97% of inflow)
Center-of-Mass det. time= 116.6 min (858.4 - 741.8)

Volume	Invert	Avail.Storage	Storage Description
#1	49.66'	338 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.66	421	0.0	0	0
49.67	421	40.0	2	2
50.49	421	40.0	138	140
50.50	421	5.0	0	140
51.49	421	5.0	21	161
51.50	421	40.0	2	163
52.49	421	40.0	167	329
52.50	421	100.0	4	333
52.51	421	100.0	4	338

Device	Routing	Invert	Outlet Devices
#1	Primary	52.50'	**100.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Discarded	49.66'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 49.40' Phase-In= 0.01'

Discarded OutFlow Max=0.03 cfs @ 12.56 hrs HW=52.47' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.66' TW=46.41' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 8P: Unit 7 Eco-Paver Driveway

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 7.15" for 50 Yr 24 Hr event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.08 cfs @ 12.33 hrs, Volume= 0.018 af, Atten= 63%, Lag= 14.5 min
Discarded = 0.08 cfs @ 12.33 hrs, Volume= 0.018 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 53.41' @ 12.33 hrs Surf.Area= 421 sf Storage= 203 cf

Plug-Flow detention time= 43.0 min calculated for 0.018 af (100% of inflow)
Center-of-Mass det. time= 42.0 min (783.8 - 741.8)

Volume	Invert	Avail.Storage	Storage Description
#1	51.33'	225 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.33	421	0.0	0	0
51.34	421	40.0	2	2
51.91	421	40.0	96	98
51.92	421	5.0	0	98
52.91	421	5.0	21	119
52.92	421	40.0	2	120
53.49	421	40.0	96	216
53.50	421	100.0	4	221
53.51	421	100.0	4	225

Device	Routing	Invert	Outlet Devices
#1	Primary	53.50'	**100.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Discarded	51.33'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.25' Phase-In= 0.01'

Discarded OutFlow Max=0.08 cfs @ 12.33 hrs HW=53.41' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.33' TW=46.41' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 9P: Unit 8 Eco-Paver Driveway

Inflow Area = 0.045 ac, 66.04% Impervious, Inflow Depth > 6.20" for 50 Yr 24 Hr event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.10 cfs @ 12.36 hrs, Volume= 0.023 af, Atten= 65%, Lag= 16.6 min
Discarded = 0.10 cfs @ 12.36 hrs, Volume= 0.023 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.91' @ 12.36 hrs Surf.Area= 421 sf Storage= 320 cf

Plug-Flow detention time= 57.2 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 55.9 min (833.7 - 777.8)

Volume	Invert	Avail.Storage	Storage Description
#1	49.13'	393 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.13	421	0.0	0	0
49.14	421	40.0	2	2
50.71	421	40.0	264	266
50.72	421	5.0	0	266
51.71	421	5.0	21	287
51.72	421	40.0	2	289
52.29	421	40.0	96	385
52.30	421	100.0	4	389
52.31	421	100.0	4	393

Device	Routing	Invert	Outlet Devices
#1	Primary	52.30'	**100.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Discarded	49.13'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 49.05' Phase-In= 0.01'

Discarded OutFlow Max=0.10 cfs @ 12.36 hrs HW=51.91' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.13' TW=46.41' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 10P: Detention Pond

Inflow Area = 0.211 ac, 27.64% Impervious, Inflow Depth > 4.17" for 50 Yr 24 Hr event
Inflow = 0.95 cfs @ 12.10 hrs, Volume= 0.073 af
Outflow = 0.95 cfs @ 12.10 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.5 min
Primary = 0.95 cfs @ 12.10 hrs, Volume= 0.073 af
Routed to Pond 2P : Bioretention #2
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach AP5 : Analysis Point 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 53.16' @ 12.10 hrs Surf.Area= 250 sf Storage= 36 cf

Plug-Flow detention time= 1.3 min calculated for 0.073 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (812.2 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	337 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	213	0	0
54.00	451	332	332
54.01	451	5	337

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**8.0" Round Culvert** L= 117.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 50.50' / 49.80' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	53.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	54.00'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** 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 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

Primary OutFlow Max=0.94 cfs @ 12.10 hrs HW=53.15' TW=50.18' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.94 cfs of 1.60 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.94 cfs @ 1.29 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 11P: Subsurface Stone Infiltration #4

Inflow	=	0.06 cfs @	6.13 hrs, Volume=	0.056 af
Outflow	=	0.06 cfs @	8.24 hrs, Volume=	0.056 af, Atten= 4%, Lag= 127.0 min
Discarded	=	0.06 cfs @	8.24 hrs, Volume=	0.056 af
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routed to Pond 2P : Bioretention #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 50.59' @ 8.24 hrs Surf.Area= 0.010 ac Storage= 0.006 af

Plug-Flow detention time= 69.2 min calculated for 0.056 af (100% of inflow)
Center-of-Mass det. time= 69.1 min (623.2 - 554.1)

Volume	Invert	Avail.Storage	Storage Description
#1	49.20'	0.009 af	**10.00'W x 45.00'L x 2.21'H Prismatoid** 0.023 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	49.20'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 49.12' Phase-In= 0.01'
#2	Primary	51.40'	**45.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 4	50.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	50.60'	**6.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 50.60' / 50.08' S= 0.0124 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.06 cfs @ 8.24 hrs HW=50.59' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.20' TW=46.41' (Dynamic Tailwater)
├**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**4=Culvert** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 12P: Subsurface Stone Infiltration #2

Inflow Area = 0.242 ac, 57.77% Impervious, Inflow Depth = 0.51" for 50 Yr 24 Hr event
Inflow = 0.58 cfs @ 12.22 hrs, Volume= 0.010 af
Outflow = 0.16 cfs @ 12.45 hrs, Volume= 0.010 af, Atten= 73%, Lag= 13.9 min
Discarded = 0.16 cfs @ 12.45 hrs, Volume= 0.010 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 53.46' @ 12.45 hrs Surf.Area= 0.008 ac Storage= 0.007 af

Plug-Flow detention time= 28.7 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 28.6 min (765.8 - 737.2)

Volume	Invert	Avail.Storage	Storage Description
#1	51.30'	0.007 af	**17.00'W x 20.00'L x 2.21'H Prismatoid** 0.017 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.30'	**0.890 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.20' Phase-In= 0.01'
#2	Primary	53.50'	**14.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.16 cfs @ 12.45 hrs HW=53.46' (Free Discharge)
└**1=Exfiltration** (Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.30' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 5L: Unit 5 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 13.00 hrs, Volume= 0.044 af
Primary = 0.04 cfs @ 13.00 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Subsurface Stone Infiltration #3

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

29 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
0.03	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.03
0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	

Summary for Link 6L: Unit 6 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 2.00 hrs, Volume= 0.007 af
Primary = 0.04 cfs @ 2.00 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Subsurface Stone Infiltration #3

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

5 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.02	0.04	0.02	0.00

Summary for Link 7L: Unit 7 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 10.00 hrs, Volume= 0.036 af
Primary = 0.04 cfs @ 10.00 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 11P : Subsurface Stone Infiltration #4

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

23 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03
0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.01	0.01
0.01	0.00	0.00							

Summary for Link 8L: Unit 8 Sump Pump

Factor of safety of 2 provided

Inflow = 0.04 cfs @ 6.00 hrs, Volume= 0.020 af
Primary = 0.04 cfs @ 6.00 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 11P : Subsurface Stone Infiltration #4

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

16 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.03	0.03	0.02
0.01	0.01	0.00	0.00	0.00	0.00				

APPENDIX III

Test Pit Logs

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project: 212 Woodbury Ave, Portsmouth
Client: Tuck Realty Corp.
GES Project No. 2021307
MM/DD/YY Staff 3-18-2022 JPG

Test Pit No. 1
ESHWT: 21"
Termination @ 43"
Refusal: None
Obs. Water: 40"

2" gravel at surface.

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–21"	10YR 4/6	FSL	GR	FR	NONE
21–43"	2.5Y 5/2	FSL	PL	FI	30%, Distinct

Test Pit No. 2
ESHWT: 30"
Termination @ 51"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–30"	10YR 4/6	FSL	GR	FR	NONE
30–51"	2.5Y 5/3	FSL	PL	FI	20%, Distinct

Test Pit No. 3
ESHWT: 27"
Termination @ 45"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–27"	10YR 4/6	FSL	GR	FR	NONE
27–45"	2.5Y 5/3	FSL	PL	FI	20%, Distinct

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

Test Pit No. 4
ESHWT: 15"
Termination @ 41"
Refusal: None - boulder
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–8"	10YR 3/2	FSL	GR	FR	NONE
8–15"	2.5Y 5/4	FSL	GR	FR	NONE
15–41"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 5
ESHWT: 27"
Termination @ 50"
Refusal: None - stony
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–12"	10YR 3/2	FSL	GR	FR	NONE
12–27"	10YR 4/6	FSL	GR	FR	NONE
27–50"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 6
ESHWT: 26"
Termination @ 45"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–10"	10YR 3/2	FSL	GR	FR	NONE
10–26"	10YR 5/6	FSL	GR	FR	NONE
26–45"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 7
ESHWT: 26"
Termination @ 40"
Refusal: None
Obs. Water: None

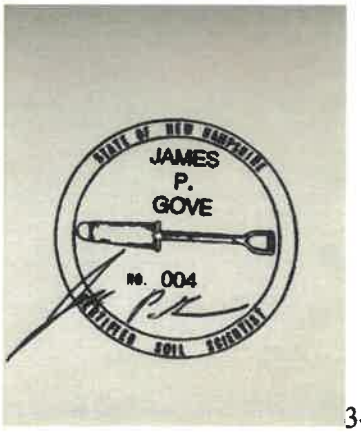
NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–26"	10YR 4/6	FSL	GR	FR	NONE
26–40"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Legend:

FSL = fine sandy loam
GR = granular
FR = friable
PL = platy
FI = firm

Soil Colors at Munsell.



3-22-2022

TEST PITS
FOR
214 WOODBURY AVENUE
PORTSMOUTH, NEW HAMPSHIRE
SEPTEMBER 7, 2022
JBE Project No. 21254

Performed by: Anthony Jones, Jones & Beach Engineers, Inc., SSD #1900

Test Pit #8

0"- 8"	10YR 3/2	very dark grayish brown fine sandy loam granular, friable many roots
8"- 22"	10YR 4/6	dark yellowish brown fine sandy loam granular, friable common roots
22" – 35"	2.5Y 5/3	light olive brown fine sandy loam platey, firm few, distinct redox

SHWT = 22"
Roots: 22"
No H_2O observed
Refusal @ 35"
Perc Rate = 14 min/inch

Test Pit #9

0"- 8"	10YR 3/2	very dark grayish brown fine sandy loam granular, friable many roots
8"- 27"	10YR 4/6	dark yellowish brown fine sandy loam granular, friable common roots
27" – 40"	2.5Y 5/3	light olive brown fine sandy loam platey, firm common, distinct redox

SHWT = 27"
Roots: 27"
No H_2O observed
Refusal @ 40"
Perc Rate = 14 min/inch

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project – Woodbury Avenue, Portsmouth, NH
Client - Jones & Beach Engineers, Inc.
GES Project No. 2022091
MM/DD/YY Staff 11-17-2022 JPG

Test Pit No. 10
ESHWT: 24"
Termination @ 72"
Refusal: None
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–24"	10YR 3/3	FSL	GR	FR	NONE , Fill
24–47"	2.5Y 6/4	FSL	GR	FR	5%, Bw
47–72"	2.5Y5/3	SL	PL	FI	5%, Cd

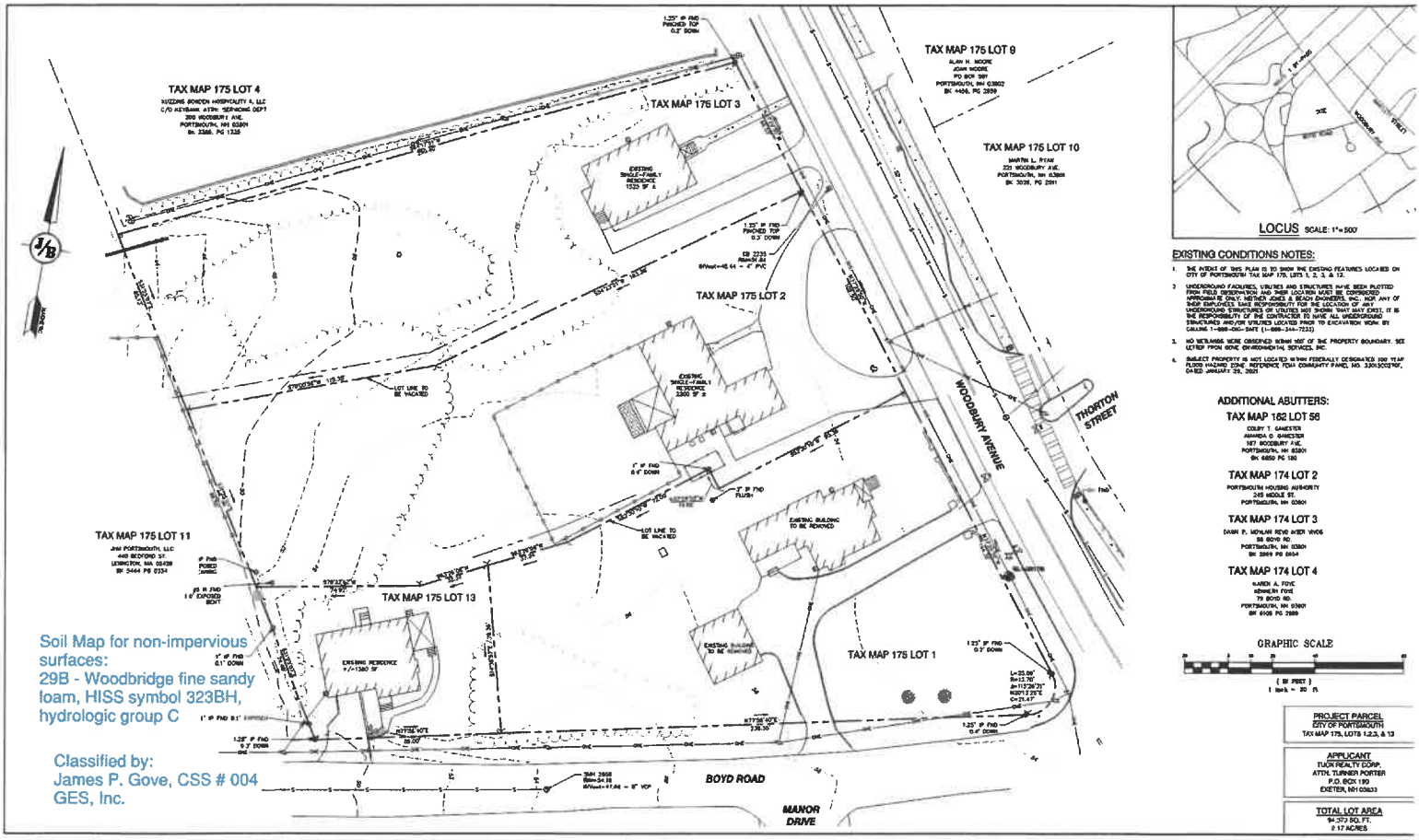
Test Pit No. 11
ESHWT: 37"
Termination @ 72"
Refusal: None
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–20"	10YR 3/2	FSL	GR	FR	NONE , Ap
20–37"	10YR 5/4	FSL	GR	FR	NONE, Bw
37–72"	2.5Y5/3	SL	PL	FI	5%, Cd

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

APPENDIX IV

Professional Soil Classification Exhibit



EXISTING CONDITIONS NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING FEATURES LOCATED ON CITY OF PORTSMOUTH TAX MAP 175, LOTS 1, 2, 3, & 13.
2. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND RISER LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. WITNER JONES & BEACH ENGINEERS, INC. NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 1-888-DIG-SAFE (1-888-344-7233)
3. NO WETLANDS WERE OBSERVED WITHIN 100' OF THE PROPERTY BOUNDARY. SEE LETTER FROM SOME ENVIRONMENTAL SERVICES, INC.
4. SUBJECT PROPERTY IS NOT LOCATED within FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE REFERENCE FEMA COMMUNITY PANEL NO. 33015C0276F, DATED JANUARY 29, 2021

ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56
COREY T. GAMESTER
AMANDA D. GAMESTER
167 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6850 PG 130

TAX MAP 174 LOT 2
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3
DIANE P. MOYLAN REVO AFTER WIDS
58 BOYD RD.
PORTSMOUTH, NH 03801
BK 2869 PG 0634

TAX MAP 174 LOT 4
KAREN A. FOYE
KENNETH FOYE
79 BOYD RD.
PORTSMOUTH, NH 03801
BK 6105 PG 2989

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1,2,3, & 13

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
94,372 SQ. FT.
2.17 ACRES

Design: JAC	Draft: AJB
Checked: JAC	Scale: 1"=30'
Drawing Name: 21254-PLAN.dwg	Date: 01/02/22
Project No.: 21254	

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
1	3/21/22	REVISED PER CLIENT	DJM
0	1/5/22	ISSUED FOR REVIEW	AJB

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-773-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	"GRAPEVINE RUN" PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE E. NELSON, 4 SHORE RD., WOLFEBORO, NH 03894

DRAWING No.
C1
SHEET 1 OF 2
JBE PROJECT NO. 21254

APPENDIX V

NRCS Soil Map

Soil Map—Rockingham County, New Hampshire
(Grapevine Run)



Map Scale: 1:995 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 45 90 180 270

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 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 19, 2021—Nov 1, 2021

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
799	Urban land-Canton complex, 3 to 15 percent slopes	2.4	100.0%
Totals for Area of Interest		**2.4**	**100.0%**

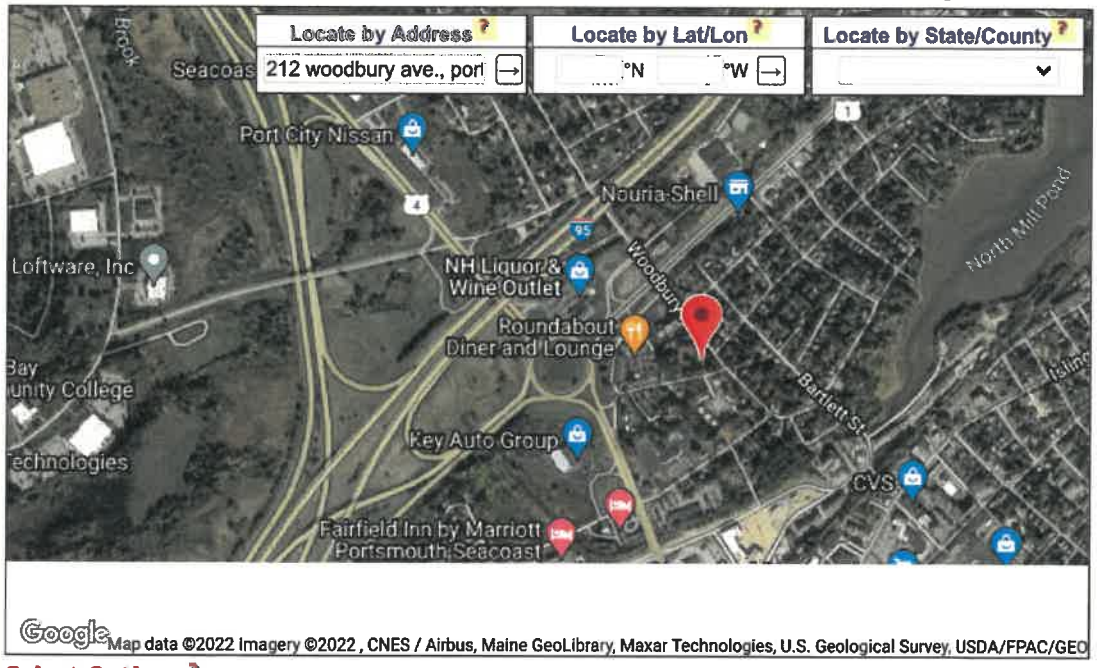
APPENDIX VI

Extreme Precipitation Estimates

Select Product

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location *Double-click the map to place a marker, or enter address or latitude/longitude.*



Select Options

Smoothing	Delivery
Yes	Popup

Submit

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.777 degrees West
Latitude	43.073 degrees North
Elevation	0 feet
Date/Time	Wed, 04 May 2022 15:24:32 -0400

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	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
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	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.73	0.97	1.25	1.60	**5yr**	1.08	1.46	1.88	2.43	3.14	4.07	4.58	**5yr**	3.60	4.40	5.04	5.93	6.70	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.72	2.23	2.89	3.75	4.87	5.53	**10yr**	4.31	5.32	6.08	7.11	7.98	**10yr**
25yr	0.48	0.76	0.96	1.33	1.77	2.33	**25yr**	1.53	2.14	2.77	3.62	4.74	6.17	7.10	**25yr**	5.46	6.83	7.80	9.02	10.05	**25yr**
50yr	0.53	0.86	1.10	1.53	2.06	2.75	**50yr**	1.78	2.52	3.28	4.32	5.66	7.39	8.58	**50yr**	6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	0.59	0.96	1.24	1.76	2.41	3.24	**100yr**	2.08	2.97	3.89	5.15	6.76	8.86	10.38	**100yr**	7.84	9.98	11.37	12.96	14.28	**100yr**
200yr	0.67	1.10	1.42	2.04	2.81	3.82	**200yr**	2.43	3.50	4.60	6.11	8.07	10.61	12.55	**200yr**	9.39	12.07	13.74	15.55	17.04	**200yr**
500yr	0.79	1.31	1.70	2.47	3.46	4.74	**500yr**	2.98	4.36	5.74	7.68	10.21	13.49	16.15	**500yr**	11.94	15.53	17.65	19.78	21.52	**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	0.73	0.89	1yr	0.63	0.87	0.92	1.32	1.67	2.22	2.51	1yr	1.97	2.41	2.86	3.16	3.88	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.19	2yr	0.86	1.16	1.37	1.82	2.34	3.06	3.45	2yr	2.70	3.32	3.82	4.55	5.08	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.40	5yr	1.01	1.37	1.61	2.12	2.74	3.79	4.20	5yr	3.36	4.04	4.72	5.54	6.25	5yr
10yr	0.39	0.59	0.73	1.03	1.33	1.60	10yr	1.14	1.56	1.81	2.39	3.06	4.38	4.87	10yr	3.87	4.69	5.45	6.42	7.21	10yr

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.76	3.54	4.70	5.91	**25yr**	4.16	5.69	6.67	7.81	8.70	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.52	2.12	2.35	3.08	3.94	5.31	6.83	**50yr**	4.70	6.57	7.76	9.07	10.04	**50yr**
100yr	0.54	0.81	1.02	1.47	2.01	2.47	**100yr**	1.74	2.42	2.63	3.43	4.37	5.96	7.89	**100yr**	5.27	7.59	9.02	10.54	11.59	**100yr**
200yr	0.59	0.89	1.13	1.64	2.28	2.82	**200yr**	1.97	2.75	2.94	3.80	4.82	6.67	9.12	**200yr**	5.90	8.77	10.49	12.27	13.41	**200yr**
500yr	0.69	1.02	1.32	1.91	2.72	3.37	**500yr**	2.35	3.29	3.41	4.34	5.49	7.75	11.03	**500yr**	6.86	10.61	12.81	15.02	16.23	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.99	3.15	**1yr**	2.65	3.03	3.58	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.86	1.06	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.43	3.70	**2yr**	3.03	3.56	4.08	4.83	5.64	**2yr**
5yr	0.40	0.62	0.76	1.05	1.33	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.34	4.95	**5yr**	3.84	4.76	5.37	6.36	7.14	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.10	3.94	5.34	6.19	**10yr**	4.72	5.95	6.79	7.82	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.56	**25yr**	1.76	2.50	2.95	4.06	5.13	7.81	8.31	**25yr**	6.91	7.99	9.10	10.31	11.39	**25yr**
50yr	0.67	1.02	1.27	1.82	2.45	3.12	**50yr**	2.11	3.05	3.59	4.99	6.29	9.78	10.41	**50yr**	8.66	10.01	11.37	12.69	13.93	**50yr**
100yr	0.78	1.19	1.49	2.15	2.94	3.79	**100yr**	2.54	3.71	4.36	6.14	7.72	12.25	13.04	**100yr**	10.84	12.54	14.20	15.65	17.05	**100yr**
200yr	0.92	1.38	1.75	2.53	3.53	4.63	**200yr**	3.05	4.52	5.32	7.55	9.47	15.38	16.35	**200yr**	13.61	15.72	17.75	19.28	20.87	**200yr**
500yr	1.14	1.69	2.18	3.16	4.50	6.00	**500yr**	3.88	5.87	6.90	9.98	12.44	20.79	22.06	**500yr**	18.40	21.21	23.87	25.41	27.28	**500yr**

Powered by ACIS
Northeast Regional Climate Center

APPENDIX VII

Amoozemeter Test Results

Pit #1 - Test #1

Height	Constant	Time		Outflow	Rate (K_{sat})	
cm	cm^2	Minutes	Hours	cm^3/hr	cm/hr	in/hr
0						
6.8	20	0.5	0.008333	16320.0	17.2339	6.7850
10.5	20	1	0.016667	12600.0	13.3056	5.2384
13	20	1.5	0.025	10400.0	10.9824	4.3238
15.1	20	2	0.033333	9060.0	9.5674	3.7667
19.5	20	3	0.05	7800.0	8.2368	3.2428
23.6	20	4	0.066667	7080.0	7.4765	2.9435
28.1	20	5	0.083333	6744.0	7.1217	2.8038
32.3	20	6	0.1	6460.0	6.8218	2.6857
36.5	20	7	0.116667	6257.1	6.6075	2.6014
40.2	20	8	0.133333	6030.0	6.3677	2.5070
				Mean		3.6898
				σ (Std. Dev.)		1.3236

Constant	20	cm^2
Glover Coefficient:	0.001056	$1/cm^2$

Calculations:

Constant = 20 cm^2 for one tube, 153 cm^2 for two tubes (one tube used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Pit #1 - Test #2

Height	Constant	Time		Outflow	Rate (K_{sat})	
cm	cm^2	Minutes	Hours	cm^3/hr	cm/hr	in/hr
0						
10.5	20	0.5	0.008333	25200.0	26.6112	10.4769
22.1	20	1.25	0.020833	21216.0	22.4041	8.8205
27.1	20	2	0.033333	16260.0	17.1706	6.7601
30.8	20	2.5	0.041667	14784.0	15.6119	6.1464
33.9	20	3	0.05	13560.0	14.3194	5.6375
36	20	3.5	0.058333	12342.9	13.0341	5.1315
38.9	20	4	0.066667	11670.0	12.3235	4.8518
	105		0	#DIV/0!	#DIV/0!	
	105		0	#DIV/0!	#DIV/0!	
	105		0	#DIV/0!	#DIV/0!	

Mean	6.8321
σ (Std. Dev.)	1.9255

Constant	20	cm^2
Glover Coefficient:	0.001056	$1/cm^2$

Calculations:

Constant = 20 cm^2 for one tube, 153 cm^2 for two tubes (one tube used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Pit #1 - Test #3

Height	Constant	Time		Outflow	Rate (K_{sat})	
cm	cm^2	Minutes	Hours	cm^3/hr	cm/hr	in/hr
0						
2.2	20	0.5	0.008333	5280.0	5.5757	2.1951
3	20	1	0.016667	3600.0	3.8016	1.4967
5.7	20	1.5	0.025	4560.0	4.8154	1.8958
7.5	20	2	0.033333	4500.0	4.7520	1.8709
10.8	20	3	0.05	4320.0	4.5619	1.7960
14.1	20	4	0.066667	4230.0	4.4669	1.7586
17.3	20	5	0.083333	4152.0	4.3845	1.7262
20.7	20	6	0.1	4140.0	4.3718	1.7212
23.8	20	7	0.116667	4080.0	4.3085	1.6963
27	20	8	0.133333	4050.0	4.2768	1.6838
30.4	20	9	0.15	4053.3	4.2803	1.6852
33.6	20	10	0.166667	4032.0	4.2578	1.6763
				Mean		1.7668
				σ (Std. Dev.)		0.1621

Constant	20	cm^2
Glover Coefficient:	0.001056	$1/cm^2$

Calculations:

Constant = 20 cm^2 for one tube, 153 cm^2 for two tubes (one tube used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Pit #2 - Test #1

Height	Constant	Time		Outflow	Rate (K_{sat})	
cm	cm^2	Minutes	Hours	cm^3/hr	cm/hr	in/hr
0						
5	20	2	0.033333	3000.0	3.1680	1.2472
7.6	20	5	0.083333	1824.0	1.9261	0.7583
12	20	10	0.166667	1440.0	1.5206	0.5987
15.9	20	15	0.25	1272.0	1.3432	0.5288
20	20	20	0.333333	1200.0	1.2672	0.4989
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	

Mean	0.7264
σ (Std. Dev.)	0.2755

Constant	20	cm^2
Glover Coefficient:	0.001056	$1/cm^2$

Calculations:

Constant = 20 cm^2 for one tube, 153 cm^2 for two tubes (one tube used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Pit #2 - Test #2

Height	Constant	Time		Outflow	Rate (K_{sat})	
cm	cm^2	Minutes	Hours	cm^3/hr	cm/hr	in/hr
0						
9.1	20	5	0.083333	2184.0	2.3063	0.9080
15.2	20	10	0.166667	1824.0	1.9261	0.7583
17.5	20	15	0.25	1400.0	1.4784	0.5820
21.5	20	20	0.333333	1290.0	1.3622	0.5363
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	

Mean	0.6962
σ (Std. Dev.)	0.1477

Constant	20	cm^2
Glover Coefficient:	0.001056	$1/cm^2$

Calculations:

Constant = 20 cm^2 for one tube, 153 cm^2 for two tubes (one tube used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Pit #2 - Test #3

Height	Constant	Time		Outflow	Rate (K_{sat})	
cm	cm^2	Minutes	Hours	cm^3/hr	cm/hr	in/hr
0						
5.6	20	5	0.083333	1344.0	1.4193	0.5588
9.4	20	10	0.166667	1128.0	1.1912	0.4690
13.4	20	15	0.25	1072.0	1.1320	0.4457
17.6	20	20	0.333333	1056.0	1.1151	0.4390
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	
	20		0	#DIV/0!	#DIV/0!	

Mean	0.4781
σ (Std. Dev.)	0.0479

Constant	20	cm^2
Glover Coefficient:	0.001056	$1/cm^2$

Calculations:

Constant = 20 cm^2 for one tube, 153 cm^2 for two tubes (one tube used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

APPENDIX VIII

BMP Worksheets

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention #1 (6P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.24	ac	A = Area draining to the practice	
0.14	ac	A_I = Impervious area draining to the practice	
0.58	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.57	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.14	ac-in	WQV= 1" x Rv x A	
501	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
125	cf	25% x WQV (check calc for sediment forebay volume)	
375	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
165	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
502	sf	A_{SA} = Surface area of the practice	
0.89	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
13.4	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
52.25	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
51.13	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
49.95	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
52.25	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
2.30	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
1.12	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
54.81	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
55.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	← yes
531	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
18.0	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	D4	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet	L1	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D_{FC} = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Stage-Area-Storage for Pond 6P: Bioretention #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
51.24	502	0
51.29	502	10
51.34	502	20
51.39	502	30
51.44	502	40
51.49	502	50
51.54	502	60
51.59	502	70
51.64	502	80
51.69	502	90
51.74	502	100
51.79	502	110
51.84	502	120
51.89	502	131
51.94	502	141
51.99	502	151
52.04	502	161
52.09	502	171
52.14	502	181
52.19	502	191
52.24	502	201
52.29	502	205
52.34	502	208
52.39	502	212
52.44	502	216
52.49	502	220
52.54	502	223
52.59	502	227
52.64	502	231
52.69	502	235
52.74	502	238
52.79	502	242
52.84	502	246
52.89	502	250
52.94	502	254
52.99	502	257
53.04	502	261
53.09	502	265
53.14	502	269
53.19	502	272
53.24	502	276
53.29	502	280
53.34	502	284
53.39	502	287
53.44	502	291
53.49	502	295
53.54	502	299
53.59	502	302
53.64	502	306
53.69	502	310
53.74	502	314
53.79	516	339
53.84	535	365
53.89	553	393
53.94	572	421
53.99	591	450
54.04	626	480
54.09	665	512
54.14	706	547
54.19	748	583
54.24	791	622
54.29	835	662
54.34	881	705
54.39	928	750
54.44	976	798
54.49	1,025	848
54.54	1,060	900
54.59	1,093	954
54.64	1,126	1,009
54.69	1,159	1,066
54.74	1,193	1,125
54.79	1,227	1,186
54.84	1,262	1,248
54.89	1,297	1,312
54.94	1,333	1,378
54.99	**1,369**	**1,445**

Bottom of filter course El. = 52.25
Vol. below = 201 cf
Excluded from WQV Calculation

Elevation of overflow risers = 54.15
Vol. below = 547 cf
Vol. Sediment forebay (included in WQV calculation) = 165 cf
Vol. below filter course (excluded from WQV calculation) = 201 cf

WQV Required = 501 cf

WQV Provided
547+165-201 = 511 cf

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention #2 (2P) SEE DESIGNER NOTES BELOW**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.88	ac	A = Area draining to the practice	
0.36	ac	A_I = Impervious area draining to the practice	
0.41	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.42	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.37	ac-in	WQV= 1" x Rv x A	
1,346	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
336	cf	25% x WQV (check calc for sediment forebay volume)	
1,009	cf	75% x WQV (check calc for surface sand filter volume)	
Pre-Tx		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
1,080	sf	A_{SA} = Surface area of the practice	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
49.8	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
47.75	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
46.25	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
44.42	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
47.75	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
3.33	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
1.50	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
51.29	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
51.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	← yes
1,361	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
18.0	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	D4	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet	L1	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D_{FC} = Filter course thickness	12", or 18" if within GPA mod. 304.1 (see spec)
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:
"Area draining to practice" excludes Eco-Paver driveways and subsurface stone basins, which are hydraulically routed to the bioretention in HydroCAD. Therefore there is a slight discrepancy, but these practices do not actually overflow to the bioretention system.

Stage-Area-Storage for Pond 2P: Bioretention #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
46.41	1,080	0
46.46	1,080	22
46.51	1,080	43
46.56	1,080	65
46.61	1,080	86
46.66	1,080	108
46.71	1,080	130
46.76	1,080	151
46.81	1,080	173
46.86	1,080	194
46.91	1,080	216
46.96	1,080	238
47.01	1,080	259
47.06	1,080	281
47.11	1,080	302
47.16	1,080	324
47.21	1,080	346
47.26	1,080	367
47.31	1,080	389
47.36	1,080	410
47.41	1,080	432
47.46	1,080	454
47.51	1,080	475
47.56	1,080	497
47.61	1,080	518
47.66	1,080	540
47.71	1,080	562
47.76	1,080	578
47.81	1,080	586
47.86	1,080	594
47.91	1,080	602
47.96	1,080	610
48.01	1,080	618
48.06	1,080	626
48.11	1,080	635
48.16	1,080	643
48.21	1,080	651
48.26	1,080	659
48.31	1,080	667
48.36	1,080	675
48.41	1,080	683
48.46	1,080	691
48.51	1,080	699
48.56	1,080	707
48.61	1,080	716
48.66	1,080	724
48.71	1,080	732
48.76	1,080	740
48.81	1,080	748
48.86	1,080	756
48.91	1,080	764
48.96	1,080	772

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
49.01	1,080	780
49.06	1,080	788
49.11	1,080	797
49.16	1,080	805
49.21	1,080	813
49.26	1,127	839
49.31	1,376	902
49.36	1,650	977
49.41	1,949	1,067
49.46	2,273	1,173
49.51	2,558	1,295
49.56	2,599	1,424
49.61	2,640	1,555
49.66	2,681	1,688
49.71	2,723	1,823
49.76	2,765	1,960
49.81	2,807	2,099
49.86	2,850	2,241
49.91	2,893	2,384
49.96	2,936	2,530
50.01	2,979	2,678
50.06	3,020	2,828
50.11	3,061	2,980
50.16	3,102	3,134
50.21	3,144	3,290
50.26	3,186	3,448
50.31	3,228	3,609
50.36	3,271	3,771
50.41	3,313	3,936
50.46	3,356	4,102
50.51	3,400	4,271
50.56	3,443	4,442
50.61	3,487	4,616
50.66	3,531	4,791
50.71	3,576	4,969
50.76	3,621	5,149
50.81	3,666	5,331
50.86	3,711	5,515
50.91	3,756	5,702
50.96	3,802	5,891
51.01	3,848	6,082
51.06	3,893	6,276
51.11	3,938	6,472
51.16	3,983	6,670
51.21	4,029	6,870
51.26	4,074	7,072
51.31	4,121	7,277
51.36	4,167	7,484
51.41	4,213	7,694
51.46	4,260	7,906
51.51	**4,331**	**8,120**

Bottom of filter course el. = 47.75
Vol. below = 576 cf
Excluded from WQV calculation

Overflow riser el. = 49.75
Vol. below riser = 1,937 cf
WQV Required = 1,346 cf

WQV Provided
1937-576 = 1,361 cf

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Unit 6 Permeable Paver Driveway (7P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.03	ac	A = Area draining to the practice	
0.03	ac	A_I = Impervious area draining to the practice	
1.00	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.95	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.03	ac-in	WQV= 1" x Rv x A	
103	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
26	cf	25% x WQV (check calc for sediment forebay volume)	
78	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
421	sf	A_{SA} = Surface area of the practice	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
9.8	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	← yes
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	≥ 3:1
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
Pavers		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.0	acres	A_{SA} = Surface area of the pervious pavement	
3.0	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
12.0	inches	D_{FC} = Filter course thickness	12", or 18" if within GPA
Sheet	D4	Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Unit 7 Permeable Paver Driveway (8P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.03	ac	A = Area draining to the practice	
0.03	ac	A_I = Impervious area draining to the practice	
1.00	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.95	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.03	ac-in	WQV= 1" x Rv x A	
103	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
26	cf	25% x WQV (check calc for sediment forebay volume)	
78	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
421	sf	A_{SA} = Surface area of the practice	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
9.8	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	← yes
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	≥ 3:1
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
Pavers		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.0	acres	A_{SA} = Surface area of the pervious pavement	
3.0	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
12.0	inches	D_{FC} = Filter course thickness	12", or 18" if within GPA mod. 304.1 (see spec)
Sheet	D4	Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Unit 8 Permeable Paver Driveway (9P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.05	ac	A = Area draining to the practice	
0.03	ac	A_I = Impervious area draining to the practice	
0.67	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.65	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.03	ac-in	WQV= 1" x Rv x A	
106	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
27	cf	25% x WQV (check calc for sediment forebay volume)	
80	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
421	sf	A_{SA} = Surface area of the practice	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
10.1	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	← yes
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	≥ 3:1
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
Pavers		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.0	acres	A_{SA} = Surface area of the pervious pavement	
4.5	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
12.0	inches	D_{FC} = Filter course thickness	12", or 18" if within GPA
Sheet	D4	Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

APPENDIX IX

Pollutant Removal Efficiency Data & Worksheet

Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis				Values Accepted for Loading Analyses		
BMP Type	**BMP**	**Notes**	**Lit. Ref.**	**TSS**	**TN**	**TP**
Stormwater Ponds	Wet Pond		B, F	70%	35%	45%
	Wet Extended Detention Pond		A, B	80%	55%	68%
	Micropool Extended Detention Pond	TBA				
	Multiple Pond System	TBA				
	Pocket Pond	TBA				
Stormwater Wetlands	Shallow Wetland		A, B, F, I	80%	55%	45%
	Extended Detention Wetland		A, B, F, I	80%	55%	45%
	Pond/Wetland System	TBA				
	Gravel Wetland		H	95%	85%	64%
Infiltration Practices	Infiltration Trench (≥75 ft from surface water)		B, D, I	90%	55%	60%
	Infiltration Trench (<75 ft from surface water)		B, D, I	90%	10%	60%
	Infiltration Basin (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Infiltration Basin (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Dry Wells			90%	55%	60%
	Drip Edges			90%	55%	60%
Filtering Practices	Aboveground or Underground Sand Filter that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Aboveground or Underground Sand Filter that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Aboveground or Underground Sand Filter with underdrain		A, I, F, G, H	85%	10%	45%
	Tree Box Filter	TBA				
	Bioretention System		I, G, H	90%	65%	65%
	Permeable Pavement that infiltrates WQV (≥75 ft from surface water)		A, F, B, D, I	90%	60%	65%
	Permeable Pavement that infiltrates WQV (<75 ft from surface water)		A, F, B, D, I	90%	10%	65%
	Permeable Pavement with underdrain		Use TN and TP values for sand filter w/ underdrain and outlet pipe	90%	10%	45%

Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis				Values Accepted for Loading Analyses		
BMP Type	**BMP**	**Notes**	**Lit. Ref.**	**TSS**	**TN**	**TP**
Treatment Swales	Flow Through Treatment Swale	TBA				
Vegetated Buffers	Vegetated Buffers		A, B, I	73%	40%	45%
Pre-Treatment Practices	Sediment Forebay	TBA				
	Vegetated Filter Strip		A, B, I	73%	40%	45%
	Vegetated Swale		A, B, C, F, H, I	65%	20%	25%
	Flow-Through Device - Hydrodynamic Separator		A, B, G, H	35%	10%	5%
	Flow-Through Device - ADS Underground Multichamber Water Quality Unit (WQU)		G, H	72%	10%	9%
	Other Flow-Through Devices	TBA				
	Off-line Deep Sump Catch Basin		J, K, L, M	15%	5%	5%

TSS Removal	A Non-Roof Impervious Area (acres)	B Removal Efficiency	C (A*B) Amount Removed	D (C/A) Total Removal Efficiency
Bioretention	0.390	90%	0.351	
Porous Pavers	0.029	90%	0.026	
Infiltration	0.022	90%	0.020	
Untreated	0.030	0%	0.000	
Total Impervious	0.472		0.398	84%

Phosphorous Removal	A Non-Roof Impervious Area (acres)	B Removal Efficiency	C (A*B) Amount Removed	D (C/A) Total Removal Efficiency
Bioretention Pond #1	0.390	65%	0.254	
Porous Pavers	0.029	60%	0.018	
Infiltration	0.022	60%	0.013	
Untreated	0.030	0%	0.000	
Total Impervious	0.472		0.285	60%

Nitrogen Removal	A Non-Roof Impervious Area (acres)	B Removal Efficiency	C (A*B) Amount Removed	D (C/A) Total Removal Efficiency
Bioretention Pond #1	0.390	65%	0.254	
Porous Pavers	0.029	65%	0.019	
Infiltration	0.022	65%	0.015	
Untreated	0.030	0%	0.000	
Total Impervious	0.472		0.287	61%

APPENDIX X

Sump Pump Discharge Calculation Worksheet

Sump Pump Discharge Calculation Worksheet

Y	Surface Area	953	SF		
Permeability		1.78	iph		
		3.56	iph	Factor of Safety = 2	
		0.296667	fph		
	Z	8.24E-05	fps	Void ratio	0.5
	Unit 5				
A	FF	55.5	feet		
B	Excavation Depth	47.5	feet	B=A-8	
C	Average Ex Grade	52.85	feet		
D	SHWT Depth	1.25	feet		
E	SHWT El.	51.6	feet	E=C-D	
F	Depth in SHWT	4.1	feet	F=E-B	
G	Volume	1953.65	cf	G=Y*F*0.5	
H	Lag	49752.81	seconds	H=F/Z	13.82022 hours
Q	Flow	0.039267	cfs	Q=G/H	
	Unit 6				
A	FF	55.5	feet		
B	Excavation Depth	47.5	feet	B=A-8	
C	Average Ex Grade	49.4	feet		
D	SHWT Depth	2.5	feet		
E	SHWT El.	46.9	feet	E=C-D	
F	Depth in SHWT	0.6	feet	F=E-B	
G	Volume	285.9	cf	G=Y*F*0.5	
H	Lag	7280.899	seconds	H=F/Z	2.022472 hours
Q	Flow	0.039267	cfs	Q=G/H	
	Unit 7				
A	FF	55.5	feet		
B	Excavation Depth	47.5	feet	B=A-8	
C	Average Ex Grade	53	feet		
D	SHWT Depth	2.25	feet		
E	SHWT El.	50.75	feet	E=C-D	
F	Depth in SHWT	3.25	feet	F=E-B	
G	Volume	1548.625	cf	G=Y*F*0.5	
H	Lag	39438.2	seconds	H=F/Z	10.95506 hours
Q	Flow	0.039267	cfs	Q=G/H	
	Unit 8				
A	FF	55	feet		
B	Excavation Depth	47	feet	B=A-8	
C	Average Ex Grade	50.5	feet		
D	SHWT Depth	1.75	feet		
E	SHWT El.	48.75	feet	E=C-D	
F	Depth in SHWT	1.75	feet	F=E-B	
G	Volume	833.875	cf	G=Y*F*0.5	
H	Lag	21235.96	seconds	H=F/Z	5.898876 hours
Q	Flow	0.039267	cfs	Q=G/H	

Unit 5 Hydrograph

Hour	Discharge rate (cfs)
0	0.000
1	0.003
2	0.006
3	0.009
4	0.011
5	0.014
6	0.017
7	0.020
8	0.023
9	0.026
10	0.028
11	0.031
12	0.034
13	0.037
14	0.040
15	0.037
16	0.034
17	0.031
18	0.028
19	0.026
20	0.023
21	0.020
22	0.017
23	0.014
24	0.011
25	0.009
26	0.006
27	0.003
28	0.000

Unit 6 Hydrograph

Hour	Discharge rate (cfs)
0	0.000
1	0.019
2	0.039
3	0.019
4	0.000

Unit 7 Hydrograph

Hour	Discharge rate (cfs)
0	0.000
1	0.004
2	0.007
3	0.011
4	0.014
5	0.018
6	0.022
7	0.025
8	0.029
9	0.032
10	0.036
11	0.039
12	0.036
13	0.032
14	0.029
15	0.025
16	0.022
17	0.018
18	0.014
19	0.011
20	0.007
21	0.004
22	0.000

Unit 8 Hydrograph

Hour	Discharge rate (cfs)
0	0.000
1	0.007
2	0.013
3	0.020
4	0.027
5	0.033
6	0.040
7	0.033
8	0.027
9	0.020
10	0.013
11	0.007
12	0.000

APPENDIX XI

Rip Rap Sizing Calculations

RIP RAP CALCULATIONS
Grapevine Run
212, 214, & 216 Woodbury Ave
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.
P.O. Box 219
Stratham, NH 03885
28-Nov-22

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.*
Aprons are sized for the 25-Year storm event.

TAILWATER < HALF THE D_o

$L_a = (1.8 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = L_a + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
				#DIV/0!	#DIV/0!	#DIV/0!

TAILWATER > HALF THE D_o

$L_a = (3.0 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = (0.4 \times L_a) + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

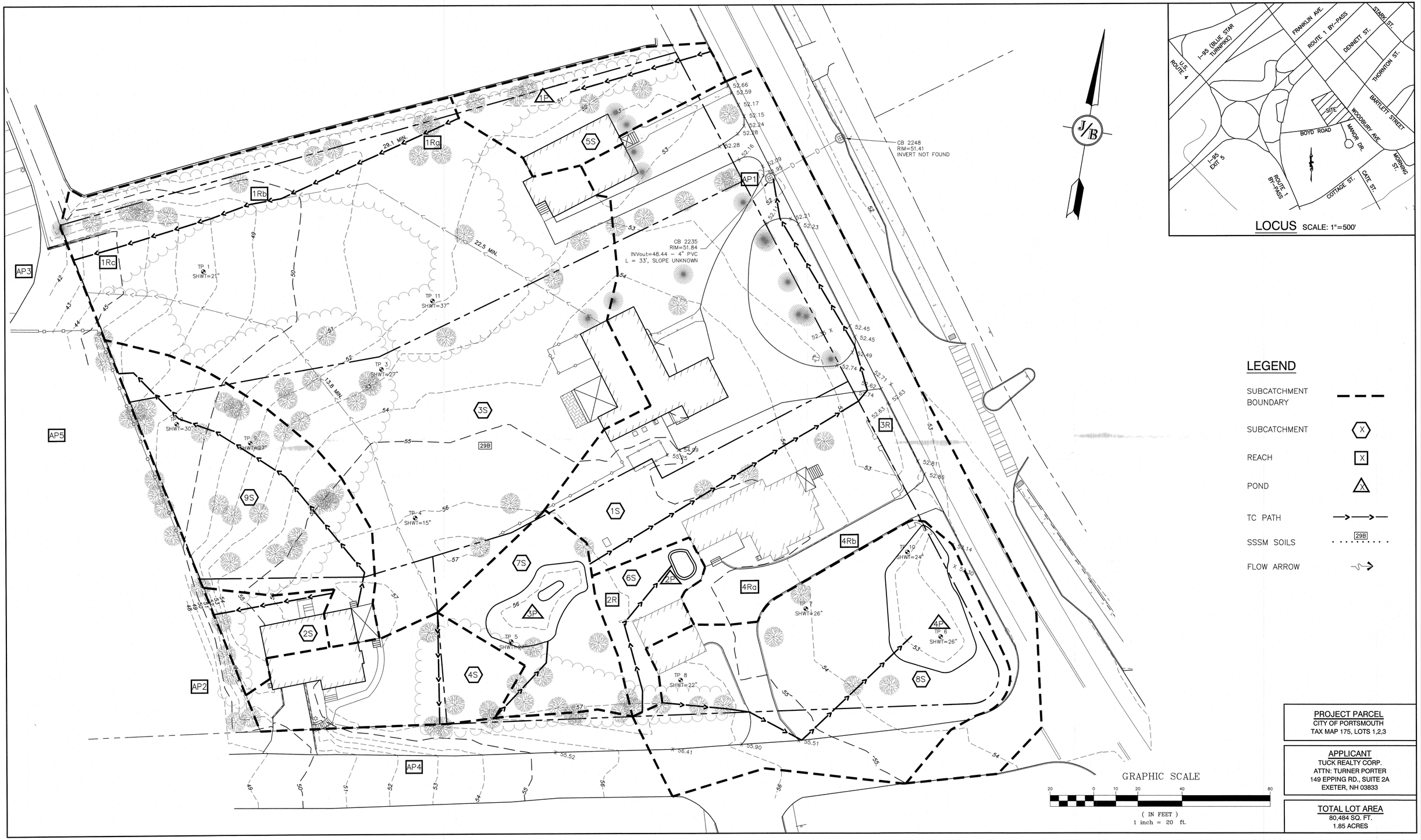
Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
8" HDPE (Pond 10P)	0.44	0.73	0.67	8.7	5	0.04

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.25	Feet	3	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d_{50} Size		From		To
100%		5		6
85%		4		5
50%		3		5
15%		1		2

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.5	Feet	6	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d_{50} Size		From		To
100%		9		12
85%		8		11
50%		6		9
15%		2		3

APPENDIX XII

Pre- and Post-Construction Watershed Plans



LOCUS SCALE: 1"=500'

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH [X]
- POND (X)
- TC PATH
- SSSM SOILS [29B]
- FLOW ARROW

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1,2,3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: DJM	Draft: DJM
Checked: PSL	Scale: 1"=20'
Date: 01/05/22	Project No.: 21254
Drawing Name: 21254-WATERSHED.dwg	

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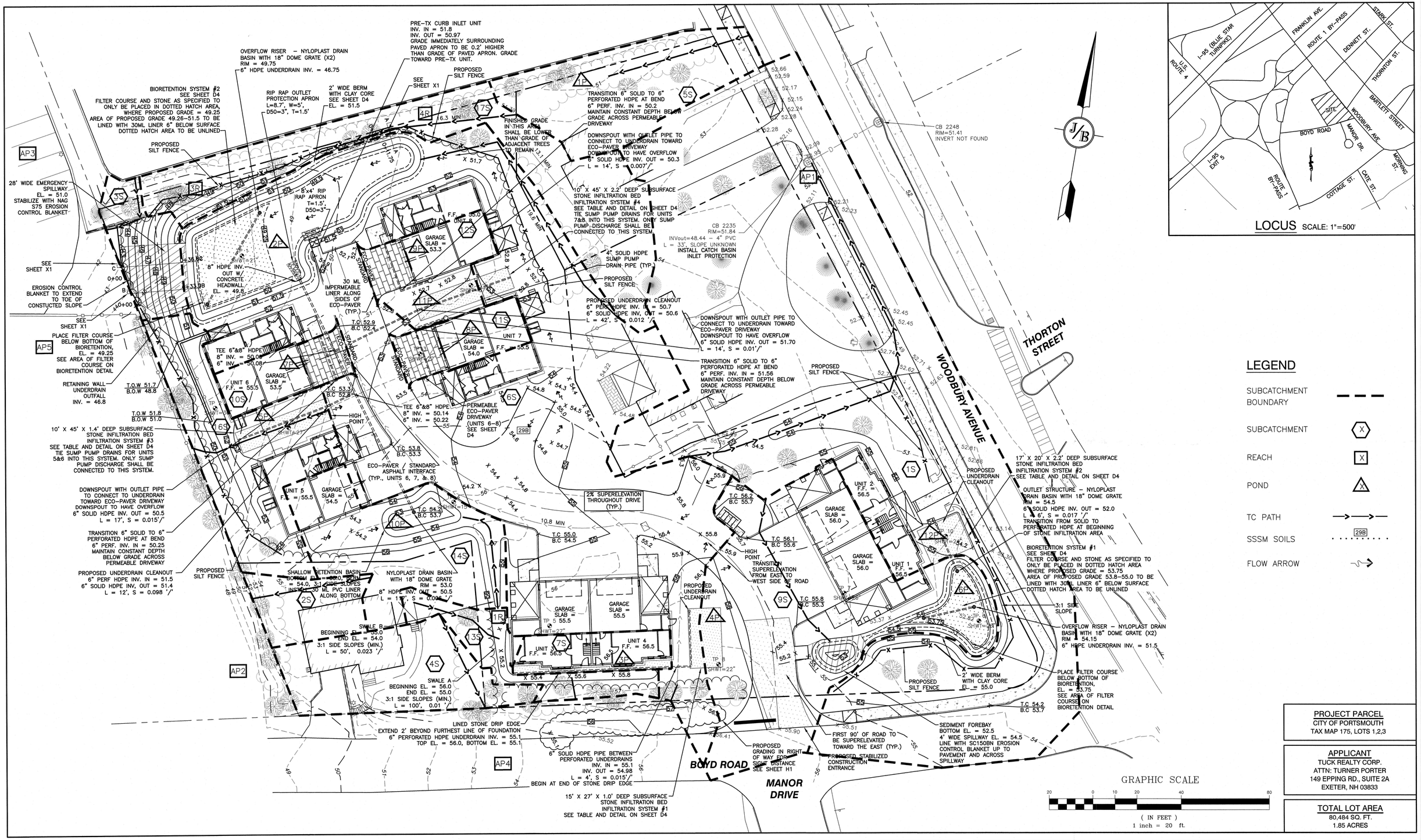
STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
5	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
4	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
3	9/16/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
2	8/1/22	REVISED PER TAC COMMENTS	DJM
1	6/21/22	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING WATERSHED PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4592 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 21254



LOCUS SCALE: 1"=500'

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH (X)
- POND (X)
- TC PATH
- SSSM SOILS (29B)
- FLOW ARROW

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1,2,3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: DJM	Draft: DJM
Checked: PSL	Scale: 1"=20'
Date: 01/05/22	Project No.: 21254
Drawing Name: 21254-WATERSHED.dwg	

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PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	REVISION	BY
5	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
4	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
3	9/16/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
2	8/1/22	REVISED PER TAC COMMENTS	DJM
1	6/21/22	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: PROPOSED WATERSHED PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 21254

5/16/2022

Tarquin

1108.124 GR (5/16/2022)

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Art Form Architecture, Inc.

603-431-9559



Dear Builders and Home Buyers,

In addition to our Terms and Conditions (the "Terms"), please be aware of the following:

This design may not yet have Construction Drawings (as defined in the Terms), and is, therefore, only available as a Design Drawing (as defined in the Terms and together with Construction Drawings, "Drawings'). It is possible that during the conversion of a Design Drawing to a final Construction Drawing, changes may be necessary including, but not limited to, dimensional changes. Please see Plan Data Explained on www.artform.us to understand room sizes, dimensions and other data provided. We are not responsible for typographical errors.

Art Form Architecture ("Art Form") requires that our Drawings be built substantially as designed. Art Form will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to accommodate where possible and reasonable, and where the changes do not denigrate our design, any and all changes to Drawings must be approved in writing by Art Form. It is recommended that you have your Drawing updated by Art Form prior to attaching any Drawing to any builder agreement. Art Form shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.

Facade Changes:
• To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Art Form.
• Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.
Floor plan layout and/or Structural Changes:
• Structural changes always require the express written consent of Art Form
• If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).

Tarquin

1108.124 GR (5/16/2022)

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Tarquin

1108.124 GR (5/16/2022)

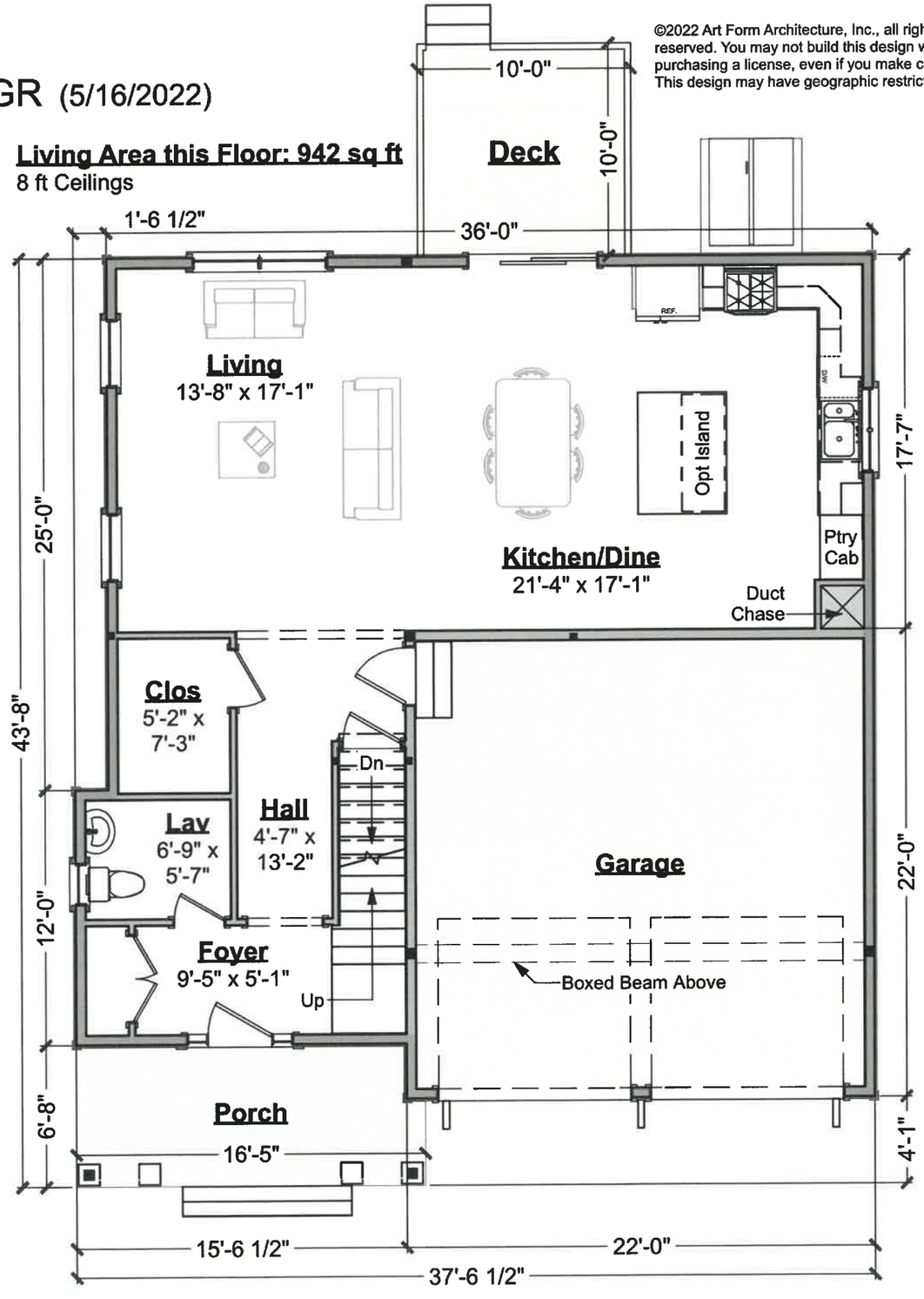
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Art Form Architecture, Inc.

603-431-9559

Living Area this Floor: 942 sq ft

8 ft Ceilings



First Floor Plan

Scale: 1/8" = 1'-0"

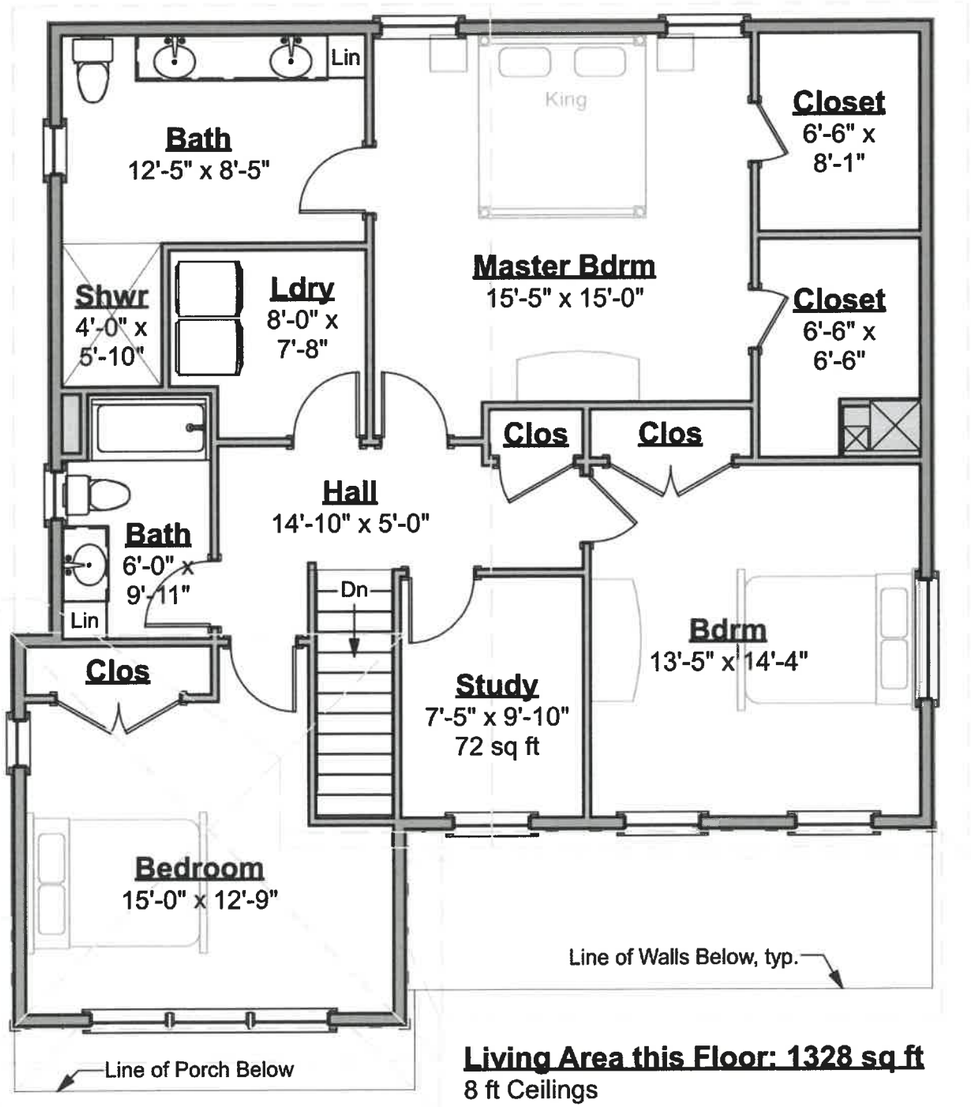
Tarquin

1108.124 GR (5/16/2022)

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Living Area this Floor: 1328 sq ft
8 ft Ceilings

Second Floor Plan

Scale: 1/8" = 1'-0"

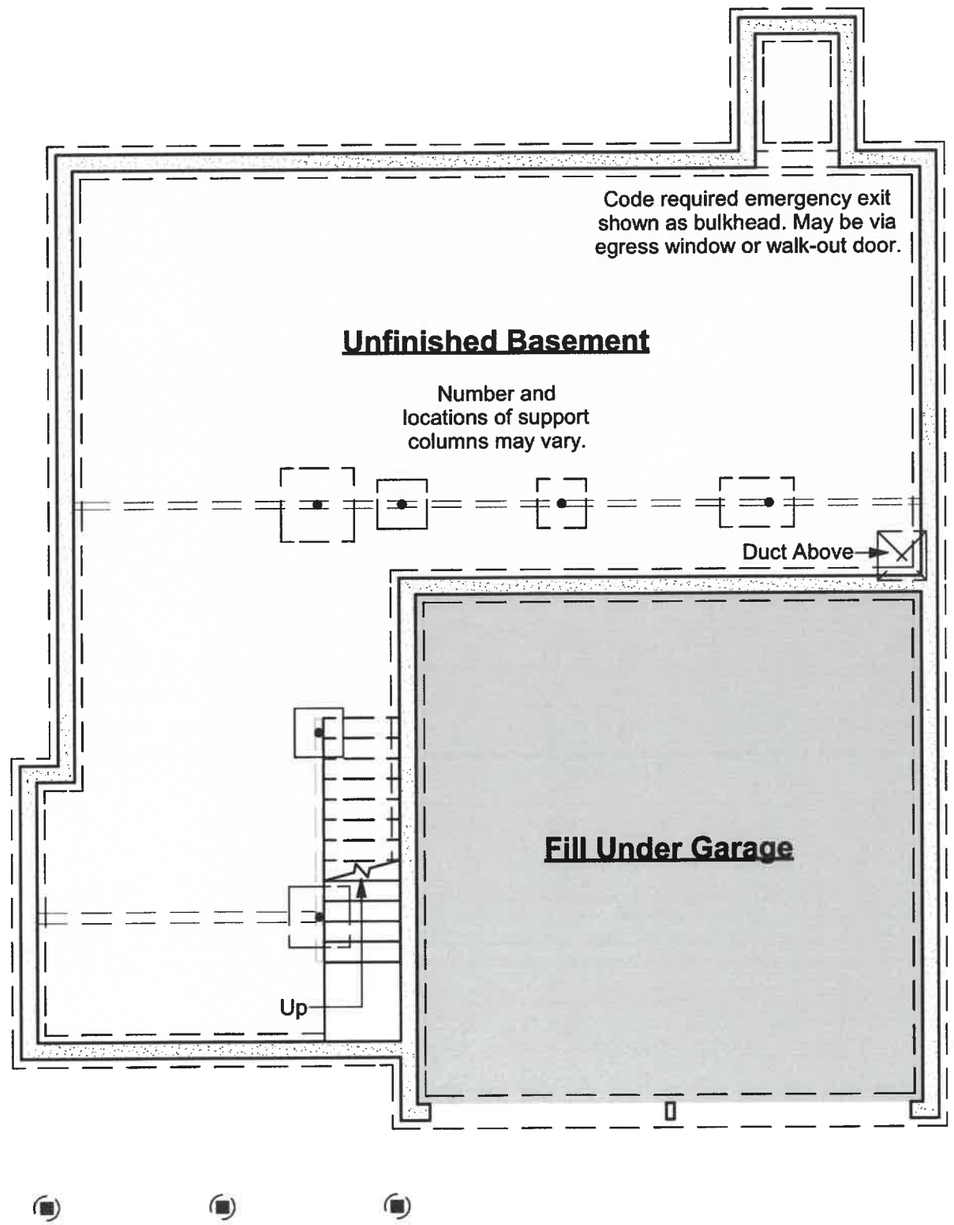
Tarquin

1108.124 GR (5/16/2022)

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Foundation Plan

Scale: 1/8" = 1'-0"

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Front Elevation

Scale: 1/8" = 1'-0"

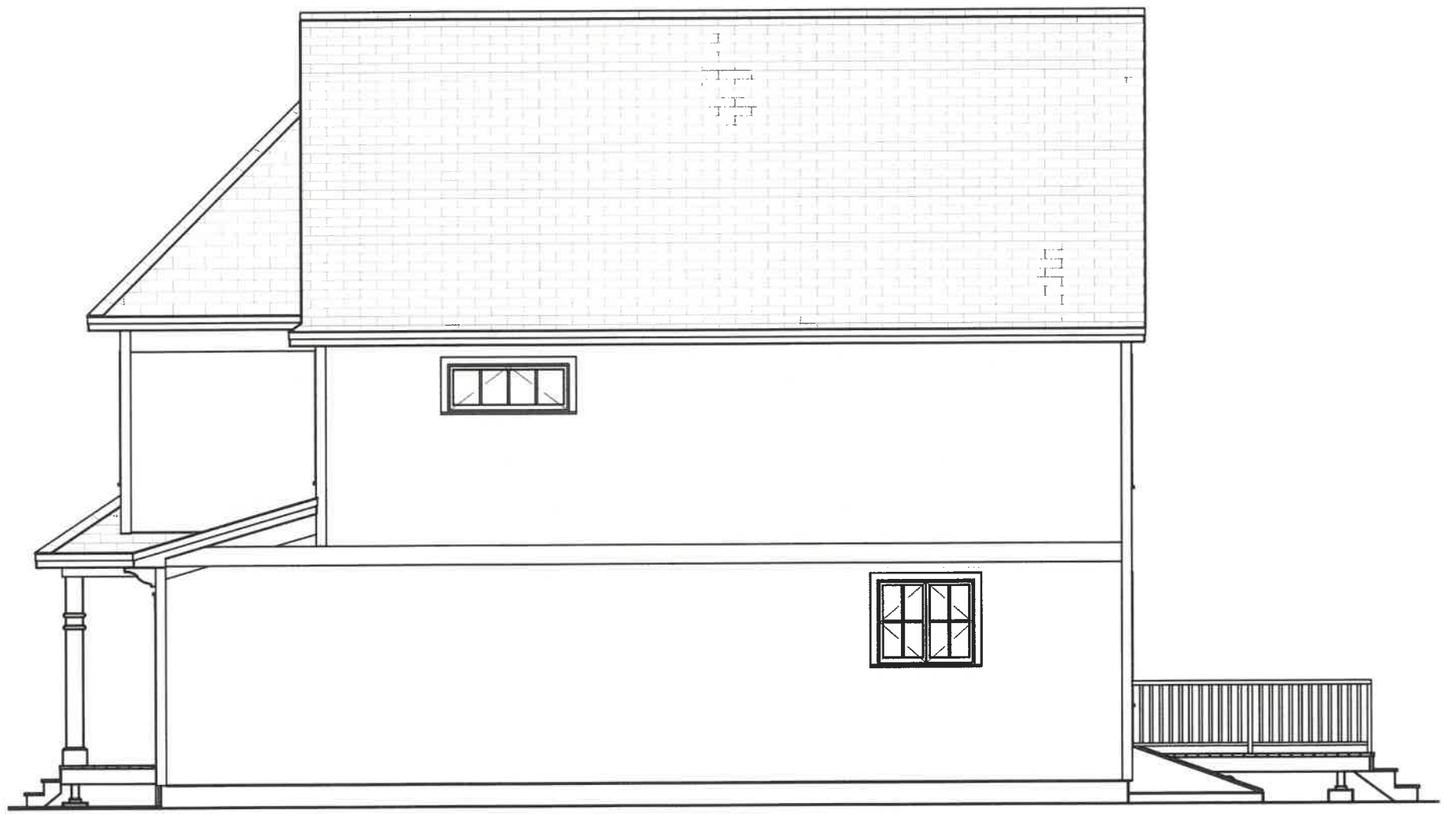
Tarquin

1108.124 GR (5/16/2022)

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Right Elevation

Scale: 1/8" = 1'-0"

Tarquin

1108.124 GR (5/16/2022)

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Rear Elevation

Scale: 1/8" = 1'-0"

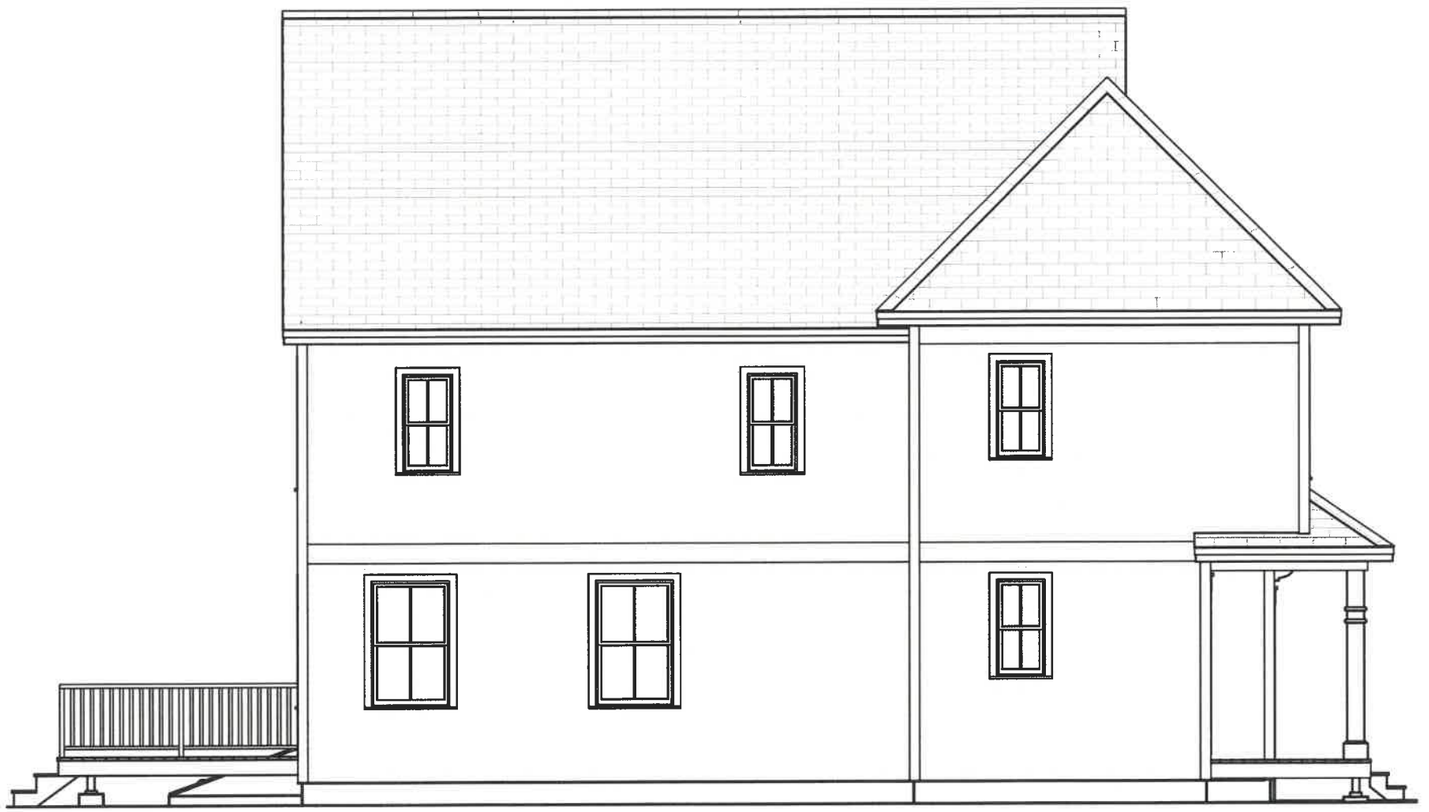
Tarquin

1108.124 GR (5/16/2022)

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Left Elevation

Scale: 1/8" = 1'-0"

Matthias Duplex

1107.224 (5/13/2022)

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Dear Builders and Home Buyers,

In addition to our Terms and Conditions (the "Terms"), please be aware of the following:

This design may not yet have Construction Drawings (as defined in the Terms), and is, therefore, only available as a Design Drawing (as defined in the Terms and together with Construction Drawings, "Drawings'). It is possible that during the conversion of a Design Drawing to a final Construction Drawing, changes may be necessary including, but not limited to, dimensional changes. Please see Plan Data Explained on www.artform.us to understand room sizes, dimensions and other data provided. We are not responsible for typographical errors.

Art Form Architecture ("Art Form") requires that our Drawings be built substantially as designed. Art Form will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to accommodate where possible and reasonable, and where the changes do not denigrate our design, any and all changes to Drawings must be approved in writing by Art Form. It is recommended that you have your Drawing updated by Art Form prior to attaching any Drawing to any builder agreement. Art Form shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.

Facade Changes:
• To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Art Form.
• Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.
Floor plan layout and/or Structural Changes:
• Structural changes always require the express written consent of Art Form
• If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).

Matthias Duplex

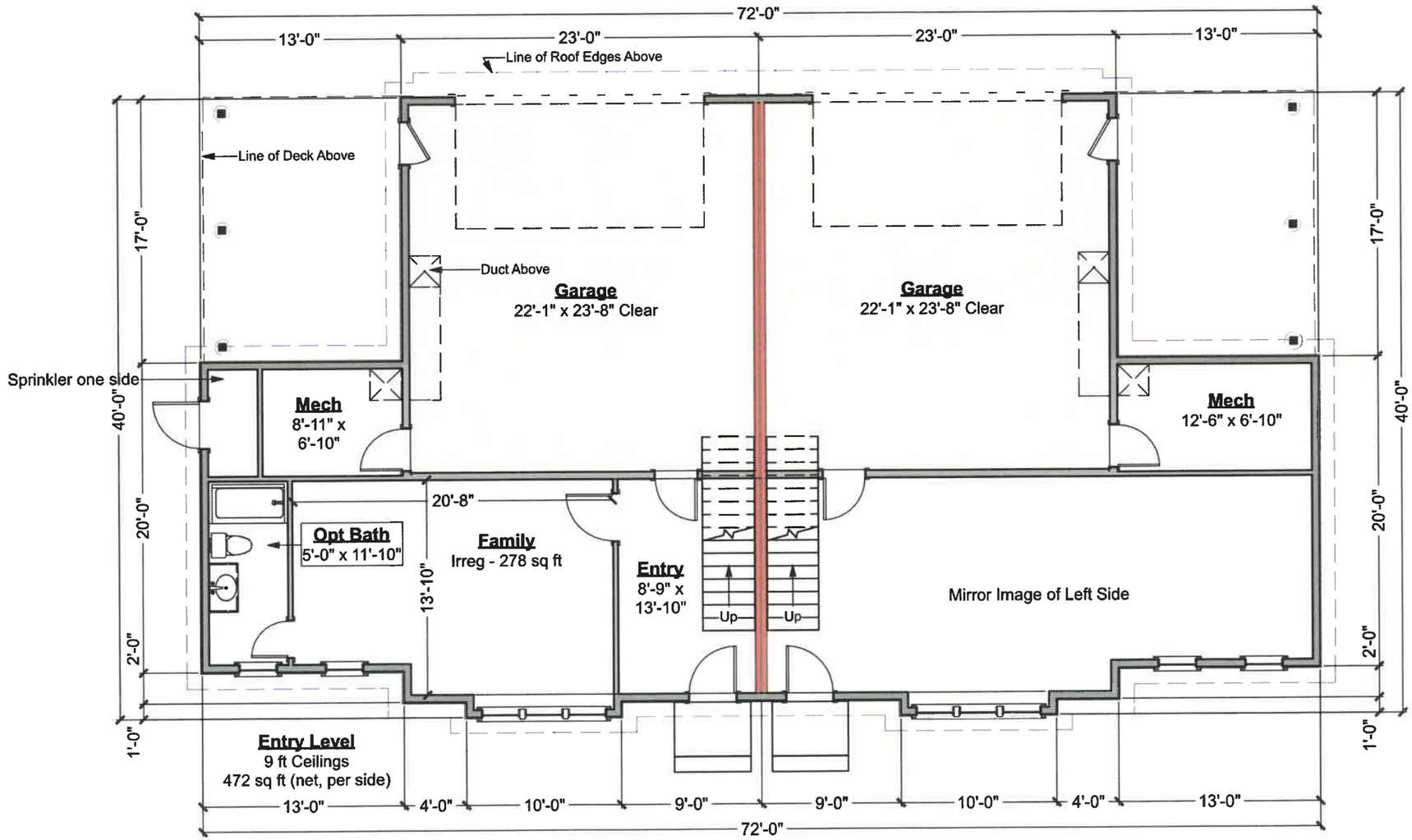
1107.224 (5/13/2022)

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603-431-9559



First Floor Plan

Scale: 1/8" = 1'-0"

Matthias Duplex

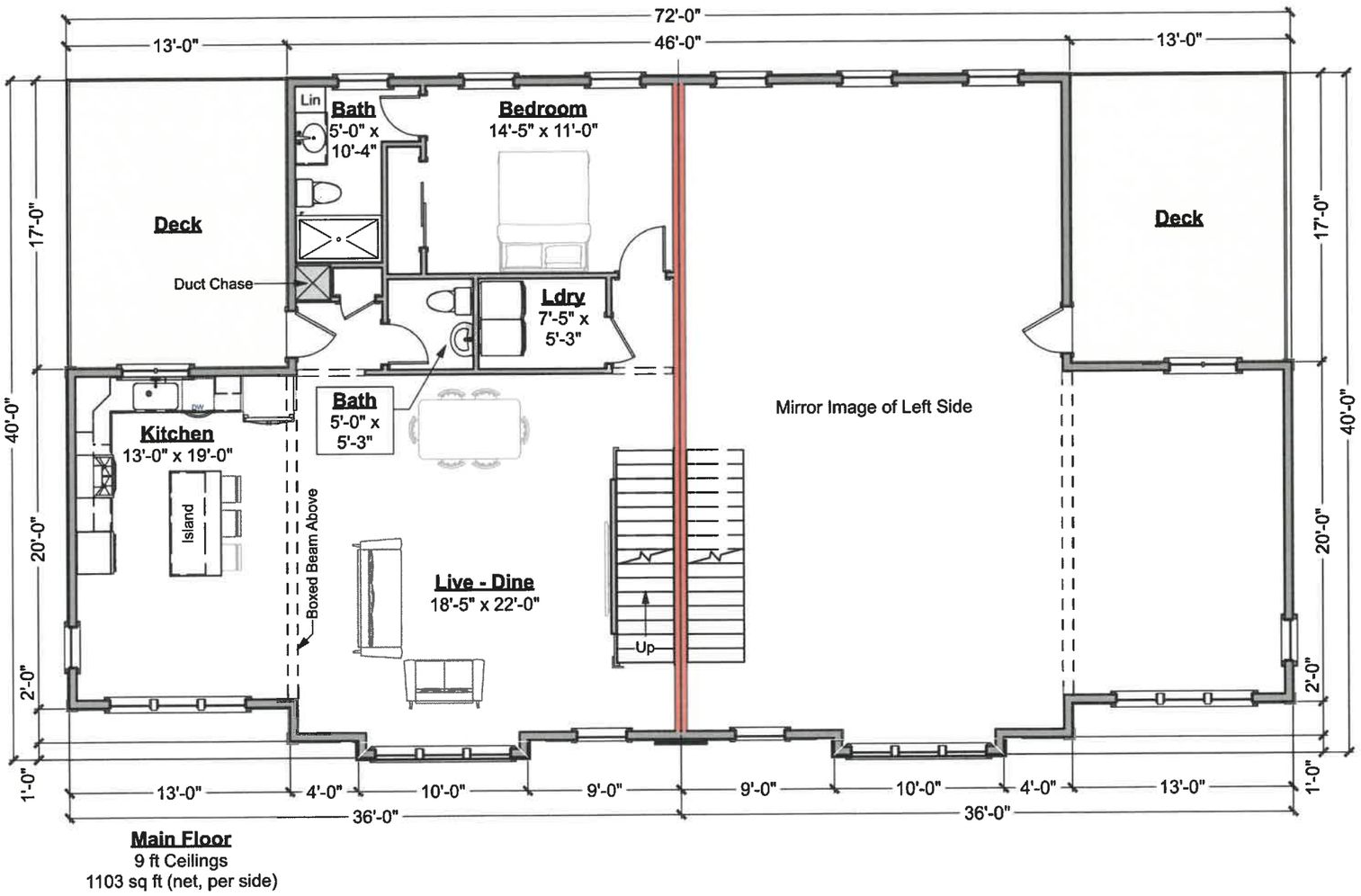
1107.224 (5/13/2022)

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Main Floor
9 ft Ceilings
1103 sq ft (net, per side)

Second Floor Plan

Scale: 1/8" = 1'-0"

Matthias Duplex

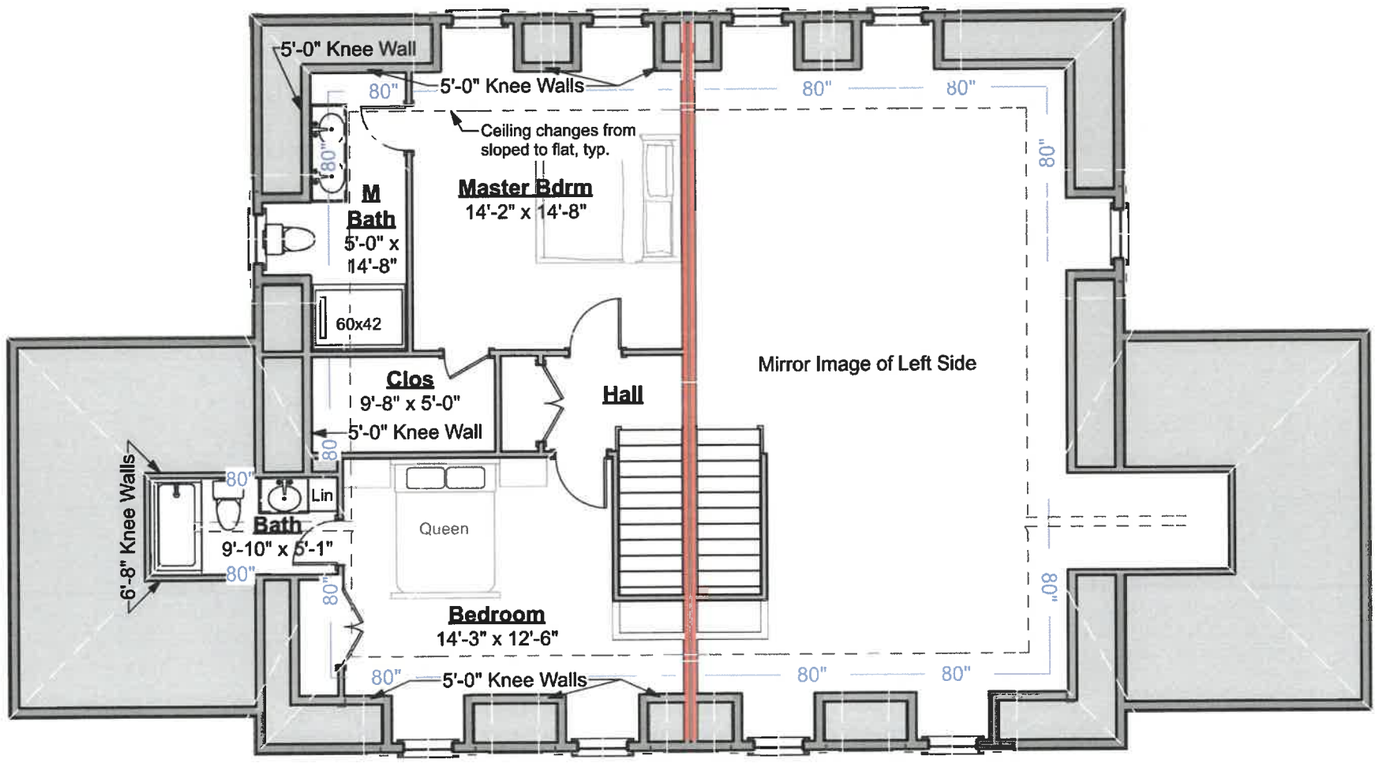
1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

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Top Floor
9 ft Ceilings
742 sq ft (net, per side)

Third Floor Plan

Scale: 1/8" = 1'-0"

Matthias Duplex

1107.224 (5/13/2022)

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Front



Right

Elevations

Scale: 1/8" = 1'-0"

Matthias Duplex

1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

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Rear



Left

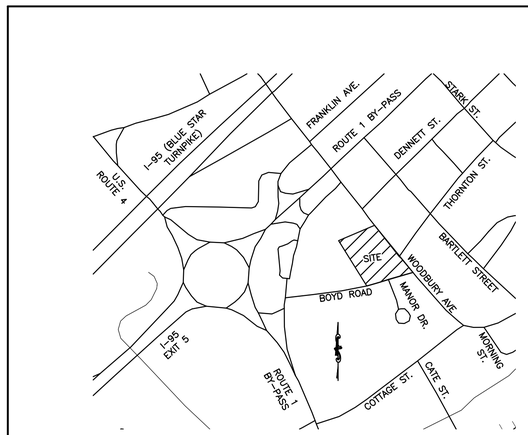
Elevations

Scale: 1/8" = 1'-0"

MULTI-FAMILY RESIDENTIAL SITE PLAN
"GRAPEVINE RUN"
TAX MAP 175, LOTS 1, 2, & 3
212, 214, & 216 WOODBURY AVE.,PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		TREE LINE
		STONEWALL
		FENCE
		SOIL BOUNDARY
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
VGC	VGC	EDGE OF PAVEMENT
SGC	SGC	VERTICAL GRANITE CURB
X	X	SLOPE GRANITE CURB
D	D	SILT FENCE
S	S	DRAINAGE LINE
FM	FM	SEWER LINE
G	G	SEWER FORCE MAIN
W	W	GAS LINE
WS	WS	WATER LINE
OHE	OHE	WATER SERVICE
UGE	UGE	OVERHEAD ELECTRIC
F	F	UNDERGROUND ELECTRIC
	W	FIRE PROTECTION LINE
		THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0	100x0	SPOT GRADE
100.00	100.00	PAVEMENT SPOT GRADE
100.00 / 99.50	100.00 / 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
TP1		TEST PIT
TP1		FAILED TEST PIT
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
		SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
D		CULVERT W/WINGWALLS
D		CULVERT W/FLARED END SECTION
D		CULVERT W/STRAIGHT HEADWALL
		DRAINAGE FLOW DIRECTION
		RIPRAP
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 500'

SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
DM-1	DEMOLITION PLAN
A1	LOT LINE ADJUSTMENT PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
P1	PLAN AND ROAD PROFILE
P2	PLAN AND SEWER PROFILE
L1	LANDSCAPE PLAN
L2	LIGHTING PLAN
D1-D6	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS
X1	SLOPE CROSS SECTIONS
T1-T2	TRUCK TURNING PLAN
H1	HIGHWAY ACCESS PLAN
DR1	OFFSITE DRAINAGE PLAN

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: JOSEPH CORONATI
EMAIL: JCORONATI@JONESANDBEACH.COM

LIGHTING CONSULTANT
CHARRON, INC.
P.O BOX 4550
MANCHESTER, NH 03108
(603) 945-3500
CONTACT: DANIEL HEBERT
EMAIL: DHEBERT@CHARRONINC.COM

SOILS CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DR., BLDG 2, UNIT H
EXETER, NH 03833-7507
(603) 418-7260
CONTACT: JAMES GOVE
EMAIL: JGOVE@GESINC.BIZ

LANDSCAPE DESIGNER
LM LAND DESIGN, LLC
11 SOUTH ROAD
BRENTWOOD, NH 03833
(603) 770-7728
CONTACT: LISE MCNAUGHTON

WATER
CITY OF PORTMOUTH
DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: BRIAN GOETZ, P.E.
(603) 427-1530

SEWER
CITY OF PORTMOUTH
DEPARTMENT OF PUBLIC WORKS
SEWER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: ZACHARY CRONIN
(603) 766-1421

ELECTRIC
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, NH 03801
(603) 634-3029
CONTACT: CASEY MACDONALD

TELEPHONE
FAIRPOINT COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
(800) 427-5525
CONTACT: JOE CONSIDINE

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03042-2325
(603) 679-5695

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

APPROVED - PORTSMOUTH, NH
PLANNING BOARD

DATE:

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS NOTED
Drawing Name: 21254-PLAN.dwg	Date: 01/05/22
	Project No.: 21254

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER – 12/20/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
CS
SHEET 1 OF 23
JBE PROJECT NO. 21254

GRAPEVINE RUN - PORTSMOUTH, NH
JBE # 21254 REVISION 7: 12/20/22

GENERAL LEGEND

PROPERTY LINE
ABUTTER PROPERTY LINE
BUILDING SETBACK
TREE LINE
EDGE OF PAVEMENT
EDGE OF GRAVEL
OVERHEAD ELECTRIC LINES
STONE WALL
MAJOR CONTOUR
MINOR CONTOUR
SEWER LINE
UTILITY POLE

ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56
COLBY T. GAMESTER
AMANDA D. GAMESTER
187 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6050 PG 180

TAX MAP 174 LOT 2
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3
DAWN P. MOYLAN REVO INTER VIVOS
55 BOYD RD.
PORTSMOUTH, NH 03801
BK 2969 PG 0654

TAX MAP 174 LOT 4
KAREN A. FOYE
KENNETH FOYE
79 BOYD RD.
PORTSMOUTH, NH 03801
BK 6108 PG 2989

TAX MAP 175 LOT 11
JHM PORTSMOUTH, LLC
440 BEDFORD ST.
LEXINGTON, MA 02420
BK 5444 PG 0334

TAX MAP 175 LOT 4
KUZZINS BOWDEN HOSPITALITY II, LLC
C/O KEYBANK ATTN: SERVICING DEPT
300 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 3355, PG 1325

TAX MAP 175 LOT 9
ALAN H. MOORE
JOAN MOORE
PO BOX 591
PORTSMOUTH, NH 03802
BK 4459, PG 2659

TAX MAP 175 LOT 10
MARTIN L. RYAN
221 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 3526, PG 2011

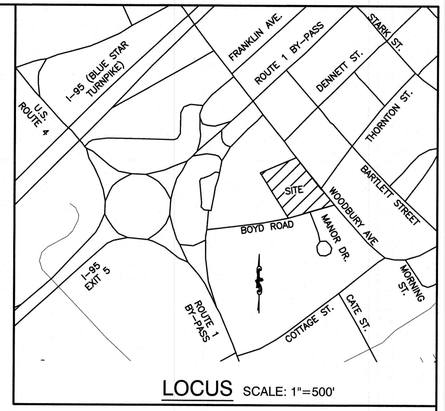
TAX MAP 175 LOT 3
216 WOODBURY AVE.

TAX MAP 175 LOT 2
214 WOODBURY AVE.

TAX MAP 175 LOT 1
212 WOODBURY AVE.

TAX MAP 175 LOT 13
FREDERICK J. BAILEY III &
JOYCE S. NELSON
4 SHORE ROAD
WOLFEBORO, NH 03894
BK 5500 PG 0334
EXISTING RESIDENCE
+/-1380 SF
6 BOYD RD.

ZONELINE BETWEEN GENERAL RESIDENCE "A" (GRA) AND GENERAL BUSINESS (GB) ZONE
ZONE "GB"
ZONE "GRA"
EXISTING ZONELINE (TYP.)
EXISTING RETAINING WALL WITH FENCE
EXISTING TREELINE (TYP.)
EXISTING WOODEN FENCE
EXISTING BRICK BENCH
EXISTING SINGLE-FAMILY RESIDENCE 1525 SF ±
EXISTING SINGLE-FAMILY RESIDENCE 2200 SF ±
EXISTING GARAGE
EXISTING PAVED DRIVEWAY
EXISTING MAILBOX
EXISTING STONE PILLARS
EXISTING GATE VALVE AND FIRE HYDRANT
APPROX. EXISTING GAS SERVICE
APPROX. EXISTING WATER SERVICE
APPROXIMATE EXISTING WATER SERVICE
APPROXIMATE EXISTING 12" CAST IRON WATER MAIN
APPROXIMATE EXISTING 4" COATED STEEL GAS MAIN (TYP.) CONTRACTOR TO FIELD VERIFY LOCATION
APPROXIMATE EXISTING 2" PLASTIC GAS MAIN (TYP.) CONTRACTOR TO FIELD VERIFY LOCATION
APPROXIMATE EXISTING 12" CAST IRON WATER MAIN
WOODBURY AVENUE
THORTON STREET
BOYD ROAD
MANOR DRIVE



LOCUS SCALE: 1"=500'

PLAN REFERENCES:

1. "PLAN OF LOT, NO. 276 WOODBURY AVE., PORTSMOUTH, N.H." DATED MARCH 1944. PREPARED BY JOHN W. DURGIN. R.C.R.D. 01219.
2. "PLAN OF LAND, PORTSMOUTH, N.H. FOR SPECTRUM ENTERPRISES." DATED APRIL 1966. PREPARED BY JOHN W. DURGIN. R.C.R.D. 1155.
3. "PLAN OF LAND, PORTSMOUTH, N.H. FOR COLONY MOTOR HOTEL, INC." DATED JULY 1, 1980. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 9644.
4. "LOT LINE ADJUSTMENT PLAN FOR JOHN & GLORIA COLLINS IN PORTSMOUTH. NH" DATED OCTOBER 27, 1988. PREPARED BY SEACOAST ENGINEERING ASSOCIATES. R.C.R.D. 18914.
5. "ALTA / ACSM LAND TITLE SURVEY IN PORTSMOUTH, NH, OWNER: JHM PORTSMOUTH, LLC" DATED JULY 16, 2013. PREPARED BY ROBER SURVEY. R.C.R.D. 38205.
6. "PLAN OF LAND, NO. 216 WOODBURY AVE., PORTSMOUTH, N.H." DATED SEPTEMBER 1951. PREPARED BY JOHN W. DURGIN. NOT RECORDED.

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF PORTSMOUTH TAX MAP 175, LOTS 1, 2, 3, AND 13.
2. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
3. 4. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
4. BASIS OF BEARING:
   HORIZONTAL – NAD83 NH STATE PLANE.
   VERTICAL – NAVD88.
5. NO WETLANDS WERE OBSERVED WITHIN 100' OF THE PROPERTY BOUNDARY. SEE LETTER FROM GOVE ENVIRONMENTAL SERVICES, INC.
6. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.

SOIL NOTES:

SOILS SHOWN HEREON WERE CLASSIFIED IN SPRING 2022 BY JAMES GOVE, CSS # 004, GOVE ENVIRONMENTAL SERVICES, INC. THE SURVEY AREA IS LOCATED ON 212, 214, AND 216 WOODBURY AVE, PORTSMOUTH, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009

SSSM SYM.	SSS MAP NAME		HISS SYM.	HYDROLOGIC SOIL GRP.
29	WOODBRIDGE FINE SANDY LOAM		229BH	C
SLOPE PHASE:				
0-8%	B	15-25%	D	
8-15%	C	25%+	E	

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

JAMES P. GOVE 6-21-22 No. 004 CERTIFIED SOIL SCIENTIST STATE OF NEW HAMPSHIRE

CERTIFICATION:

PURSUANT TO RSA 676:18-III AND RSA 672:14
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR SIGNATURE

12/22/22
MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.:21254
Drawing Name: 21254-PLAN.dwg		

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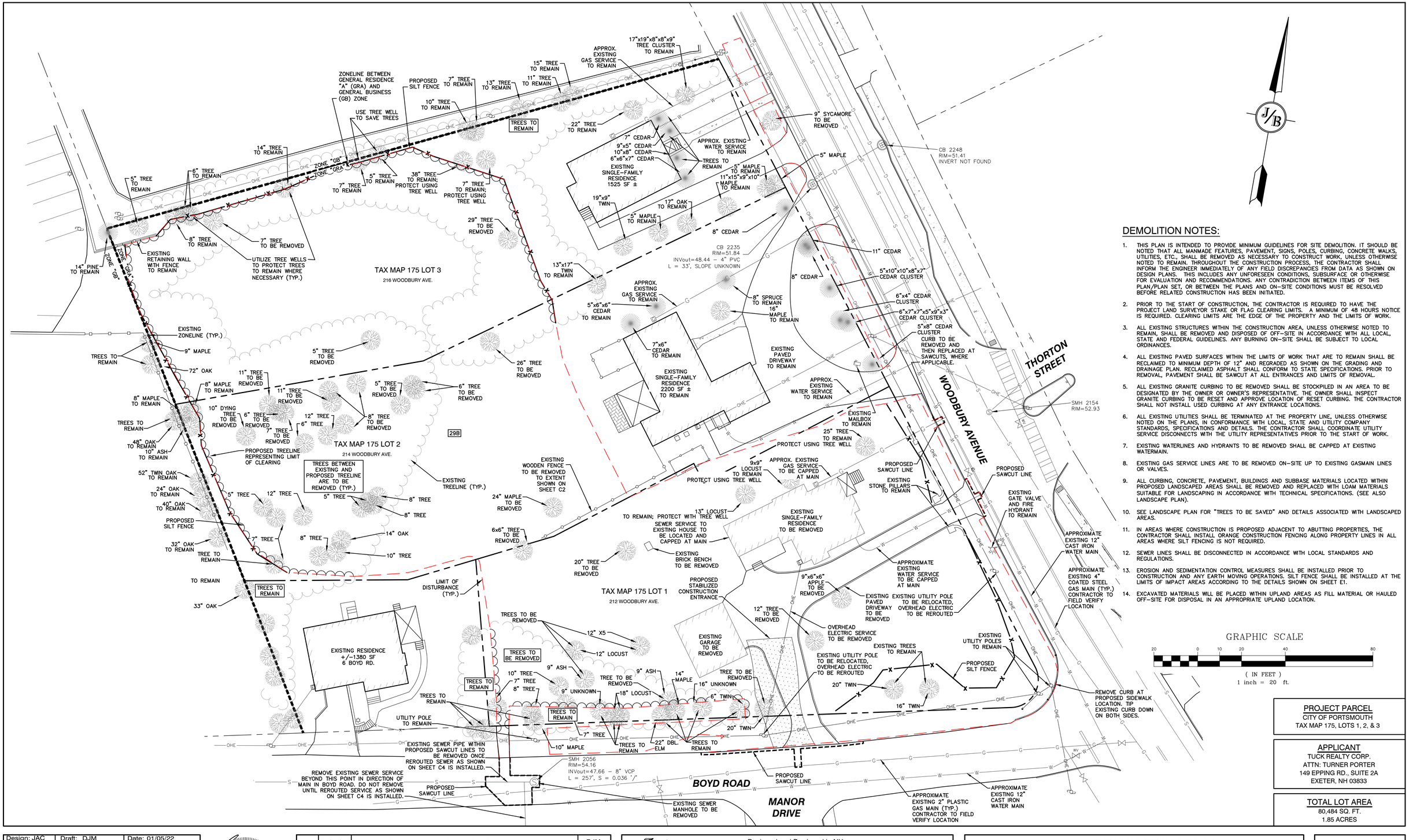
PAIGE S. LIBBEY No.16670 PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 12/22/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN
Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
C1
SHEET 2 OF 23
JBE PROJECT NO. 21254



DEMOLITION NOTES:

1. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR SITE DEMOLITION. IT SHOULD BE NOTED THAT ALL MANMADE FEATURES, PAVEMENT, SIGNS, POLES, CURBING, CONCRETE WALKS, UTILITIES, ETC., SHALL BE REMOVED AS NECESSARY TO CONSTRUCT WORK, UNLESS OTHERWISE NOTED TO REMAIN. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCIES FROM DATA AS SHOWN ON DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
2. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED. CLEARING LIMITS ARE THE EDGE OF THE PROPERTY AND THE LIMITS OF WORK.
3. ALL EXISTING STRUCTURES WITHIN THE CONSTRUCTION AREA, UNLESS OTHERWISE NOTED TO REMAIN, SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES. ANY BURNING ON-SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.
4. ALL EXISTING PAVED SURFACES WITHIN THE LIMITS OF WORK THAT ARE TO REMAIN SHALL BE RECLAIMED TO MINIMUM DEPTH OF 12" AND REGRADED AS SHOWN ON THE GRADING AND DRAINAGE PLAN. RECLAIMED ASPHALT SHALL CONFORM TO STATE SPECIFICATIONS. PRIOR TO REMOVAL, PAVEMENT SHALL BE SAWCUT AT ALL ENTRANCES AND LIMITS OF REMOVAL.
5. ALL EXISTING GRANITE CURBING TO BE REMOVED SHALL BE STOCKPILED IN AN AREA TO BE DESIGNATED BY THE OWNER OR OWNER'S REPRESENTATIVE. THE OWNER SHALL INSPECT GRANITE CURBING TO BE RESET AND APPROVE LOCATION OF RESET CURBING. THE CONTRACTOR SHALL NOT INSTALL USED CURBING AT ANY ENTRANCE LOCATIONS.
6. ALL EXISTING UTILITIES SHALL BE TERMINATED AT THE PROPERTY LINE, UNLESS OTHERWISE NOTED ON THE PLANS, IN CONFORMANCE WITH LOCAL, STATE AND UTILITY COMPANY STANDARDS, SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES PRIOR TO THE START OF WORK.
7. EXISTING WATERLINES AND HYDRANTS TO BE REMOVED SHALL BE CAPPED AT EXISTING WATERMAIN.
8. EXISTING GAS SERVICE LINES ARE TO BE REMOVED ON-SITE UP TO EXISTING GASMAIN LINES OR VALVES.
9. ALL CURBING, CONCRETE, PAVEMENT, BUILDINGS AND SUBBASE MATERIALS LOCATED WITHIN PROPOSED LANDSCAPED AREAS SHALL BE REMOVED AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPING IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS. (SEE ALSO LANDSCAPE PLAN).
10. SEE LANDSCAPE PLAN FOR "TREES TO BE SAVED" AND DETAILS ASSOCIATED WITH LANDSCAPED AREAS.
11. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
12. SEWER LINES SHALL BE DISCONNECTED IN ACCORDANCE WITH LOCAL STANDARDS AND REGULATIONS.
13. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ANY EARTH MOVING OPERATIONS. SILT FENCE SHALL BE INSTALLED AT THE LIMITS OF IMPACT AREAS ACCORDING TO THE DETAILS SHOWN ON SHEET E1.
14. EXCAVATED MATERIALS WILL BE PLACED WITHIN UPLAND AREAS AS FILL MATERIAL OR HAULED OFF-SITE FOR DISPOSAL IN AN APPROPRIATE UPLAND LOCATION.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM
Checked: JAC	Scale: 1"=20'
Date: 01/05/22	Project No.: 21254
Drawing Name: 21254-PLAN.dwg	

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STATE OF NEW HAMPSHIRE · PAIGE S. LIBBEY No.16670 · LICENSED PROFESSIONAL ENGINEER · 10/20/2022

REV.	DATE	REVISION	BY
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603-772-4746
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Plan Name:	DEMOLITION PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
DM-1
SHEET 3 OF 23
JBE PROJECT NO. 21254

PLAN REFERENCES:

1. "PLAN OF LOT, NO. 276 WOODBURY AVE., PORTSMOUTH, N.H." DATED MARCH 1944. PREPARED BY JOHN W. DURGIN. R.C.R.D. 01219.
2. "PLAN OF LAND, PORTSMOUTH, N.H. FOR SPECTRUM ENTERPRISES." DATED APRIL 1966. PREPARED BY JOHN W. DURGIN. R.C.R.D. 1155.
3. "PLAN OF LAND, PORTSMOUTH, N.H. FOR COLONY MOTOR HOTEL, INC." DATED JULY 1, 1980. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 9644.
4. "LOT LINE ADJUSTMENT PLAN FOR JOHN & GLORIA COLLINS IN PORTSMOUTH. NH" DATED OCTOBER 27, 1988. PREPARED BY SEACOAST ENGINEERING ASSOCIATES. R.C.R.D. 18914.
5. "ALTA / ACSM LAND TITLE SURVEY IN PORTSMOUTH, NH, OWNER: JHM PORTSMOUTH, LLC" DATED JULY 16, 2013. PREPARED BY ROBER SURVEY. R.C.R.D. 38205.
6. "PLAN OF LAND, NO. 216 WOODBURY AVE., PORTSMOUTH, N.H." DATED SEPTEMBER 1951. PREPARED BY JOHN W. DURGIN. NOT RECORDED.

ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56
COLBY T. GAMESTER
AMANDA D. GAMESTER
187 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6050 PG 180

TAX MAP 174 LOT 2
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3
DAWN P. MOYLAN REVO INTER VIVOS
55 BOYD RD.
PORTSMOUTH, NH 03801
BK 2969 PG 0654

TAX MAP 174 LOT 4
KAREN A. FOYE
KENNETH FOYE
79 BOYD RD.
PORTSMOUTH, NH 03801
BK 6108 PG 2989

TAX MAP 175 LOT 11
JHM PORTSMOUTH, LLC
440 BEDFORD ST.
LEXINGTON, MA 02420
BK 5444 PG 0334

TAX MAP 175 LOT 4
KUZZINS BOWDEN HOSPITALITY II, LLC
C/O KEYBANK ATTN: SERVICING DEPT
300 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 3355, PG 1325

TAX MAP 175 LOT 9
ALAN H. MOORE
JOAN MOORE
PO BOX 591
PORTSMOUTH, NH 03802
BK 4459, PG 2659

TAX MAP 175 LOT 10
MARTIN L. RYAN
221 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 3526, PG 2011

TAX MAP 175 LOT 13
FREDERICK J. BAILEY III &
JOYCE S. NELSON
4 SHORE ROAD
WOLFEBORO, NH 03894
BK 5500 PG 0334
EXISTING RESIDENCE
+/-1380 SF
6 BOYD RD.

TAX MAP 175 LOT 3
EXISTING LOT AREA:
24,936 SQ. FT.
0.57 AC.
PROPOSED LOT AREA:
7,932 SF
0.18 AC.
EXISTING SINGLE-FAMILY RESIDENCE
1525 SF ±
216 WOODBURY AVE.

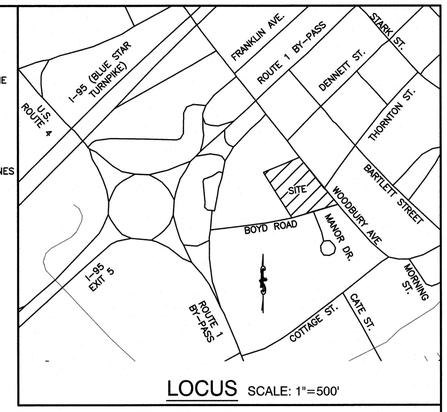
TAX MAP 175 LOT 2
EXISTING LOT AREA:
29,536 SQ. FT.
0.68 AC.
PROPOSED LOT AREA:
12,477 SF
0.29 AC.
EXISTING SINGLE-FAMILY RESIDENCE
2200 SF ±
214 WOODBURY AVE.

TAX MAP 175 LOT 1
EXISTING LOT AREA:
26,012 SQ. FT.
0.60 AC.
PROPOSED LOT AREA:
60,075 SF
1.38 AC.
EXISTING SINGLE-FAMILY RESIDENCE
212 WOODBURY AVE.
EXISTING GARAGE

ZONELINE BETWEEN GENERAL RESIDENCE "A" (GRA) AND GENERAL BUSINESS (GB) ZONE
ZONE "GB"
ZONE "GRA"
EXISTING ZONELINE (TYP.)
IRON ROD TO BE SET (TYP. X11)
IRON ROD TO BE REMOVED
IR FND COLWELL FLUSH
IR FND ROBER SURVEY
1.25" IP FND PINCHED TOP 0.2' DOWN
1.25" IP FND PINCHED TOP 0.3' DOWN
1" IP FND 0.4' DOWN
3" IP FND FLUSH
1.25" IP FND 1.0' EXPOSED LEANING
#5 IR FND 1.0' EXPOSED BENT
1" IP FND 0.1' DOWN
1" IP FND 0.1' EXPOSED
1.25" IP FND 0.3' DOWN
1.25" IP FND 0.2' DOWN
1.25" IP FND 0.4' DOWN
DH FND
20' REAR SETBACK (TYP.)
10' SIDE SETBACK (TYP.)
15' FRONT SETBACK (TYP.)
15' SIDE SETBACK (TYP.)
PROPOSED RELOCATED LOT LINE BETWEEN TAX MAP 175 LOTS 1&3
PROPOSED RELOCATED LOT LINE BETWEEN TAX MAP 175 LOTS 1&2
EXISTING LOT LINE BETWEEN TAX MAP 175, LOT 2, AND TAX MAP 175, LOT 3 TO BE ADJSUTED
EXISTING LOT LINE BETWEEN TAX MAP 175, LOT 1, AND TAX MAP 175, LOT 2 TO BE ADJSUTED
S64°30'15"W 289.89'
196.73'
93.18'
N 11°00'54" W 38.73'
N 37°09'53" W 47.41'
N 54°23'51" E 109.33'
N 15°20'42" W 50.47'
N 36°48'19" W 49.56'
S 52°30'10" W 33.54'
S 62°9'44" W 96.95'
N37°29'50"W 66.07'
N77°29'50"W 102.50'
N37°29'50"W 144.22'
S31°20'06"E 86.33'
S31°20'06"E 86.50'
S79°38'15"W 74.59'
S63°26'08"W 32.37'
S14°38'57"E 76.36'
N77°56'40"E 238.55'
S 23°47' 138.02'
L=25.59'
R=12.70'
Δ=115°26'31"
N20°13'25"E
C=21.47'
WOODBURY AVENUE
THORTON STREET
BOYD ROAD
MANOR DRIVE

GENERAL LEGEND

- PROPERTY LINE
- ABUTTER PROPERTY LINE
- BUILDING SETBACK
- EASEMENT
- TREE LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- OHE — OVERHEAD ELECTRIC LINES
- STONE WALL
- MAJOR CONTOUR
- MINOR CONTOUR
- S — SEWER LINE
- UTILITY POLE



LOCUS SCALE: 1"=500'

SUBDIVISION NOTES:

1. THE INTENT OF THIS PLAN IS TO ADJUST THE LOT LINE BETWEEN TAX MAP 175, LOTS 1, 2, AND 3.
2. ZONING DISTRICT: GENERAL RESIDENTIAL A (GRA)
   LOT AREA MINIMUM = 7,500 S.F.
   MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA
   LOT FRONTAGE MINIMUM = 100'
   LOT DEPTH MINMUM = 70'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 15'
   SIDE SETBACK = 10'
   REAR SETBACK = 20'
   MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF
   MAX. BUILDING COVERAGE = 25%
   MIN. OPEN SPACE = 30%
3. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
4. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
5. IRON RODS WITH SURVEY CAPS TO BE SET AT ALL PROPERTY CORNERS AND ANGLE POINTS, UNLESS OTHERWISE INDICATED. ALL MONUMENTS SET ARE 5/8" IRON RODS WITH ALUMINUM CAPS MARKED "JONES & BEACH ENGINEERS BOUNDARY, DO NOT DISTURB, STRATHAM, N.H." AS SHOWN.
6. NO WETLANDS WERE OBSERVED ON THE SUBJECT PREMISES.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS AND ABUTTING OWNERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSORS OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
11. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

CERTIFICATION:

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE — No. 1030 — MATTHEW J. SALVUCCI — LICENSED LAND SURVEYOR — SIGNATURE

12/12/22
MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

APPROVED - PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM
Checked: JAC	Scale: 1"=20'
Drawing Name: 21254-PLAN.dwg	Date: 01/05/22
	Project No.: 21254

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STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 — PROFESSIONAL ENGINEER — LICENSED — 12/22/2022

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PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LOT LINE ADJUSTMENT PLAN
TAX MAP 175, LOTS 1, 2, & 3

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
A1
SHEET 4 OF 23
JBE PROJECT NO. 21254

CERTIFICATION:

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THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE — No. 1030 — MATTHEW J. SALVUCCI — LICENSED LAND SURVEYOR — SIGNATURE

MATTHEW J. SALVUCCI, LLS 1030 DATE: 12/12/22

ON BEHALF OF JONES & BEACH ENGINEERS, INC.

TAX MAP 175 LOT 4
KUZZINS BOWDEN HOSPITALITY II, LLC
C/O KEYBANK ATTN: SERVICING DEPT
300 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 3355, PG 1325

TAX MAP 175 LOT 9
ALAN H. MOORE
JOAN MOORE
PO BOX 591
PORTSMOUTH, NH 03802
BK 4459, PG 2659

TAX MAP 175 LOT 10
MARTIN L. RYAN
221 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 3526, PG 2011

TAX MAP 175 LOT 3
216 WOODBURY AVE.

TAX MAP 175 LOT 1
212 WOODBURY AVE.

TAX MAP 175 LOT 2
214 WOODBURY AVE.

TAX MAP 175 LOT 11
JHM PORTSMOUTH, LLC
440 BEDFORD ST.
LEXINGTON, MA 02420
BK 5444 PG 0334

TAX MAP 175 LOT 13
FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE ROAD
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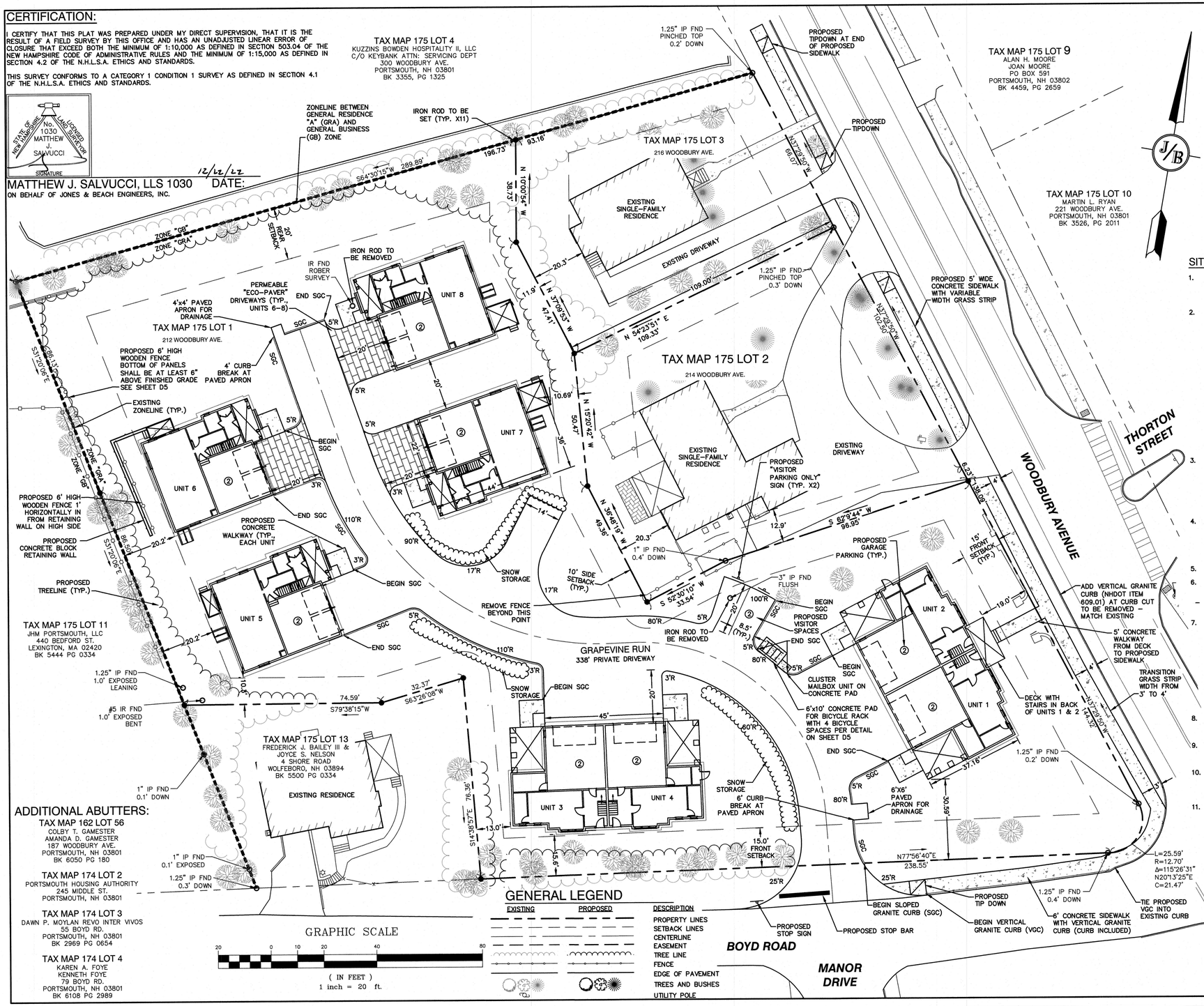
ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56
COLBY T. GAMESTER
AMANDA D. GAMESTER
187 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6050 PG 180

TAX MAP 174 LOT 2
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3
DAWN P. MOYLAN REVO INTER VIVOS
55 BOYD RD.
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KAREN A. FOYE
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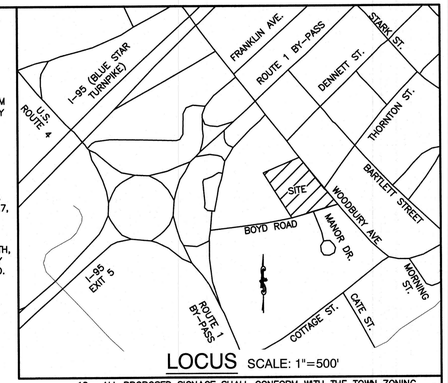
GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GENERAL LEGEND

DESCRIPTION	EXISTING	PROPOSED
PROPERTY LINES		
SETBACK LINES		
CENTERLINE		
EASEMENT		
TREE LINE		
FENCE		
EDGE OF PAVEMENT		
TREES AND BUSHES		
UTILITY POLE		

PLAN REFERENCES:

1. "PLAN OF LOT, NO. 276 WOODBURY AVE., PORTSMOUTH, N.H." DATED MARCH 1944. PREPARED BY JOHN W. DURGIN. R.C.R.D. 01219.
2. "PLAN OF LAND, PORTSMOUTH, N.H. FOR SPECTRUM ENTERPRISES." DATED APRIL 1966. PREPARED BY JOHN W. DURGIN. R.C.R.D. 1155.
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5. "ALTA / ACSM LAND TITLE SURVEY IN PORTSMOUTH, NH, OWNER: JHM PORTSMOUTH, LLC" DATED JULY 16, 2013. PREPARED BY ROBER SURVEY. R.C.R.D. 38205.
6. "PLAN OF LAND, NO. 216 WOODBURY AVE., PORTSMOUTH, N.H." DATED SEPTEMBER 1951. PREPARED BY JOHN W. DURGIN. NOT RECORDED.



LOCUS SCALE: 1"=500'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO REMOVE THE HOUSE AND GARAGE ON LOT 1, ADJUST THE LOT LINE BETWEEN LOT 1 WITH LOTS 2 & 3, AND PROPOSE AN 8-UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT ON LOT 1 WITH ACCESS FROM BOYD ROAD.
2. ZONING DISTRICT: GENERAL RESIDENTIAL A (GRA)
   LOT AREA MINIMUM = 7,500 S.F.
   MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA
   PROPOSED ON LOT 1 = 60,075 S.F. / 8 = 1 UNIT PER 7,509 S.F PROVIDED
   LOT FRONTAGE MINIMUM = 100'
   LOT DEPTH MINIMUM = 70'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 15'
   SIDE SETBACK = 10'
   REAR SETBACK = 20'
   MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF
   MAX. BUILDING COVERAGE = 25%
   PROPOSED, LOT 1 = 21.1%
   PROPOSED, LOT 2 = 17.6%
   PROPOSED, LOT 3 = 19.3%
   MAX. OPEN SPACE = 30%
   PROPOSED, LOT 1 = 58.7%
   PROPOSED, LOT 2 = 58.1%
   PROPOSED, LOT 3 = 68.2%
3. PARKING CALCULATIONS
   UNITS OVER 750 S.F. = 1.3 SPACES REQUIRED PER UNIT PLUS 1 VISITOR SPACE PER EVERY 5 DWELLING UNITS OR PORTION THEREOF
   8 UNITS * 1.3 SPACES REQUIRED = 11 SPACES REQUIRED, 16 SPACES PROVIDED IN GARAGES
   8 UNITS; 2 VISITOR SPACES REQUIRED, 2 VISITOR SPACES PROVIDED
   TOTAL: 13 SPACES REQUIRED, 18 SPACES PROVIDED.
4. LOT 1 CALCULATIONS
   TOTAL BUILDING FOOTPRINT = 12,700 SF
   TOTAL IMPERVIOUS PAVED AREA = 10,900 SF
   TOTAL IMPERVIOUS ON LOT 1 = 23,600 S.F. = 39.2% OF LOT 1
   PERVIOUS PAVERS = 1,350 S.F. = 2.2% OF LOT 1
   TOTAL OPEN SPACE ON LOT 1 = 100% - 39.2% - 2.2% = 58.6%
5. NHDES SEWER CONNECTION PERMIT NO. , DATED .
6. AT ITS MEETING ON APRIL 19, 2022, THE CITY OF PORTSMOUTH ZONING BOARD OF ADJUSTMENT VOTED TO GRANT A VARIANCE FROM THE FOLLOWING REQUIREMENT:
   - SECTION 10.513 - TO ALLOW MORE THAN ONE FREE-STANDING DWELLING ON A SINGLE LOT WITHIN THE GRA ZONE
7. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
8. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
9. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
10. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THIS DOCUMENT IS TO BE KEPT ONSITE AT ALL TIMES AND UPDATED AS REQUIRED.
11. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
12. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
13. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON-REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED.
14. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
15. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.
16. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
17. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
18. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
19. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
20. 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 THE SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
21. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
22. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
23. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
24. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.
25. AN ACCESS EASEMENT SHALL BE GRANTED TO THE CITY OF PORTSMOUTH FOR ACCESS AND LEAK DETECTION OF THE WATER MAIN, SHUTOFFS, AND METERS ON THE PROPERTY. EASEMENT DESCRIPTION MUST BE APPROVED BY THE CITY'S LEGAL DEPARTMENT AND ACCEPTED BY THE CITY COUNCIL.
26. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
27. ON-SITE SALT STORAGE IS PROHIBITED WITHIN 250' OF AN INLAND WETLAND UNLESS COMPLETELY COVERED AND CONTAINED IN A STRUCTURE.
28. AN EASEMENT SHALL BE GRANTED TO THE CITY OF PORTSMOUTH FOR VALVE ACCESS AND LEAK DETECTION OF THE WATER MAIN, SHUTOFFS, AND METERS ON THE PROPERTY. EASEMENT DESCRIPTION MUST BE APPROVED BY THE CITY'S LEGAL DEPARTMENT AND ACCEPTED BY THE CITY COUNCIL.
29. BUILDINGS SHALL BE CONSTRUCTED IN THE FOOTPRINTS SHOWN HEREON. NOTIFY THE PROJECT ENGINEER IF THE PROPOSED ROOF LAYOUT, GUTTERS, AND/OR ROOF LINES ARE MODIFIED AFTER FINAL PLANS ARE SUBMITTED. UNITS 1-4 WILL NOT HAVE BASEMENTS, SUMP PUMPS, OR FOUNDATION DRAINS.
30. AREA OF DISTURBANCE = 58,000 S.F. (ON AND OFF SITE)

APPROVED - PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM
Checked: JAC	Scale: 1"=20'
Drawing Name: 21254-PLAN.dwg	Project No.: 21254

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 — LICENSED PROFESSIONAL ENGINEER — 10/20/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

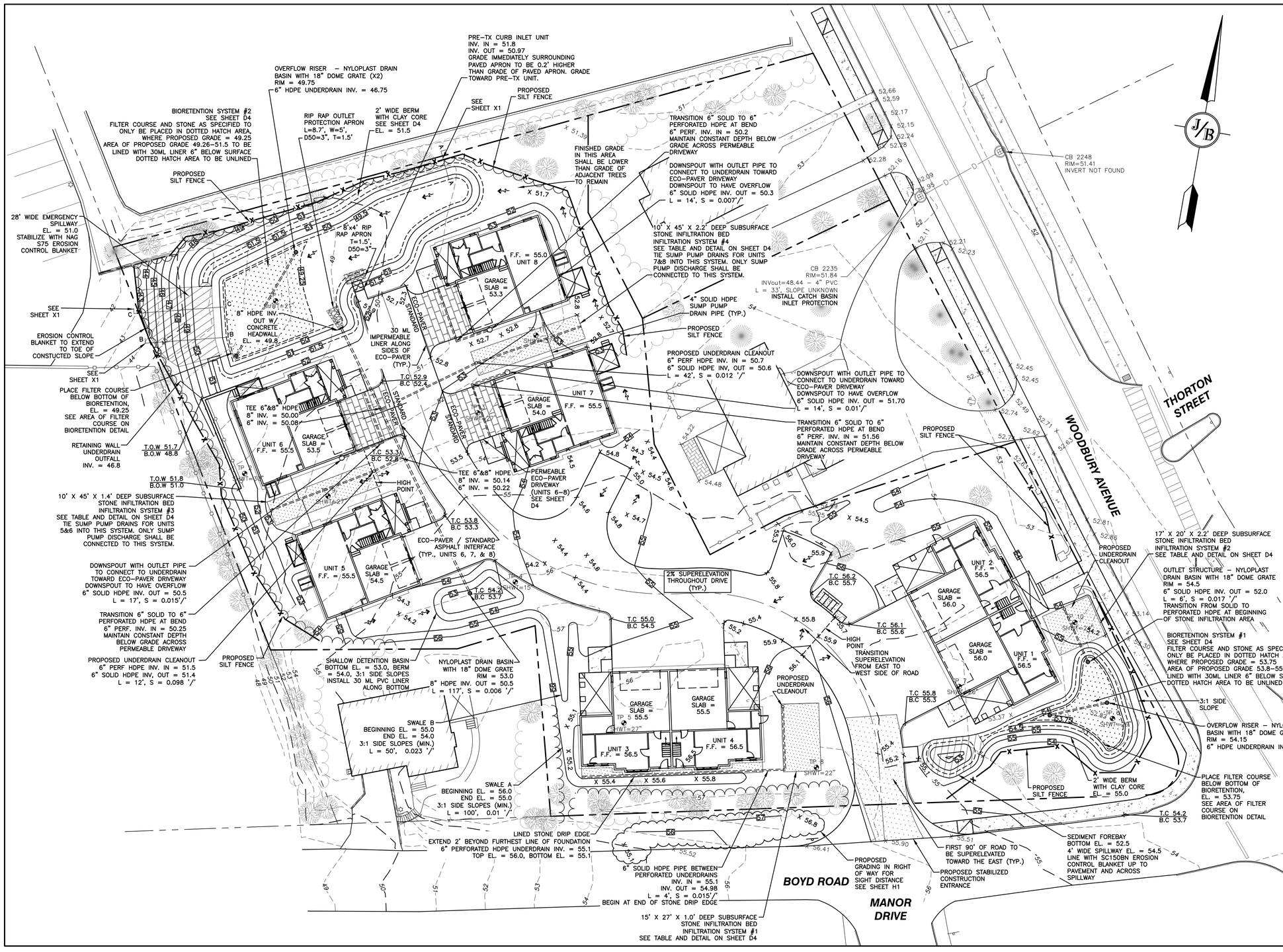
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: SITE PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owners of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
C2
SHEET 5 OF 23
JBE PROJECT NO. 21254



GRADING AND DRAINAGE NOTES:

1. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888–DIG–SAFE (888–344–7233).
2. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
3. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
5. ALL ROOF DRAINS FROM BUILDING SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT THE END. ALL EXTERIOR ROOF DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW DEVICES.
6. ALL SWALES AND BIORETENTION SYSTEMS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
7. ALL SLOPES SHALL BE 3:1 OR FLATTER AS DIRECTED.
8. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 3' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
9. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE DETAIL SHEETS FOR DRAINAGE DETAILS.
10. ALL DRAINAGE STRUCTURES AND STORMWATER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
11. IMMEDIATELY APPLY AND COMPACT STONE BASE FOR BUILDING PAD TO +/–½" PRIOR TO EXCAVATING INTERIOR AND PERIMETER FOOTINGS.
12. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
13. ALL DRAINAGE PIPE SHALL BE NON–PERFORATED ADS N–12 OR APPROVED EQUAL.
14. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
15. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
16. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING AND ANYTIME CONSTRUCTION STOPS FOR LONGER THAN 3 DAYS.
17. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.25" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
18. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
19. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
20. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
21. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
22. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
23. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
24. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON–SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
25. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.
26. POST–CONSTRUCTION EFFECTIVE IMPERVIOUS AREA ON TAX MAP 175, LOT 1, 2, & 3 = 7,600 S.F. (9.4% OF PARCELS).
27. UNITS 5–8 SHALL HAVE BASEMENTS WITH SUMP PUMPS. UNITS 1–4 SHALL NOT HAVE BASEMENTS, SUMP PUMPS, OR FOUNDATION DRAINS.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM
Checked: JAC	Scale: 1"=20'
Drawing Name: 21254-PLAN.dwg	Date: 01/05/22
	Project No.: 21254

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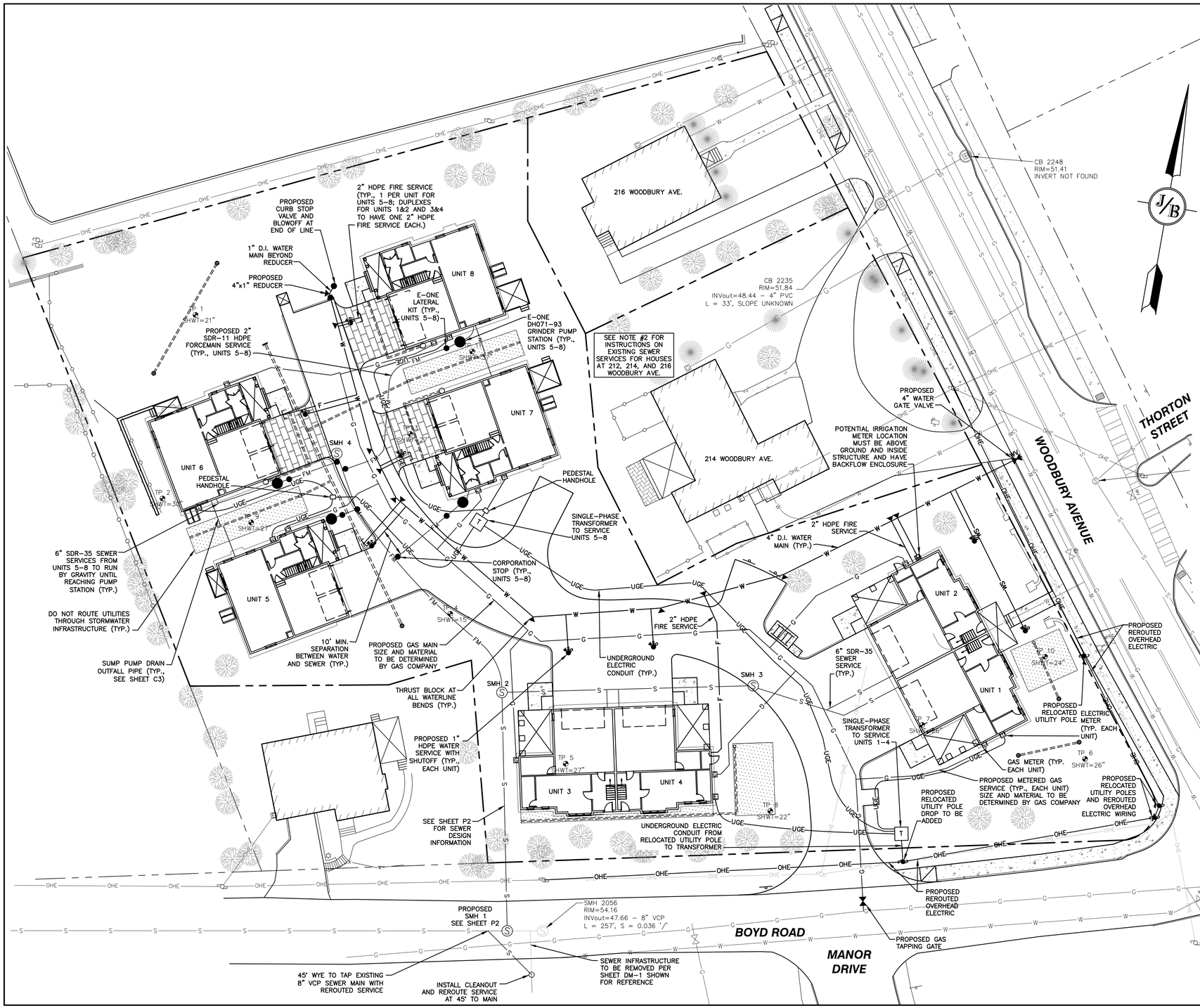
STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER – 12/20/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

Designed and Produced in NH
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PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	GRADING AND DRAINAGE PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
C3
SHEET 6 OF 23
JBE PROJECT NO. 21254



UTILITY NOTES:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
2. CUT & CAP SEWER SERVICE FOR 212 WOODBURY AVENUE TO PROPERTY LINE. SEWER SERVICES FOR 214 AND 216 WOODBURY AVENUE ARE TO REMAIN. NOTIFY PROJECT ENGINEER IF EITHER OF THE TWO SEWER SERVICES TO REMAIN CONFLICT WITH THE PROPOSED DEVELOPMENT.
3. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
4. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, GAS, WATER, AND SEWER).
5. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT–RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
6. ALL CONSTRUCTION SHALL CONFORM TO THE TOWN STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS A WAIVER IS OTHERWISE OBTAINED.
7. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS
8. BUILDING TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
10. AS–BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
11. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
12. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA. CLEAR OPENING. THE WORD "SEWER" OR "DRAIN" SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
13. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
14. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
15. SANITARY SEWER FLOW CALCULATIONS:
    8 – THREE BEDROOM UNITS @ 150 GPD/BEDROOM = 3,600 GPD
16. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
17. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
18. ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
19. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICH EVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
20. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
21. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND FIRE HYDRANTS.
22. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
23. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
24. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHALL BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
25. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
26. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
27. ALL GRAVITY SEWER PIPE, MANHOLES, AND FORCE MAINS SHALL BE TESTED ACCORDING TO NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER TREATMENT FACILITIES, CHAPTER ENV–WQ 700. ADOPTED ON 10–15–14.
28. ENV–WQ 704.06 GRAVITY SEWER PIPE TESTING: GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY USE OF LOW–PRESSURE AIR TESTS CONFORMING WITH ASTM F1417–92(2005) OR UNI–BELL PVC PIPE ASSOCIATION UNI–B–6. LINES SHALL BE CLEANED AND VISUALLY INSPECTED AND TRUE TO LINE AND GRADE. DEFLECTION TESTS SHALL TAKE PLACE AFTER 30 DAYS FOLLOWING INSTALLATION AND 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.
29. ENV–WQ 704.17 SEWER MANHOLE TESTING: SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PRIOR TO BACKFILLING AND PLACEMENT OF SHELVES AND INVERTS.
30. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES.
31. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS–COUNTRY LOCATIONS. PROVIDE TWO–INCHES OF R–10 FOAM BOARD INSULATION 2–FOOT WIDE TO BE INSTALLED 6–INCHES OVER SEWER PIPE IN AREAS WHERE DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
32. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY THE DEPARTMENT OF PUBLIC WORKS.
33. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
38. AN AS–BUILT PLAN OF THE WATER LINE IS TO BE PREPARED AND SUBMITTED TO THE CITY OF PORTSMOUTH WATER DEPARTMENT.
39. WATER LINE TO BE CONSTRUCTED PER CITY OF PORTSMOUTH SPECIFICATIONS.
40. SHOP DRAWINGS TO BE SUBMITTED TO CITY OF PORTSMOUTH FOR REVIEW AND APPROVAL.
41. NEW DUCTILE IRON WATER LINE SHALL BE WRAPPED WITH A WATER TIGHT POLYETHYLENE WRAPPING FOR THE FULL LENGTH. ALL WATER LINE JOINTS SHALL HAVE THREE (3) BRASS WEDGES PER JOINT. CONTRACTOR SHALL CONTACT CITY OF PORTSMOUTH WATER DEPARTMENT (JIM TOW AT 603–766–1439) PRIOR TO WATER LINE INSTALLATION.
42. IF IRRIGATION IS TO BE USED, THE PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY THE PORTSMOUTH CITY PLANNER, CITY ENGINEER, AND THE WATER DEPARTMENT PRIOR TO INSTALLATION.
43. DISINFECTION OF WATER MAINS SHALL BE CARRIED OUT IN STRICT ACCORDANCE WITH AWWA STANDARD C651, LATEST EDITION. THE BASIC PROCEDURE TO BE FOLLOWED FOR DISINFECTING WATER MAINS IS AS FOLLOWS:
    a. PREVENT CONTAMINATING MATERIALS FROM ENTERING THE WATER MAIN DURING STORAGE, CONSTRUCTION, OR REPAIR.
    b. REMOVE, BY FLUSHING OR OTHER MEANS, THOSE MATERIALS THAT MAY HAVE ENTERED THE WATER MAINS.
    c. CHLORINATE ANY RESIDUAL CONTAMINATION THAT MAY REMAIN, AND FLUSH THE CHLORINATED WATER FROM THE MAIN.
    d. PROTECT THE EXISTING DISTRIBUTION SYSTEM FROM BACKFLOW DUE TO HYDROSTATIC PRESSURE TEST AND DISINFECTION PROCEDURES.
    e. DETERMINE THE BACTERIOLOGICAL QUALITY BY LABORATORY TEST AFTER DISINFECTION.
    f. MAKE FINAL CONNECTION OF THE APPROVED NEW WATER MAIN TO THE ACTIVE DISTRIBUTION SYSTEM

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.:21254
Drawing Name: 21254-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER – 12/20/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

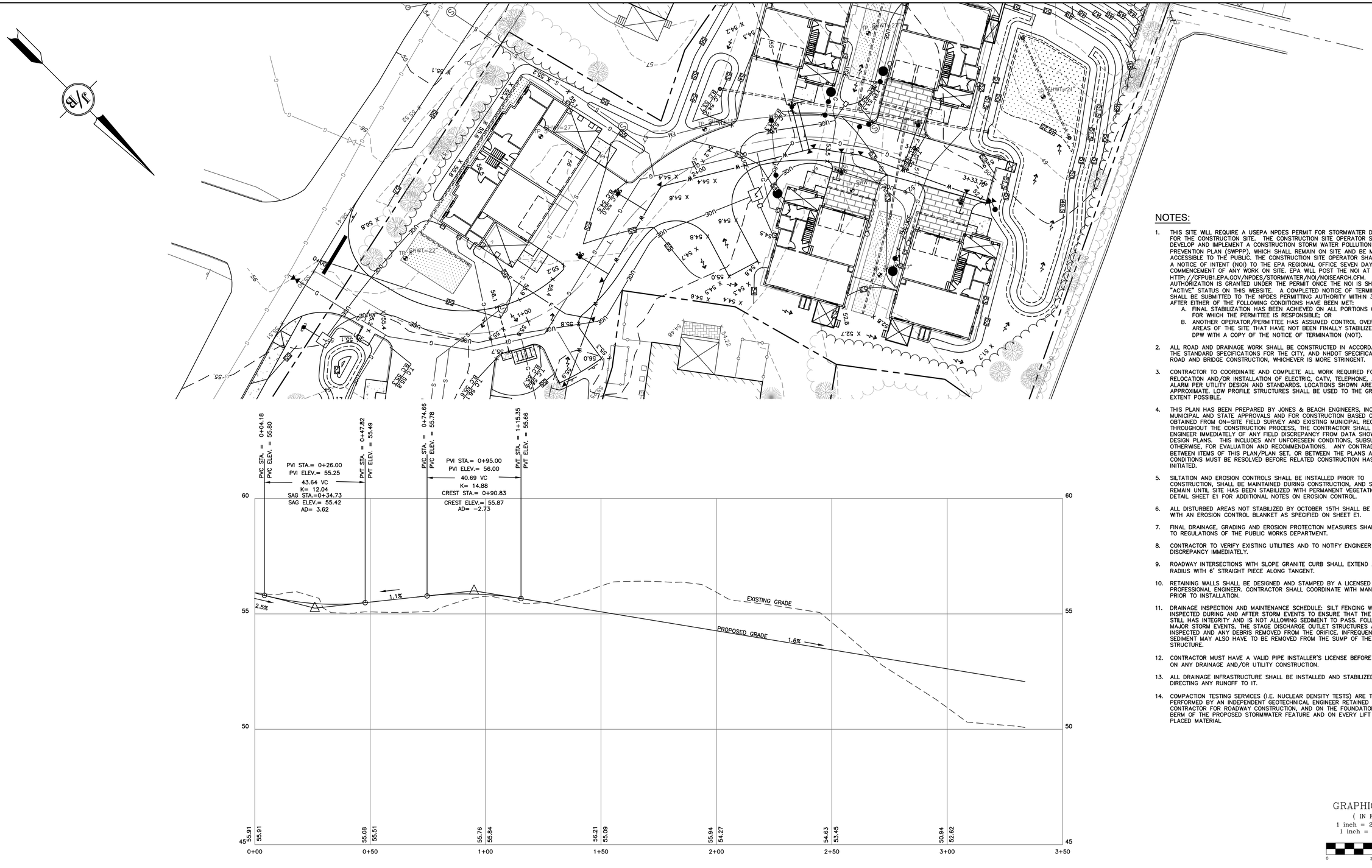
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: UTILITY PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
C4
SHEET 7 OF 23
JBE PROJECT NO. 21254



NOTES:

1. THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE CONSTRUCTION SITE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND BE MADE ACCESSIBLE TO THE PUBLIC. THE CONSTRUCTION SITE OPERATOR SHALL SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA REGIONAL OFFICE SEVEN DAYS PRIOR TO COMMENCEMENT OF ANY WORK ON SITE. EPA WILL POST THE NOI AT HTTP://CFPUB1.EPA.GOV/NPDES/STORMWATER/NOI/NOISEARCH.CFM. AUTHORIZATION IS GRANTED UNDER THE PERMIT ONCE THE NOI IS SHOWN IN "ACTIVE" STATUS ON THIS WEBSITE. A COMPLETED NOTICE OF TERMINATION SHALL BE SUBMITTED TO THE NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET:
   A. FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR
   B. ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED. PROVIDE DPW WITH A COPY OF THE NOTICE OF TERMINATION (NOT).
2. ALL ROAD AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR THE CITY, AND NHDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
3. CONTRACTOR TO COORDINATE AND COMPLETE ALL WORK REQUIRED FOR THE RELOCATION AND/OR INSTALLATION OF ELECTRIC, CATV, TELEPHONE, AND FIRE ALARM PER UTILITY DESIGN AND STANDARDS. LOCATIONS SHOWN ARE APPROXIMATE. LOW PROFILE STRUCTURES SHALL BE USED TO THE GREATEST EXTENT POSSIBLE.
4. THIS PLAN HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC. FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA SHOWN ON THE DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
5. SILTATION AND EROSION CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION, SHALL BE MAINTAINED DURING CONSTRUCTION, AND SHALL REMAIN UNTIL SITE HAS BEEN STABILIZED WITH PERMANENT VEGETATION. SEE DETAIL SHEET E1 FOR ADDITIONAL NOTES ON EROSION CONTROL.
6. ALL DISTURBED AREAS NOT STABILIZED BY OCTOBER 15TH SHALL BE COVERED WITH AN EROSION CONTROL BLANKET AS SPECIFIED ON SHEET E1.
7. FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.
8. CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
9. ROADWAY INTERSECTIONS WITH SLOPE GRANITE CURB SHALL EXTEND AROUND RADIUS WITH 6' STRAIGHT PIECE ALONG TANGENT.
10. RETAINING WALLS SHALL BE DESIGNED AND STAMPED BY A LICENSED PROFESSIONAL ENGINEER. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER PRIOR TO INSTALLATION.
11. DRAINAGE INSPECTION AND MAINTENANCE SCHEDULE: SILT FENCING WILL BE INSPECTED DURING AND AFTER STORM EVENTS TO ENSURE THAT THE FENCE STILL HAS INTEGRITY AND IS NOT ALLOWING SEDIMENT TO PASS. FOLLOWING MAJOR STORM EVENTS, THE STAGE DISCHARGE OUTLET STRUCTURES ARE TO BE INSPECTED AND ANY DEBRIS REMOVED FROM THE ORIFICE. INFREQUENTLY, SEDIMENT MAY ALSO HAVE TO BE REMOVED FROM THE SUMP OF THE STRUCTURE.
12. CONTRACTOR MUST HAVE A VALID PIPE INSTALLER'S LICENSE BEFORE WORKING ON ANY DRAINAGE AND/OR UTILITY CONSTRUCTION.
13. ALL DRAINAGE INFRASTRUCTURE SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING ANY RUNOFF TO IT.
14. COMPACTION TESTING SERVICES (I.E. NUCLEAR DENSITY TESTS) ARE TO BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR FOR ROADWAY CONSTRUCTION, AND ON THE FOUNDATION OF THE BERM OF THE PROPOSED STORMWATER FEATURE AND ON EVERY LIFT OF NEWLY PLACED MATERIAL

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.
0 20 40
4 2 0

Design: JAC	Draft: DJM
Checked: JAC	Scale: 1"=20'
Drawing Name: 21254-PLAN.dwg	

Date: 01/05/22
Project No.: 21254

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED PROFESSIONAL ENGINEER
12/20/2022

REV.	DATE	REVISION	BY
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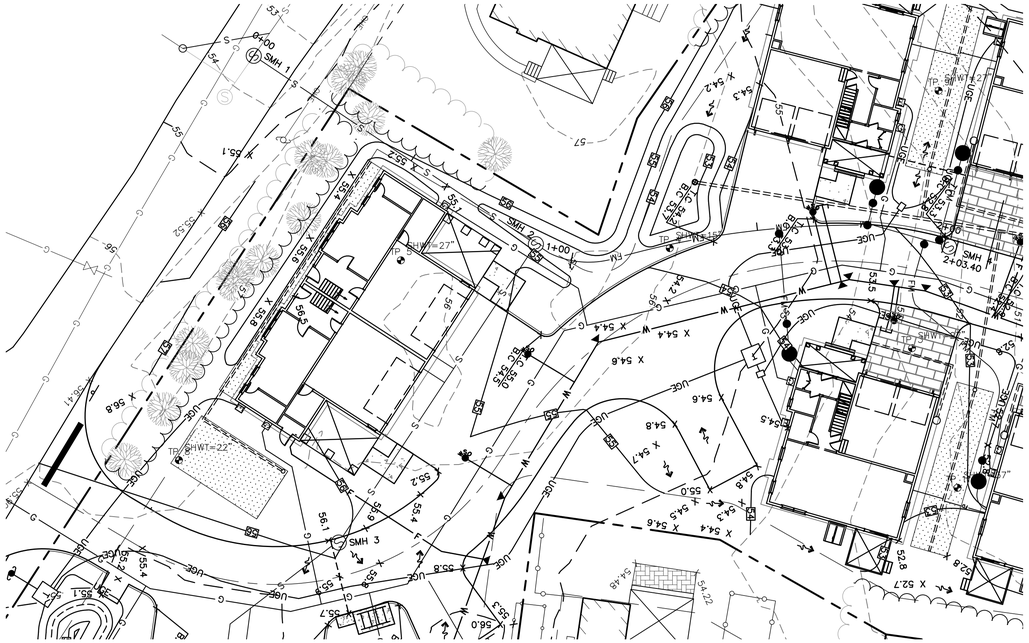
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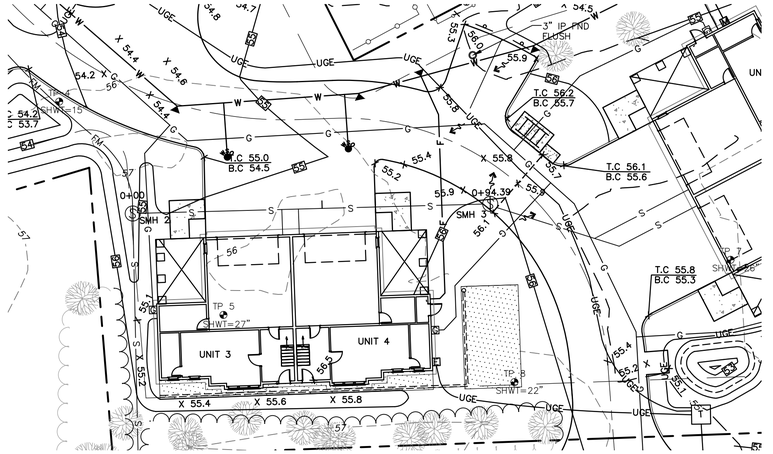
Plan Name: PLAN AND ROAD PROFILE

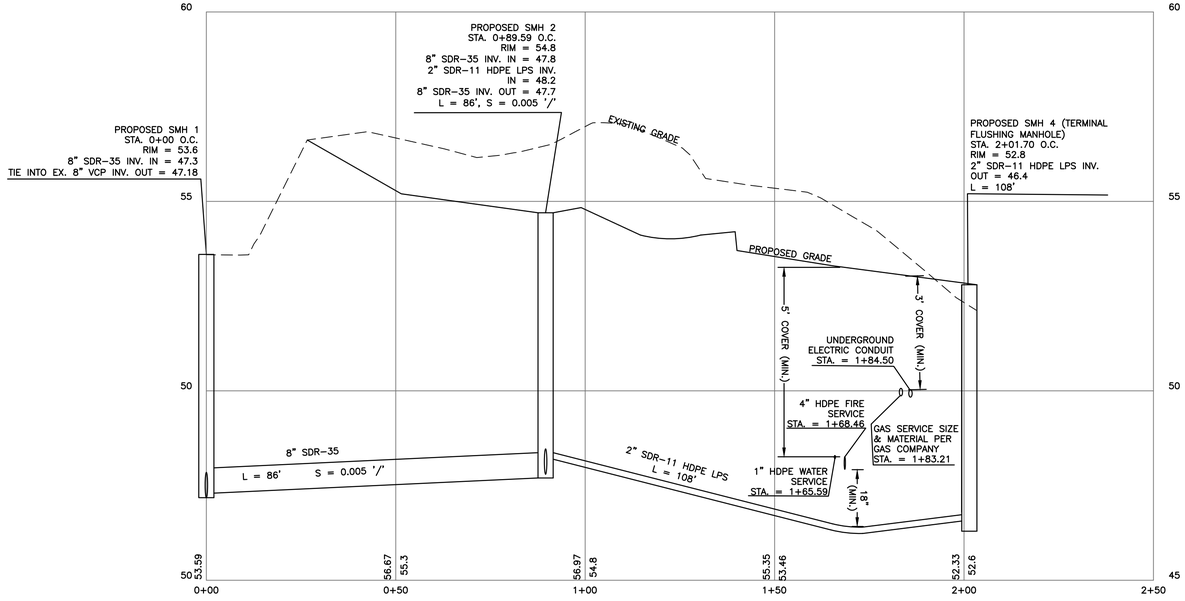
Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

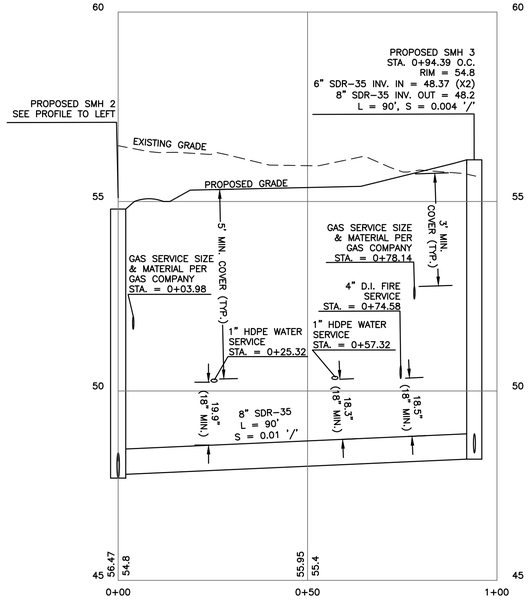
DRAWING No.
P1
SHEET 8 OF 23
JBE PROJECT NO. 21254







MAIN SEWER THROUGH SITE



SEWER MAIN SERVICING UNITS 1-2

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft. Horiz.
1 inch = 2 ft. Vert.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY No.16670
PROFESSIONAL ENGINEER
12/19/2022

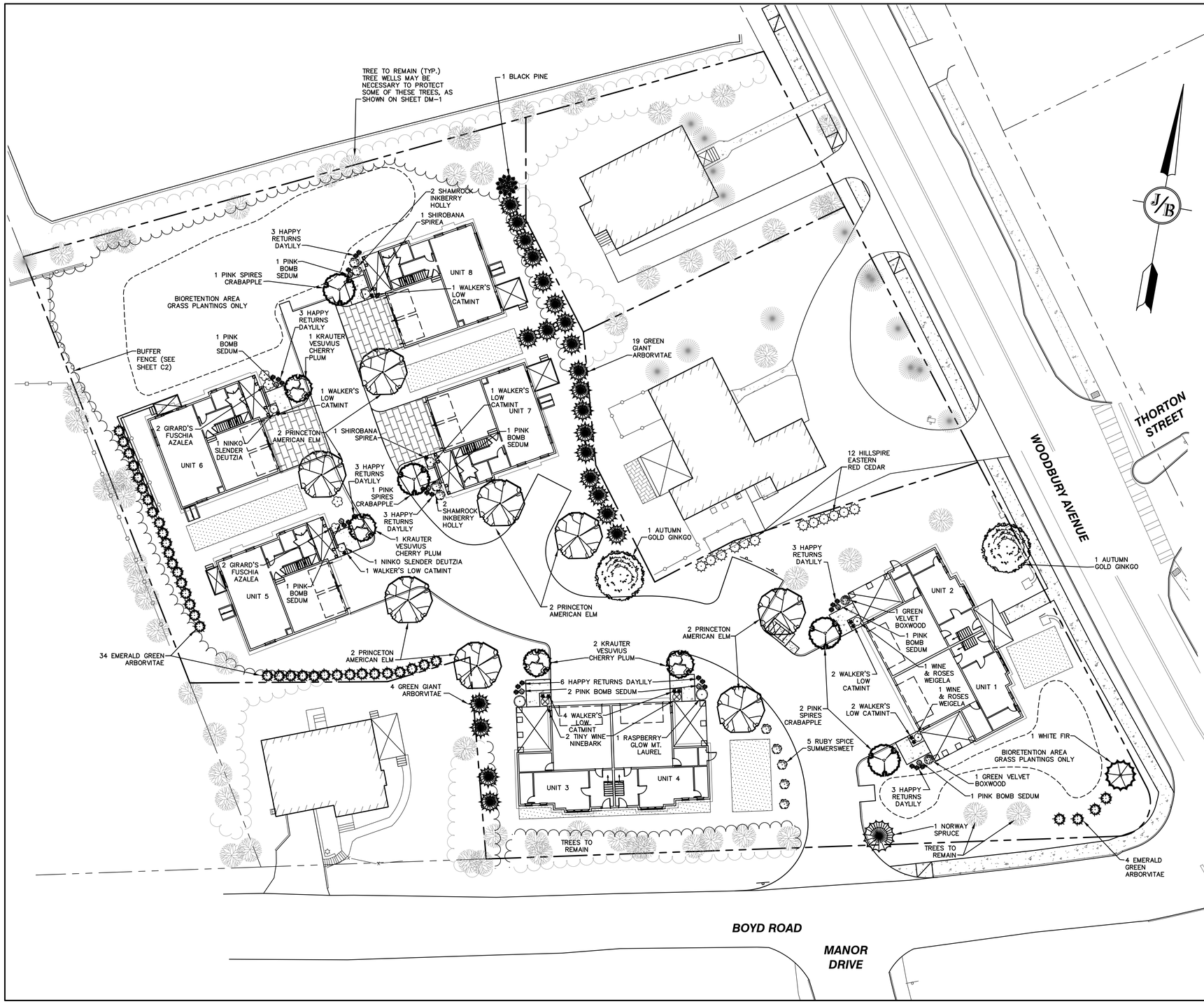
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Designed and Produced in NH

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85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	PLAN AND SEWER PROFILE
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
P2
SHEET 9 OF 23
JBE PROJECT NO. 21254



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. 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 FOR CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
5. 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.
6. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
7. 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.
8. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
9. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
10. THE CONTRACTOR SHALL REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC. FROM ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE. GRASS SEED OR PINE BARK MULCH SHALL BE APPLIED AS DEPICTED ON PLANS.
11. FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
12. ALL LANDSCAPING SHALL MEET THE CITY OF PORTSMOUTH STANDARDS AND REGULATIONS.
13. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. 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.
14. ALL MULCH AREAS SHALL RECEIVE A 3" LAYER OF SHREDDED PINE BARK MULCH OVER A 10 MIL WEED MAT EQUAL TO "WEEDBLOCK" BY EASY GARDENER OR DEWITT WEED BARRIER.
15. ALL LANDSCAPED AREAS SHALL HAVE SELECT MATERIALS REMOVED TO A DEPTH OF AT LEAST 12" BELOW FINISH GRADE. THE RESULTING VOID IS TO BE FILLED WITH A MINIMUM OF 9" HIGH-QUALITY SCREENED LOAM AMENDED WITH 3" OF AGED ORGANIC COMPOST.
16. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
17. IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
18. THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
19. ALL REQUIRED PLANT MATERIALS SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL REQUIRED FENCES AND WALLS SHALL BE MAINTAINED IN GOOD REPAIR.
20. THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE, AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED, AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.
21. SEE TYPICAL PLANTING DETAILS ON SHEET D5.
22. IF TREES SCHEDULED TO REMAIN NEED TO BE REMOVED OR BECOME UNHEALTHY, ADDITIONAL TREES WILL NEED TO BE PLANTED TO THE SATISFACTION OF THE PLANNING DEPARTMENT.
23. NO LOAM OR OTHER TOPSOIL SHALL BE REMOVED FROM THE SITE AS PART OF SITE DEVELOPMENT. TOPSOIL SHALL BE APPROPRIATELY STOCKPILED AND STABILIZED FOR REDISTRIBUTION WITHIN NEW PLANTING AREAS.

Quantity	Botanical Name	Common Name	Size
	TREES		
1	Abies concolor	WHITE FIR	7-8 FT. HT.
2	Ginkgo biloba 'Autumn Gold'	AUTUMN GOLD GINKGO	3" CALIPER
12	Juniperus virginiana 'Hillspire'	HILLSPIRE EASTERN RED CEDAR	7-8 FT. HT.
4	Malus x 'Pink Spires'	PINK SPIRES CRABAPPLE	2" CALIPER
1	Picea abies	NORWAY SPRUCE	8-9 FT. HT.
1	Pinus nigra	BLACK PINE	7-8 FT. HT.
4	Prunus cerasifera 'Krauter Vesuvius'	KRAUTER VESUVIUS CHERRY PLUM	2" CALIPER
38	Thuja occidentalis 'Smaragd Emerald'	EMERALD GREEN ARBORVITAE	5-6 FT. HT.
23	Thuja plicata 'Green Giant'	GREEN GIANT ARBORVITAE	7-8 FT. HT.
8	Ulmus americana 'Princeton'	PRINCETON AMERICAN ELM	3" CALIPER
	SHRUBS		
4	Azalea 'Girard's Fuchsia'	GIRARD'S FUCHSIA AZALEA	5 GALLON
2	Buxus 'Green Velvet'	GREEN VELVET BOXWOOD	5 GALLON
2	Deutzia gracilis 'Nikko'	NIKKO SLENDER DEUTZIA	3 GALLON
4	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	5 GALLON
2	Kalmia latifolia 'Raspberry Glow'	RASPBERRY GLOW MT LAUREL	5 GALLON
2	Physocarpus opulifolius 'SMNPOTW'	TINY WINE NINEBARK	3 GALLON
2	Spiraea japonica 'Shirobana'	SHIROBANA SPIREA	3 GALLON
5	Clethra alnifolia 'Ruby Spice'	RUBY SPICE SUMMERSWEET	3 GALLON
2	Weigela florida 'Alexandra'	WINE & ROSES WEIGELA	3 GALLON
	PERENNIALS		
24	Hemerocallis 'Happy Returns'	HAPPY RETURNS DAYLILY	1 GALLON
12	Nepeta x faassenii 'Walker's Low'	WALKER'S LOW CATMINT	1 GALLON
8	Sedum 'Pink Bomb'	PINK BOMB SEDUM	1 GALLON

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LANDSCAPE PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
L1
SHEET 10 OF 23
JBE PROJECT NO. 21254



Calvin Wall

TMSLIGHTING
ESTABLISHED 1923



Features

- Provides excellent coverage and uniformity with cut-off
- Practical and aesthetic options for application and design flexibility
- Weatherproof construction to withstand the elements
- Quality components combined with the most current technology for high efficiency and reduced lighting costs

Applications

The Calvin wall-mount luminaire is ideal for illuminating areas where localized distribution is necessary, such as doorways and entrances, laneways, patios and could provide adequate night time security lighting. It lends itself to commercial, and industrial applications that could benefit from materials and maintenance cost reductions. Calvin could either augment the existing lighting, or illuminate a small to medium-sized area.

Calvin is also available as a pendant-style model.

Construction

High grade spun aluminum, brushed solid copper, or brushed 316L stainless steel reflector, with stainless steel mounting hardware, for indoor and outdoor applications.

Lamp

Operates with Cree™ LED (19W max.), compact fluorescent (42W max.), metal halide (100W max.) or incandescent (150W max.). Specify 3000K, 3500K or 4000K CCT for LED systems. A dimmable, screw-type, 17W LED lamp is also available (PAR 38, E26 base, 120V, 4000K CCT).

Note: LED systems are available with 120-277V supply voltage only.

LED modules do not require a socket, and are wired directly to the integral driver.

Incandescent and metal halide systems, and those using the 17W LED PAR 38 lamp, use a medium base socket (E26).

Diffuser

Globe: clear and prismatic, elongated, glass globes are available.

Lens: the clear, flat lens provides slight diffusion, and protects any components located in the reflector.

Note: G3 is used with 100IN, 32CF, and 15LED max.

Only prismatic globes are compatible with LED systems.

Globes are not available with the 17W LED PAR 38 lamps.

Option

Wire Guard: a steel, chrome-plated wire guard is available for lamp protection against light projectiles, wildlife, and serves as a vandal deterrent.

Ballast/LED Driver

Ballasts are efficient with a high power factor greater than 90%, and quiet with an "A" sound rating.

The LED source is controlled by an advanced electronic driver that delivers consistent power.

Ballast and LED drivers are electronic, and available for integral and remote mounting, indoor or outdoor.

IP23

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
⊖	8	W	Single	2W-O-15LED-30K-120-WM-CXX / WALL MTD 9' AFG

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LIGHTING AND ELECTRICAL NOTES:

1. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER CITY REGULATIONS.
2. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
3. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
4. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
5. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
6. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03108. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER – 12/20/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

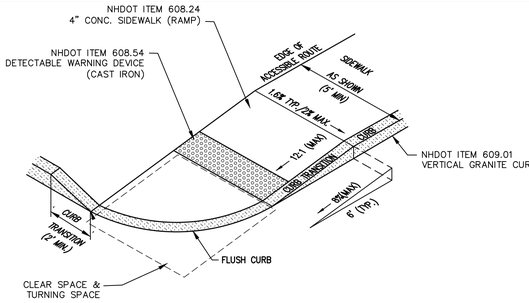
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LIGHTING PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

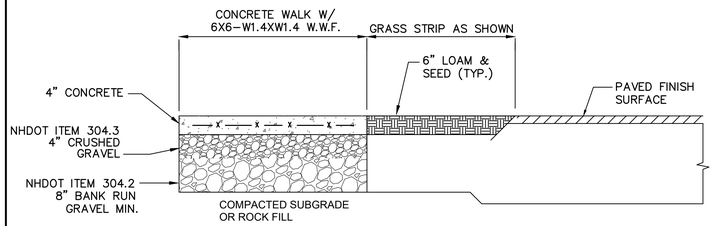
DRAWING No.
L2
SHEET 11 OF 23
JBE PROJECT NO. 21254



NOTES:
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8.3%.
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.
8. WHERE A CHANGE IN DIRECTION IS REQUIRED TO UTILIZE A CURB RAMP, A TURNING SPACE SHALL BE PROVIDED AT THE BASE AND/OR THE TOP OF THE CURB RAMP. TURNING SPACES SHALL BE PERMITTED TO OVERLAP CLEAR SPACES.
9. TURNING SPACE MAXIMUM CROSS SLOPE IS 2% IN ANY DIRECTION.
10. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4'X4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN CROSSWALK, AND OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE. THE CLEAR SPACE MAY OVERLAP TURNING SPACES, DETECTABLE WARNING SURFACES AND DROP CURBS.

ACCESSIBLE CURB RAMP (NHDOT TYPE 1)

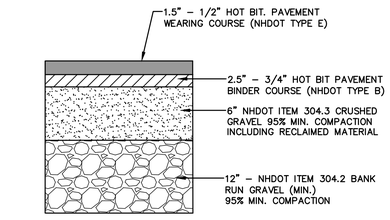
NOT TO SCALE



NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT EVERY 16' ALONG SIDEWALK.

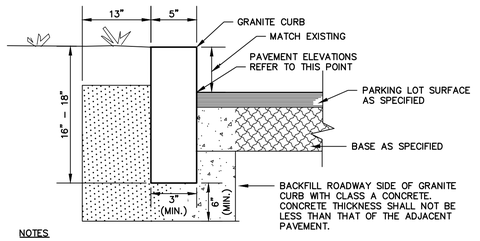
CONCRETE SIDEWALK WITH GRASS STRIP

NOT TO SCALE



TYPICAL BITUMINOUS PAVEMENT

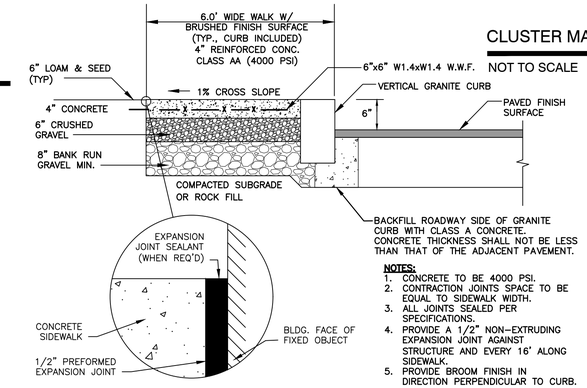
NOT TO SCALE



NOTES
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.
3. PROPOSED VERTICAL GRANITE CURB ALONG WOODBURY AVE. AT CURB CUT TO BE REMOVED SHALL MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 609.

VERTICAL GRANITE CURB

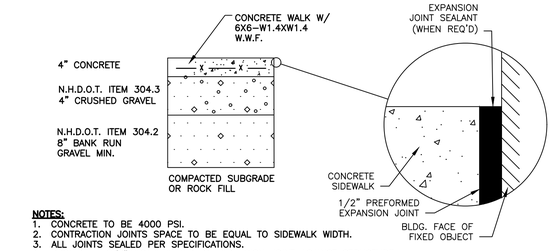
NOT TO SCALE



NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

CONCRETE SIDEWALK W/ VERTICAL GRANITE CURB

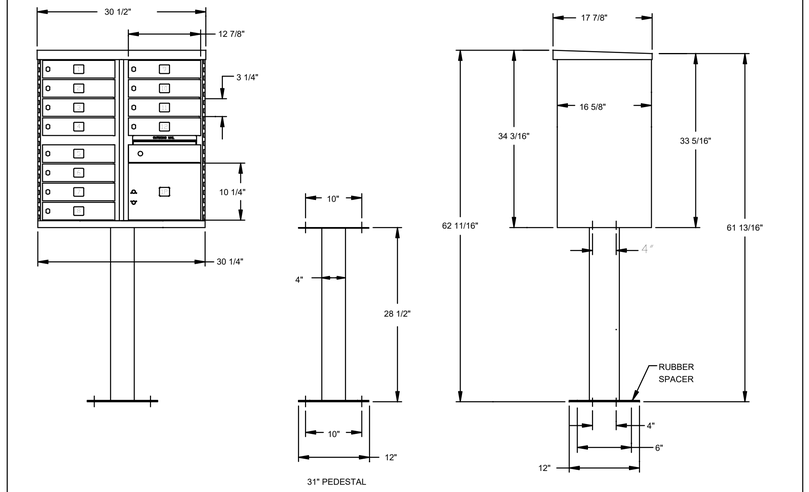
NOT TO SCALE



NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.

CONCRETE SIDEWALK

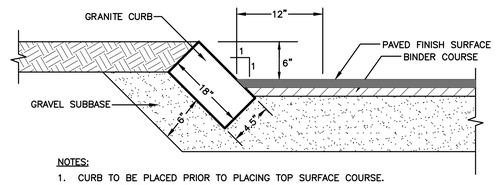
NOT TO SCALE



POSTAL PRODUCTS UNLIMITED, INC.™ A Division of American Postal Manufacturing, Inc. Phone: 1-800-229-4500 500 W. Oklahoma Ave. Milwaukee, WI 53207-2549	Product: Type II CBU with Pedestal – Front Loading – N1027875		
	Distribution: USPS Approved		Finish: Powder Coat
	Mounting: Pedestal		Total Mailboxes: 12 Doors – 1 Locker
	Date: 02/02/06	Scale: NONE	Drawn By: CDO / Checked By: AJK

CLUSTER MAILBOX UNIT DETAIL

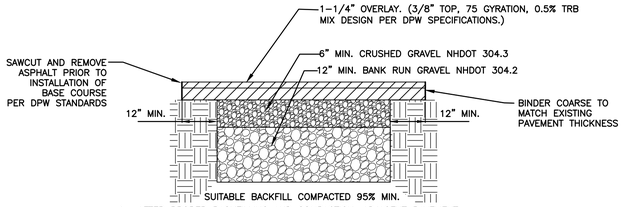
NOT TO SCALE



NOTES:
1. CURB TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

SLOPED GRANITE CURB

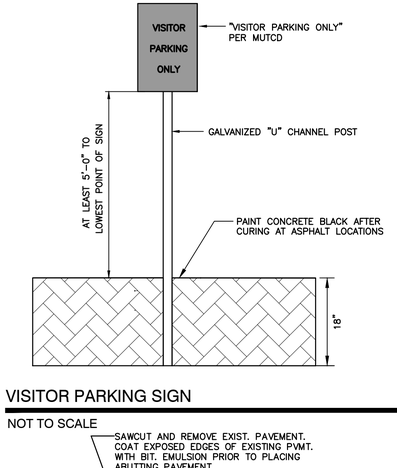
NOT TO SCALE



1. AFTER PROPER BACKFILLING AND COMPACTION, ADJACENT PAVEMENT MUST BE "SAW CUT" (STRAIGHT CUTS) A MINIMUM OF ONE FOOT (1') AROUND THE PERIMETER OF THE EXCAVATION. PAVEMENT MUST BE REMOVED.
2. INSTALL BASE COURSE LEAVING A REVEAL FOR SURFACE COURSE.
3. INSTALL SURFACE COURSE OF ASPHALT PAVING.
4. APPLY EMULSION SEALANT AT PERIMETER OF JOINT OVERLAPPING BASE COURSE. INSTALL WEARING COURSE OF ASPHALT TO GRADE. APPLY LIGHT SAND TO ABSORB EXCESS JOINT SEALANT.
5. GRAVEL COMPACTIONS TO MEET 95% MINIMUM.

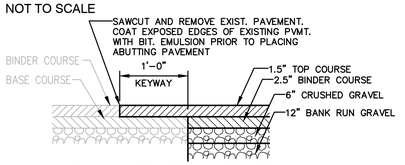
TYPICAL PAVEMENT REPAIR DETAIL

NOT TO SCALE



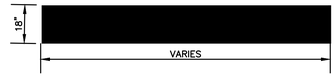
VISITOR PARKING SIGN

NOT TO SCALE



KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

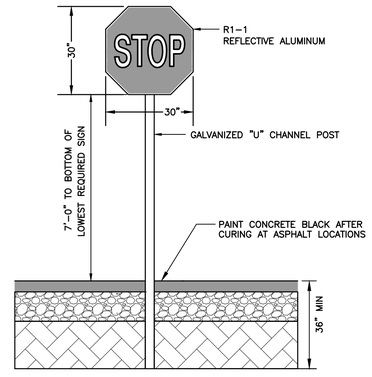
NOT TO SCALE



NOTES:
1. ALL STOP BARS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

STOP BAR

NOT TO SCALE



NOTES:
1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. SIGN, HARDWARE, AND INSTALLATION TO CONFORM TO 2016 NHDOT STANDARD SPECIFICATION, SECTION 615 – TRAFFIC SIGNS.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
4. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.

STOP SIGN (R1-1)

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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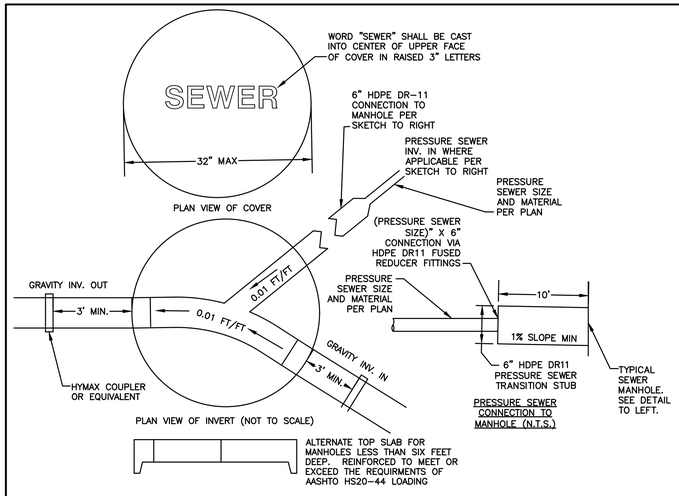
STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – PROFESSIONAL ENGINEER – LICENSED 1/25/2022

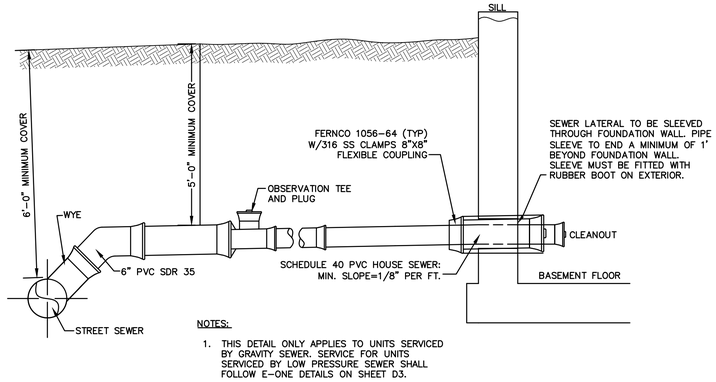
REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
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3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

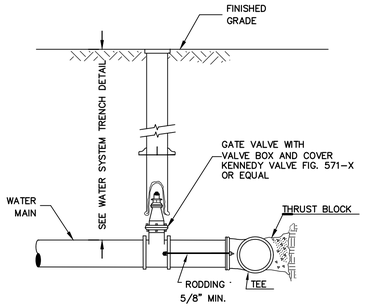
DRAWING No.
D1
SHEET 12 OF 23
JBE PROJECT NO. 21254





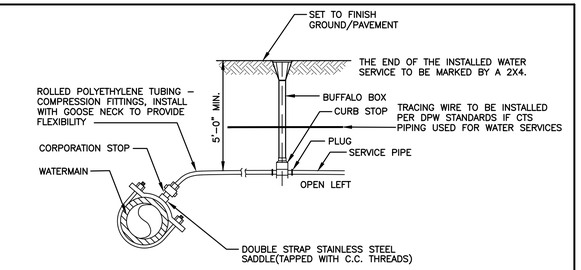
HOUSE SEWER SERVICE

NOT TO SCALE



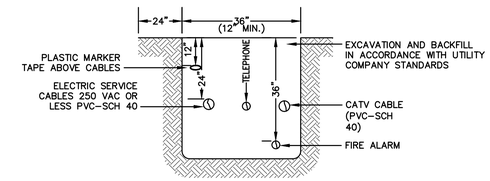
BURIED GATE VALVE DETAIL

NOT TO SCALE



WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

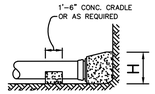
UTILITY TRENCH

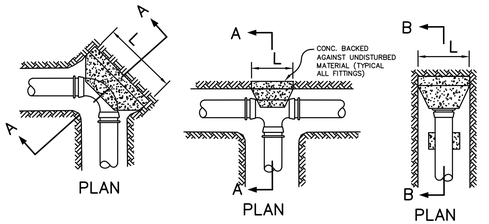
NOT TO SCALE



CONCRETE THRUST BLOCK DIMENSIONS								
PIPE DIA. (IN.)	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
	H	L	H	L	H	L	H	L
4"/6"	1'-6"	1'-6"	1'-6"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"
8"	2'-0"	2'-0"	2'-0"	3'-0"	1'-6"	2'-0"	1'-6"	1'-6"
10"	2'-0"	3'-0"	2'-6"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"
12"	2'-6"	3'-6"	3'-0"	4'-0"	2'-0"	3'-6"	1'-6"	2'-6"
15"	3'-0"	4'-6"	3'-6"	5'-6"	3'-0"	3'-6"	2'-0"	2'-6"
18"	4'-0"	5'-0"	4'-6"	6'-0"	3'-6"	4'-0"	2'-6"	3'-0"
24"	5'-0"	7'-0"	6'-0"	8'-0"	4'-0"	6'-0"	3'-0"	4'-6"

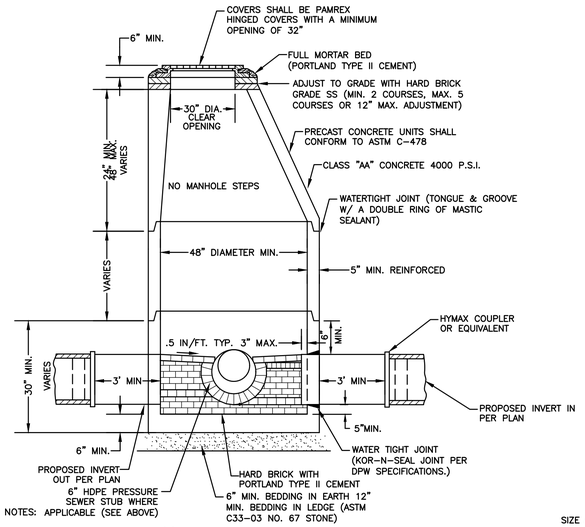
PIPING W/ MECHANICAL JOINT FITTINGS SHALL HAVE RETAINING GLANDS





THRUST BLOCK DETAILS

NOT TO SCALE

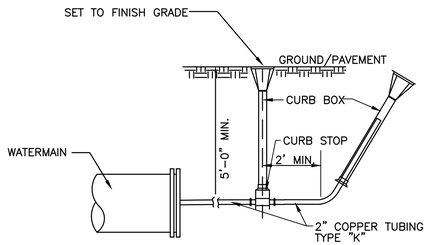


NOTES: APPLICABLE (SEE ABOVE)

1. PER NHDES ENV-WQ 704.13(C), THE MORTAR SPECIFICATION SHALL BE AS FOLLOWS:
   1. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   2. 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;
   3. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
   4. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 'STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES';
   5. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 'STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES';
2. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV-WQ 704.12 (K).
3. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV-WQ 704.17 (a) THROUGH (e).
4. SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48 WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (a).
5. ALL ASBESTOS CONTAINING WASTE MATERIALS MUST BE PROPERLY IDENTIFIED, PACKAGED AND DELIVERED TO A LANDFILL LICENCED BY THE NHDES SOLID WASTE MANAGEMENT PROGRAM FOR DISPOSAL. CALL (603) 271-2925 FOR MORE INFORMATION.
6. PORTSMOUTH STANDARD SEWER MANHOLE SHALL BE USED.
7. CONTRACTOR TO PURCHASE SEWER MANHOLE COVERS FROM THE CITY OF PORTSMOUTH DIRECTLY.
8. MANHOLE BASE SECTIONS SHALL BE MONOLITHIC TO A POINT AT LEAST 6" ABOVE THE HIGHEST INCOMING SEWER PIPE PER ENV-WQ 704.12 (e).
9. MANHOLE CASTINGS SHALL CONFORM TO ASTM A48 PER ENV-WQ 704.13 (a) (8).
10. ON-SITE SEWER MANHOLE COVERS WILL NEED TO BE PURCHASED BY THE APPLICANT. THE CITY OF PORTSMOUTH WILL NOT BE PROVIDING THESE.

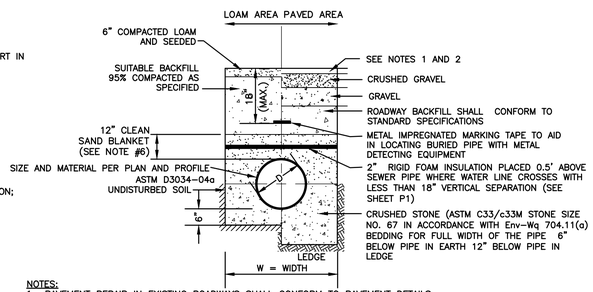
PORTSMOUTH SEWER MANHOLE

NOT TO SCALE



TYPICAL WATER MAIN BLOW OFF DETAIL

NOT TO SCALE

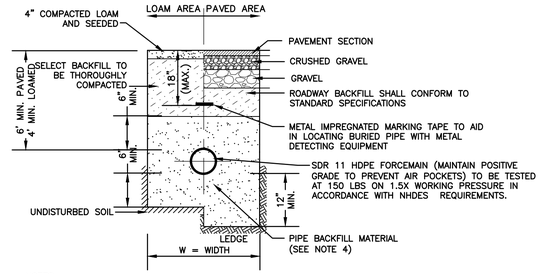


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
5. RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6' AND CROSS COUNTRY IS LESS THAN 4', PURSUANT TO DES WAIVER BEING ISSUED.
6. PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2 " SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env-Wq 704.11(b).
7. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE PER Env-Wq 704.05 (e).

SEWER TRENCH

NOT TO SCALE

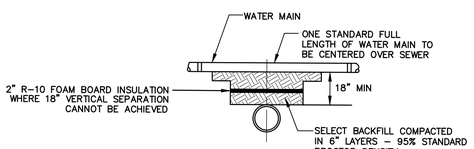


NOTES:

1. ALL JOINTS TO BE MECHANICALLY RESTRAINED.
2. W=MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. W SHALL BE NO MORE THAN 36"
3. SAND BEDDING AND BLANKET SHALL BE CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90-100% PASSES A 1/2 INCH SIEVE AND NO MORE THAN 15% WILL PASS A #200 SIEVE.

FORCE MAIN SEWER TRENCH

NOT TO SCALE



SEPARATION NOTES:

1. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
2. WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN PIPES. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.

TYPICAL WATER / SEWER SEPARATION

NOT TO SCALE

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Drawing Name: 21254-PLAN.dwg	

Date: 01/05/22
Project No.: 21254

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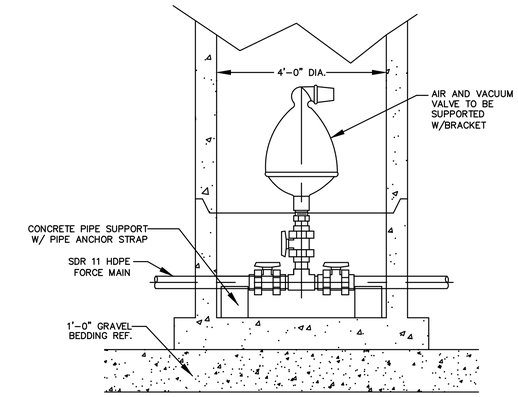
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DETAIL SHEET

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

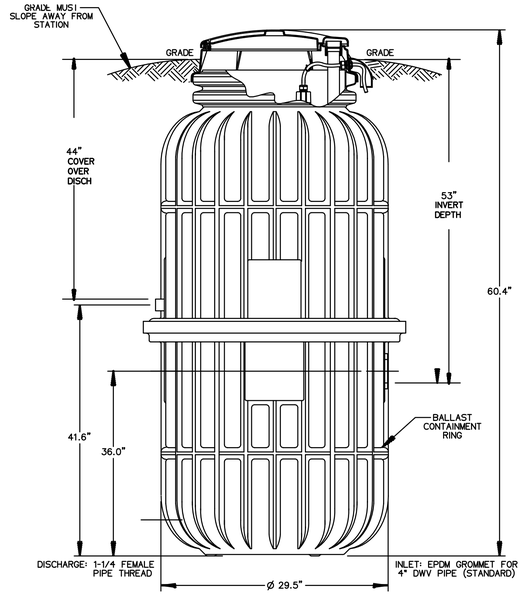
Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
D2
SHEET 13 OF 23
JBE PROJECT NO. 21254



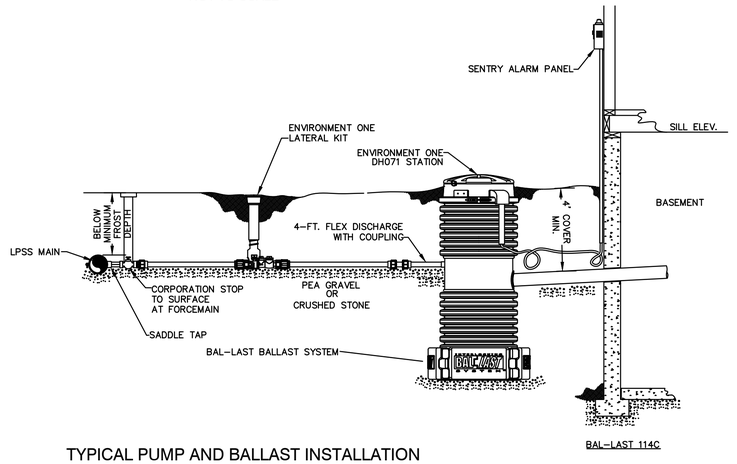
TERMINAL FLUSHING MANHOLE - OPTIONAL ELEV. VIEW

NOT TO SCALE



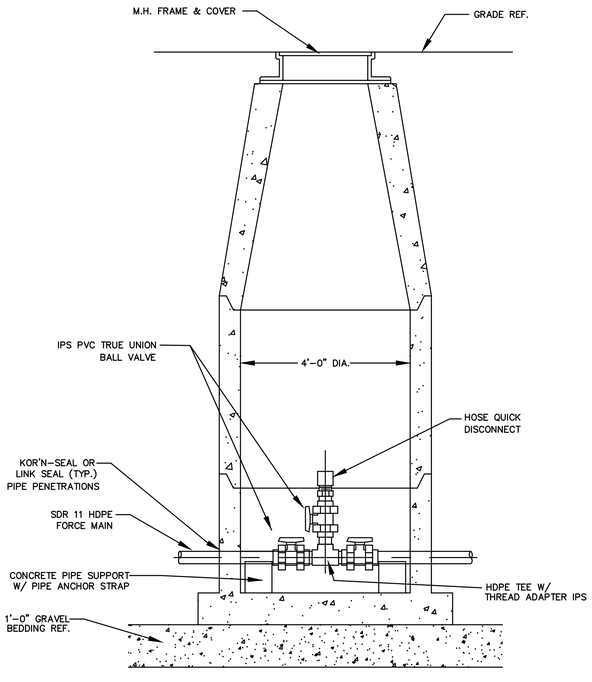
DH071-93 GRINDER PUMP STATION

NOT TO SCALE



TYPICAL PUMP AND BALLAST INSTALLATION

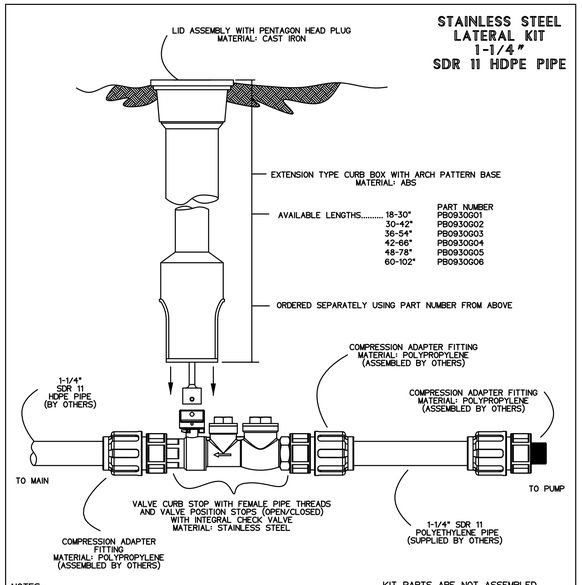
NOT TO SCALE



TERMINAL FLUSHING MANHOLE

NOT TO SCALE

STAINLESS STEEL LATERAL KIT 1-1/4" SDR 11 HDPE PIPE



KIT PARTS ARE NOT ASSEMBLED

NOTES:

1. SS CURB STOP/CHECK VALVE AND FITTINGS ARE PROVIDED SEPARATELY, TO BE ASSEMBLED BY OTHERS
2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND A LAYER OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS
   *FOR SS FITTING INTO SS THREAD, USE PIPE DOPE OR TEFLON TAPE, NOT BOTH
3. ASSEMBLY IS TO BE PRESSURE TESTED (BY OTHERS)
4. ASSEMBLY IS TO BE USED WITH SDR11 HDPE PIPE
5. TO ORDER SS LATERAL KIT, USE PART NUMBER NC0193G01
6. CURB BOX IS TO BE ORDERED SEPARATELY, SEE ABOVE

SGS	DN	11/02/11	B	3/16
DR BY	CHK'D	DATE	ISSUE	SCALE

eone SEWER SYSTEMS

STAINLESS STEEL LATERAL KIT
1-1/4" SDR 11 HDPE PIPE

NA0330P02

STAINLESS STEEL LATERAL KIT

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Checked: JAC	Scale: AS NOTED	Project No.:21254
Drawing Name: 21254-PLAN.dwg		

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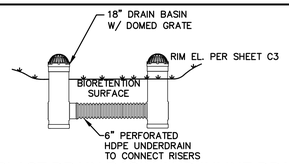
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Plan Name:	DETAIL SHEET
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DRAWING No.

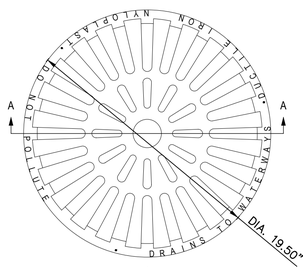
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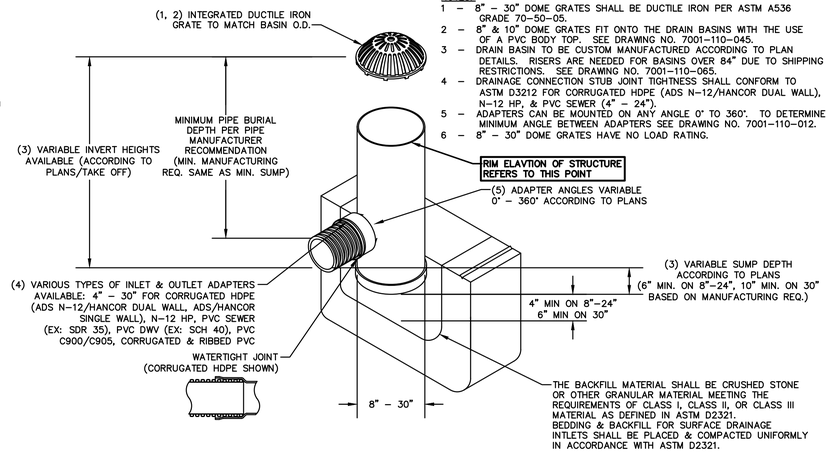
SHEET 14 OF 23
JBE PROJECT NO. 21254



NYOPLAST DRAIN BASIN AND INLINE DRAIN

NOT TO SCALE

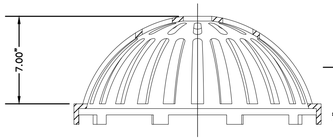




NOTES:
1 – 8" – 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70–50–05.
2 – 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001–110–045.
3 – DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001–110–065.
4 – DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N–12/HANCOR DUAL WALL), N–12 HP, & PVC SEWER (4" – 24").
5 – ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001–110–012.
6 – 8" – 30" DOME GRATES HAVE NO LOAD RATING.

NYLOPLAST DRAIN BASIN (W/ DOME GRATE) (BIORETENTION RISER & YARD DRAIN SPECIFICATION)

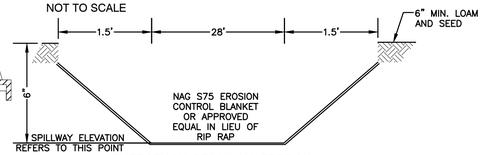
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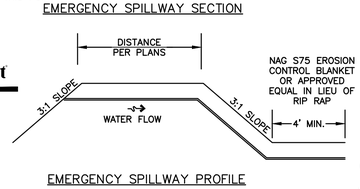
NOTES:
1. DIMENSIONS ARE FOR REFERENCE ONLY
2. ACTUAL DIMENSIONS MAY VARY
3. DIMENSIONS ARE IN INCHES
4. QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70–50–05
5. PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
6. LOCKING DEVICE AVAILABLE UPON REQUEST

18" NYLOPLAST DOME GRATE

NOT TO SCALE



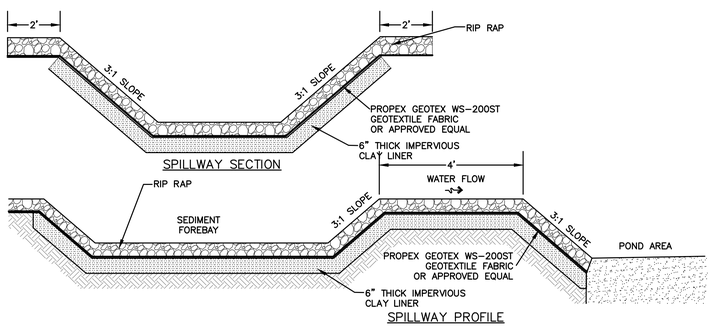
EMERGENCY SPILLWAY SECTION



EMERGENCY SPILLWAY PROFILE

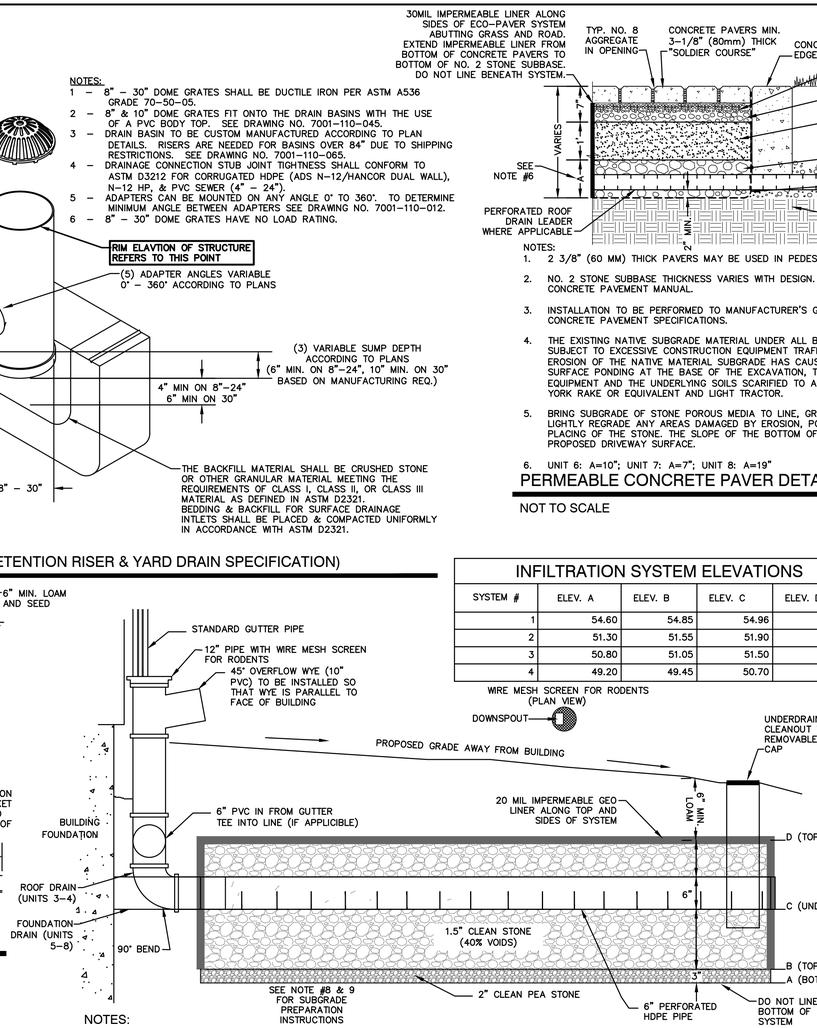
EMERGENCY SPILLWAY

NOT TO SCALE



SEDIMENT FOREBAY SPILLWAY

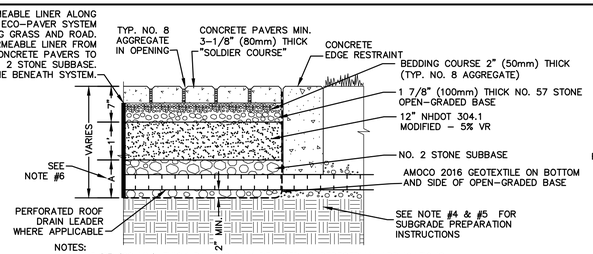
NOT TO SCALE



SUBSURFACE STONE INFILTRATION BED DETAIL

NOT TO SCALE

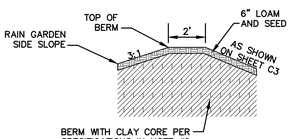
NOTES:
1. ONCE THE SYSTEM HAS BEEN CONSTRUCTED, IT SHOULD BE TESTED BY INSERTING A GARDEN HOSE INTO THE INLET AND ALLOWING THE WATER TO RUN FOR A MINIMUM OF ONE (1) HOUR. THE WATER SHOULD STAY UNDERGROUND WITHIN THE GRAVEL. IF WATER COMES OUT OF THE OVERFLOW, THE SYSTEM SHOULD BE FURTHER INSPECTED AND POSSIBLY REPLACED. THIS PROCEDURE SHOULD BE PERFORMED EVERY YEAR DURING THE FALL INSPECTION.
2. IN THE SPRING AND FALL, VISUALLY INSPECT THE AREA AROUND THE SYSTEM AND REPAIR ANY EROSION. USE SMALL STONES TO STABILIZE EROSION ALONG DRAINAGE PATHS. RE–MULCH ANY VOID AREAS BY HAND AS NEEDED. ALSO INSPECT THE ROOF COLLECTION AND PIPING AND CLEAN AND REPAIR AS NECESSARY.
3. KEEP HEAVY VEHICLES FROM DRIVING OR PARKING OVER THE SYSTEM.
4. FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
5. A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.
6. THE DOWNSPOUT DRAIN LEADING INTO THE INFILTRATION PRACTICE AS WELL AS THE PERFORATED PVC UNDERDRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDINGS. SITEWORK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.
7. OVERFLOWS ARE TO BE INSTALLED ON EXTERIOR DOWNSPOUT LEADERS ONLY.
8. THE EXISTING NATIVE SUBGRADE MATERIAL UNDER ALL BED AREAS SHALL NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO STONE BED PLACEMENT. WHERE EROSION OF THE NATIVE MATERIAL SUBGRADE HAS CAUSED ACCUMULATION OF FINE MATERIALS AND/OR SURFACE PONDING AT THE BASE OF THE EXCAVATION, THIS MATERIAL SHALL BE REMOVED WITH LIGHT EQUIPMENT AND THE UNDERLYING SOILS SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES (15 CM) WITH A YORK RAKE OR EQUIVALENT AND LIGHT TRACTOR.
9. BRING SUBGRADE OF STONE POROUS MEDIA TO LINE, GRADE, AND ELEVATIONS INDICATED. FILL AND LIGHTLY REGRADE ANY AREAS DAMAGED BY EROSION, PONDING, OR TRAFFIC COMPACTION BEFORE PLACING OF THE STONE. THE BOTTOM OF EXCAVATION SHALL BE LEVEL PRIOR TO INSTALLATION OF THE POROUS STONE MEDIA.
10. UNITS 3&4: STONE INFILTRATION IS FOR ROOF WATER ONLY. UNITS 5–8: STONE INFILTRATION IS FOR FOUNDATION DRAINAGE ONLY. DO NOT TIE ROOF LEADERS FROM UNITS 5–8 INTO THESE SYSTEMS.



NOTES:
1. 2 3/8" (60 MM) THICK PAVERS MAY BE USED IN PEDESTRIAN APPLICATIONS.
2. NO. 2 STONE SUBBASE THICKNESS VARIES WITH DESIGN. CONSULT ICPI PERMEABLE INTERLOCKING CONCRETE PAVEMENT MANUAL.
3. INSTALLATION TO BE PERFORMED TO MANUFACTURER'S GUIDLINES AND THE PERMEABLE INTERLOCKING CONCRETE PAVEMENT SPECIFICATIONS.
4. THE EXISTING NATIVE SUBGRADE MATERIAL UNDER ALL BED AREAS SHALL NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO STONE BED PLACEMENT. WHERE EROSION OF THE NATIVE MATERIAL SUBGRADE HAS CAUSED ACCUMULATION OF FINE MATERIALS AND/OR SURFACE PONDING AT THE BASE OF THE EXCAVATION, THIS MATERIAL SHALL BE REMOVED WITH LIGHT EQUIPMENT AND THE UNDERLYING SOILS SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES (15 CM) WITH A YORK RAKE OR EQUIVALENT AND LIGHT TRACTOR.
5. BRING SUBGRADE OF STONE POROUS MEDIA TO LINE, GRADE, AND ELEVATIONS INDICATED. FILL AND LIGHTLY REGRADE ANY AREAS DAMAGED BY EROSION, PONDING, OR TRAFFIC COMPACTION BEFORE PLACING OF THE STONE. THE SLOPE OF THE BOTTOM OF EXCAVATION SHALL PARALLEL THAT OF THE PROPOSED DRIVEWAY SURFACE.
6. UNIT 6: A=10"; UNIT 7: A=7"; UNIT 8: A=19"

PERMEABLE CONCRETE PAVER DETAIL ("ECO-PAVER")

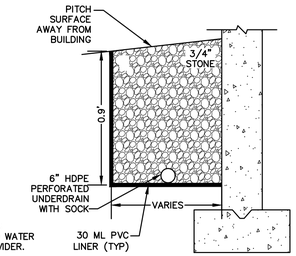
NOT TO SCALE



1. BERM SHALL BE CONSTRUCTED WITH A CLAY CORE AS DESCRIBED BELOW, AND A FINE GEOTEXTILE, TO AVOID WATER SEEPAGE AND SOIL PIPING THROUGH THE EARTHEN DIVIDER.
2. MATERIAL FOR CLAY CORE SHALL BE CLEAN SILTY–CLAY BORROW FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER THREE INCHES (3") IN DIAMETER. THIS MATERIAL SHALL BE INSTALLED IN 6" LIFTS COMPACTED TO 92% OF ASTM D–1557, AND SHALL MEET THE FOLLOWING SPECIFICATIONS: 6" PASSING 100%, #4 SIEVE 95–100%, #40 SIEVE 60–90%, #100 SIEVE 40–60%, #200 SIEVE 25–45% (OF THE FRACTION PASSING THE #4 SIEVE). THE CLAY COMPONENT SHALL HAVE A PLASTICITY INDEX OF AT LEAST 8 AND A HYDRAULIC CONDUCTIVITY OF 10 TO THE –6 CM/SEC

BIORETENTION BERM SECTION

NOT TO SCALE



THE INTENT OF THIS FEATURE IS TO COLLECT ROOF WATER INTO THE PERFORATED UNDERDRAIN. LINE SYSTEM AS SPECIFIED TO PREVENT INFILTRATION.

LINED DRIP EDGE DETAIL

NOT TO SCALE

INFILTRATION SYSTEM ELEVATIONS

SYSTEM #	ELEV. A	ELEV. B	ELEV. C	ELEV. D
1	54.60	54.85	54.96	55.60
2	51.30	51.55	51.90	53.50
3	50.80	51.05	51.50	52.20
4	49.20	49.45	50.70	51.40

BIORETENTION SYSTEM ELEVATIONS

BIORETENTION	SIZE OF BOTTOM (S.F.)	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	SHWT	LEDGE
1	502	55.0	N/A	53.75	52.25	52.0	51.25	51.13	< 49.55 *
2	1,080	51.5	51.0	49.25	47.75	47.5	46.42	46.25	< 44.42 *

* TEST PITS TERMINATED AT THESE DEPTHS BELOW REFERENCE POINT WITHOUT ENCOUNTERING LEDGE.

SAND SPECIFICATION

SIEVE SIZE	% BY WEIGHT
3/8"	100
#4	95–100
#8	80–100
#16	50–85
#30	25–60
#60	10–30
#100	2–10
#200	0–5

TOPSOIL SPECIFICATION

LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15 TO 25% FINES PASSING THE #200 SIEVE.

MULCH SPECIFICATION

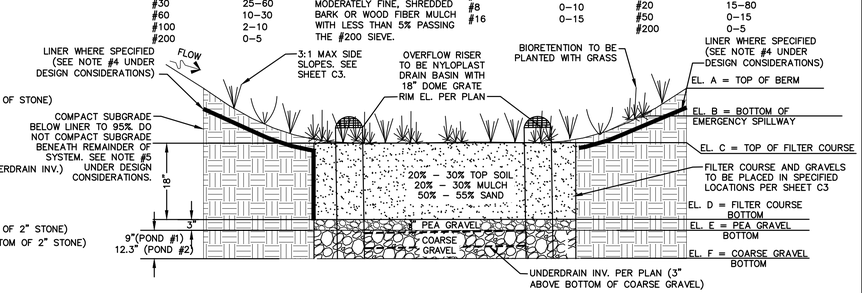
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

PEA GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	100
3/4"	85–100
3/8"	10–30
#8	0–10
#16	0–15

COARSE GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5



DESIGN CONSIDERATIONS

1. DO NOT DIRECT RUNOFF TO THE BIORETENTION SYSTEMS UNTIL IT HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN–OFF, 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 OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
4. ONLY PLACE FILTER MEDIA AND STONE BENEATH DOTTED HATCH AREA ON SHEET C3. REMAINDER OF POND TO BE LINED WITH 30ML LINER 6" BELOW SURFACE. FILTER MEDIA AND STONE SECTIONS ARE NOT TO BE LINED. LINER SHALL CONTINUE DOWN THE SIDES OF THE FILTER COURSE BUT MUST NOT BE PLACED ON THE SIDES OF THE PEA GRAVEL OR COARSE GRAVEL OR PLACED BENEATH THE FILTER COURSE AND/OR GRAVELS.
5. THE EXISTING NATIVE SUBGRADE MATERIAL SHALL NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO STONE PLACEMENT. IF SOIL MEDIA OR SUBGRADE IS OVER COMPACTED, DISTURBED, OR CONTRAMINATED BY FOREIGN OR DELETERIOUS MATERIALS OR LIQUIDS, REMOVE THE SOIL MEDIA AND CONTAMINATION; RESTORE THE SUBGRADE AS DIRECTED BY ENGINEER AND REPLACE CONTAMINATED SOIL MEDIA WITH NEW SOIL MEDIA.
6. IN ADDITION TO DESIGN CRITERIA LISTED HERE, REFER TO GUIDELINES LISTED IN UNIVERSITY OF NEW HAMPSHIRE (UNH) STORMWATER CENTER BIORETENTION SOIL SPECIFICATION.
7. BIORETENTION SYSTEM #1 HAS A SEDIMENT FOREBAYS FOR PRE–TREATMENT AND BIORETENTION SYSTEM #2 HAS A PRETX CURB INLET STRUCTURE FOR PRE–TREATMENT.

MAINTENANCE REQUIREMENTS:

1. SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
2. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
3. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72 HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
4. VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

BIORETENTION SYSTEM

NOT TO SCALE

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Drawing Name: 21254-PLAN.dwg		

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4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
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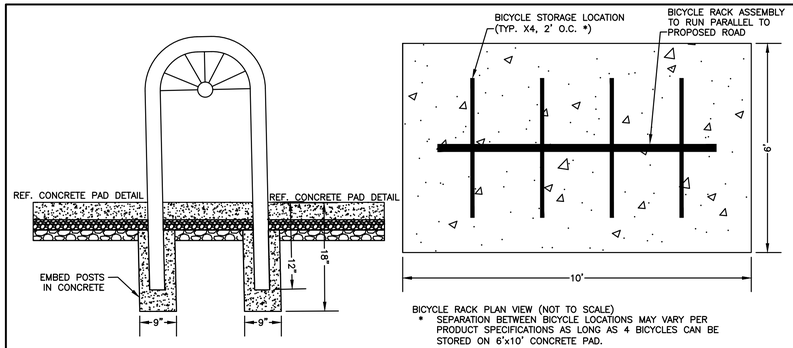
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.

D4

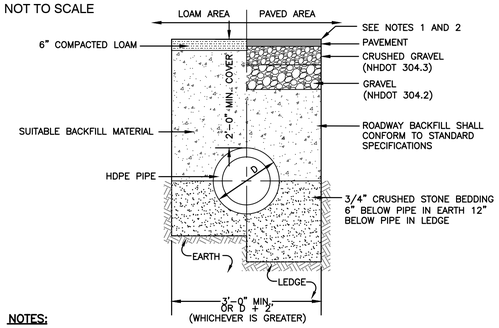
SHEET 15 OF 23
JBE PROJECT NO. 21254



BICYCLE RACK PLAN VIEW (NOT TO SCALE)
* SEPARATION BETWEEN BICYCLE LOCATIONS MAY VARY PER PRODUCT SPECIFICATIONS AS LONG AS 4 BICYCLES CAN BE STORED ON 6'x10' CONCRETE PAD.

BICYCLE RACK

NOT TO SCALE

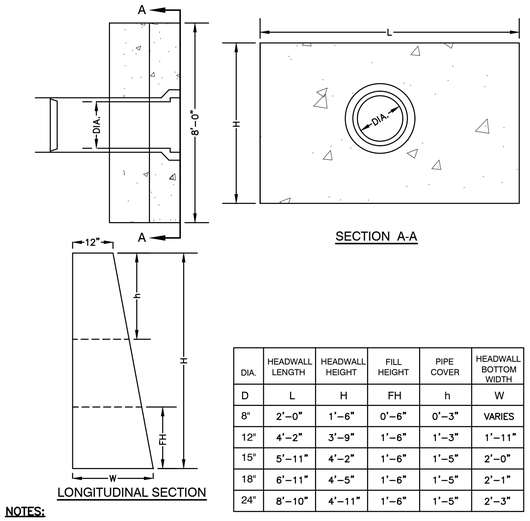


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
3. ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

DRAINAGE TRENCH

NOT TO SCALE



SECTION A-A

LONGITUDINAL SECTION

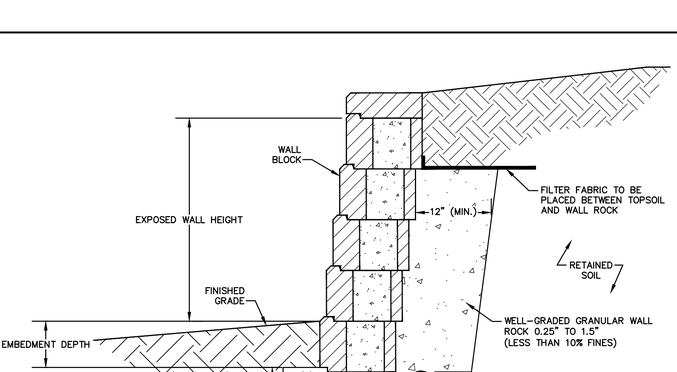
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
8"	2'-0"	1'-6"	0'-6"	0'-3"	VARIES
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150. REINFORCING TO MEET OR EXCEED ASTM A-615 GRADE 60 DEFORMED BARS.
4. 1" THREADED INSERTS PROVED FOR FINAL ATTACHMENT IN FIELD BY OTHERS.

PRECAST CONCRETE HEADWALL

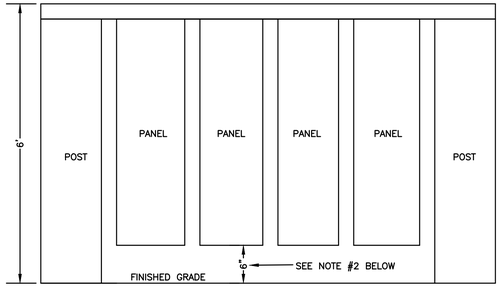
NOT TO SCALE



THE CONTRACTOR IS RESPONSIBLE FOR RETAINING THE SERVICES OF A STRUCTURAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE TO DESIGN THE PROPOSED RETAINING WALL. JONES & BEACH ENGINEERS, INC. DOES NOT ACCEPT ANY LIABILITY FOR THE STRUCTURAL DESIGN AND/OR INSTALLATION OF THE WALL. THIS DETAIL IS INTENDED TO PROVIDE AN EXAMPLE OF THE RETAINING WALL FOR PLANNING PURPOSES ONLY AND IS SPECIFICALLY NOT INTENDED FOR USE BY THE CONTRACTOR IN ANY CONSTRUCTION-RELATED ACTIVITY.

TYPICAL GRAVITY WALL DETAIL

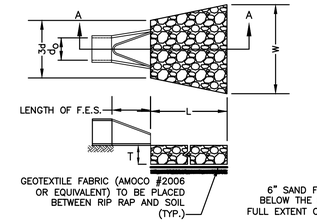
NOT TO SCALE



1. THE INTENT OF THIS DETAIL IS TO SHOW THE REQUIRED CLEARANCE FROM FINISHED GRADE TO THE BOTTOM OF THE WOODEN PANELS ON THE PROPOSED FENCE. THIS DETAIL SHALL NOT CONSTRUE A REQUIREMENT WITH REGARDS TO POST OR PANEL PLACEMENT ALONG THE LENGTH OF THE FENCE.
2. A 6" CLEARANCE MUST BE PROVIDED BETWEEN FINISHED GRADE AND THE BOTTOM OF WOODEN PANELS ON THE FENCE BEHIND BIORETENTION #2 EMERGENCY SPILLWAY. HOWEVER, 6" CLEARANCE IS NOT NECESSARY FOR THE FENCE ATOP THE RETAINING WALL BEHIND UNIT 6.

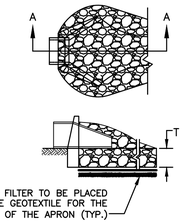
4' HIGH WOODEN FENCE DETAIL

NOT TO SCALE



SECTION A-A

PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL



SECTION A-A

PIPE OUTLET TO WELL-DEFINED CHANNEL

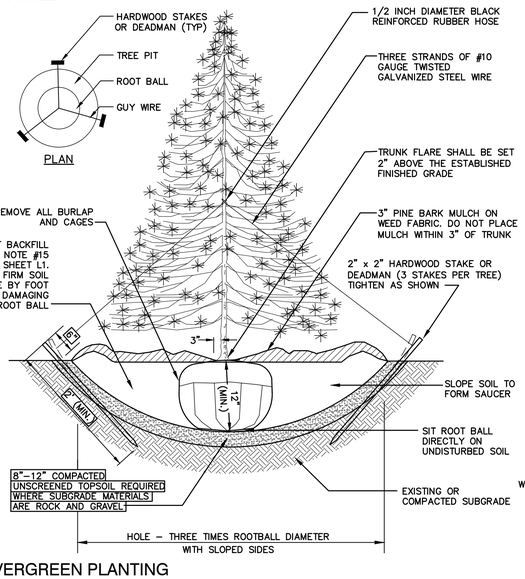
TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES		
THICKNESS OF RIP RAP = 1.5 FEET		
d50 SIZE= 0.25 FEET 3 INCHES		
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	TO
100%	5	6
85%	4	5
50%	3	5
15%	1	2

NOTES:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. OUTLETS TO A DEFINED CHANNEL SHALL HAVE 2:1 OR FLATTER SIDE SLOPES AND SHOULD BEGIN AT THE TOP OF THE CULVERT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.
6. MAINTENANCE: THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO OUTLET PROTECTION.

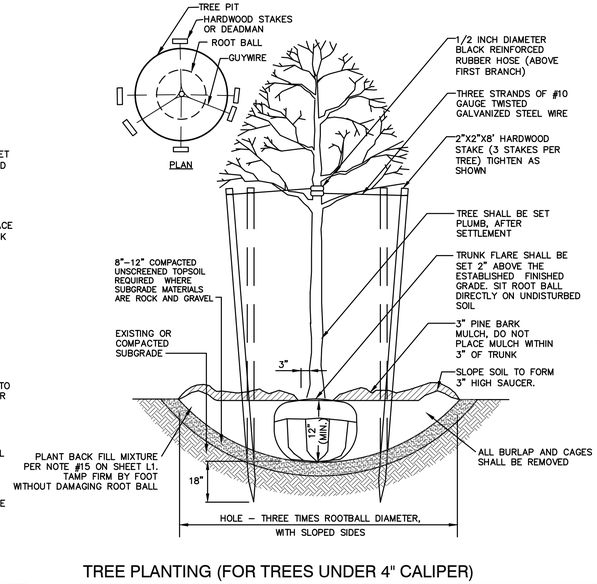
RIP RAP OUTLET PROTECTION APRON

NOT TO SCALE



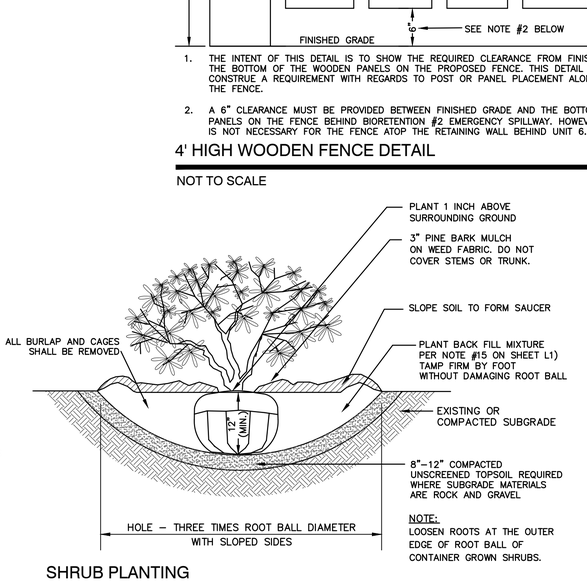
EVERGREEN PLANTING

NOT TO SCALE



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE



SHRUB PLANTING

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE - PAIGE S. LIBBEY No.16670 - LICENSED PROFESSIONAL ENGINEER - 12/20/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
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PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
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Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.

D5

SHEET 16 OF 23
JBE PROJECT NO. 21254

PRETX SPECIFICATIONS

A. GENERAL

1. PRETX SYSTEMS ARE A PRE-FILTER AND CRITICAL MAINTENANCE DEVICE THAT EXTENDS THE OPERATING LIFE AND REDUCES THE MAINTENANCE BURDEN OF BIORETENTION SYSTEMS, RAIN GARDENS, BIOSWALES AND OTHER TYPES OF SURFACE BEST MANAGEMENT PRACTICES BY FILTERING OUT SEDIMENT, TRASH AND DEBRIS AT THE INLET.

B. PRODUCTS

1. PRETX IS AVAILABLE IN 3 MODELS THAT MANAGE MOST BIORETENTIOIN INLET CONFIGURATIONS: CURB, DROP, AND INLINE.
2. PRETX-CURB IS FOR EDGE OF PAVEMENT RUNOFF AT A CURB CUT IN LIEU OF A STONE SPREADER.
3. PRETX-DROP IS FOR USE AS A DROP INLET CONFIGURATION ALONG A CURB LINE AND WOULD BE INSTALLED WITH A STANDARD DROP INLET GRATE.
4. PRETX-INLINE IS FOR USE WITH SUBSURFACE INLET AND OUTLET PIPE.
5. PRETX IS SIZED TO PRETREAT WATER QUALITY FLOWS AND BYPASS LARGER FLOWS THAT HAVE MINIMAL TRASH AND DEBRIS. PRETX CAN BE USED BOTH IN RETROFIT OR NEW INSTALLATIONS.
6. ACCEPTABLE SYSTEM SUPPLIER:
   CONVERGENT WATER TECHNOLOGIES, INC. OR ITS AUTHORIZED VALUE-ADDED RESELLER
   (800) 711-5428
   WWW.CONVERGENTWATER.COM

C. SUBMITTALS

1. SUBMIT PROPOSED LAYOUT DRAWINGS. DRAWINGS SHALL INCLUDE TYPICAL SECTION DETAILS ANNOTED WITH SYSTEM ELEVATIONS (E.G., RIM, PIPE INVERTS, OUTSIDE BOTTOM OF STRUCTURE, ETC.).
2. SUBMIT MATERIAL CERTIFICATES FOR FRAMES AND COVERS
3. ANY PROPOSED EQUAL ALTERNATE PRODUCT SUBSTITUION TO THIS SPECIFICATON MUST BE SUBMITTED FOR REVIEW AND APPROVED PRIOR TO BID OPENING.

D. EXECUTION

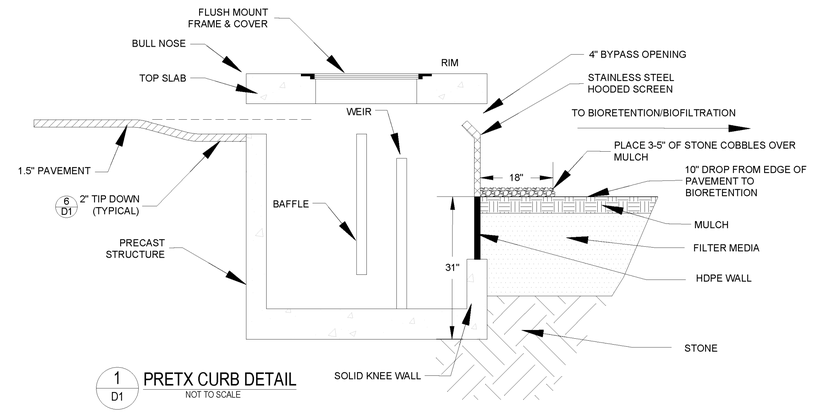
1. All PUBLIC ST ORM DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS AND ACCORDING TO LOCAL MUNICIPAL REQ UIREME NTS.
2. All STORM DRAINAGE SYSTEM CONSTRUCTION IS SUBJECT TO INSPECTION AND APPROVAL BY THE PROJECT ENGINEER.
3. THE CONTRACTOR SHALL NOTIFYTHE PROJECT ENGINEER A MINIMUM OF TWO FULL BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTIO N.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND OBTAINING APPROVAL FROM DIG-SAFE AND DETERMINING THE LOCATION OF All UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION/ EXCAVATI ON AND SHALL NOTIFY THE PROJECT ENGINEER OF ANY POTENTIAL CONFLICTS.
5. TO PROTECT STORMWATER FLOW CONTROL AND QUALITY TREATMENT FACILITIES FROM SEDIMENTATION, THEY SHALL BE CONNECTED TO THE STORM CONVEYANCE SYSTEM ONLY AFTER ALL SITE WORK, ROAD CONSTRUCTION, UTILITY WORK AND LANDSCAPING ARE IN PLACE IN ALL AREAS ABOVE AND UPSTREAM OF THE FACILITY.
6. THE EXISTING STORM SEWER SYSTEM SHALL STAY ISOLATED FROM THE NEW SYSTEM UNTIL THE NEW SYSTEM IS CLEANED, AND APPROVED FOR USE. THERE SHALL BE NO DEBRIS IN THE LINES OR FURTHER CLEANING Will BE REQUIRED PRIOR TO ACCEPTANCE.
7. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR
8. THE OPENING SHALL BE MEASURED ATTHE TOP OF THE PRECAST BASE SECTION.
9. All PICKUP HOLES SHALL BE GROUTED FULL AFTER THE BASIN HAS BEEN PLACED.
10. STANDARD CURB INLETS AND TIPDOWNS SHALL BE PRECAST CONCRETE OR ASPHALT.
11. PIPE ENDS SHALL BE FLUSH WITH THE INNER WALL OR 1" MAXIMUM INTRUSION. MASONRY, CINDER BLOCKS, OR SIMILIAR MATERIALS MA Y BE USED TO ADJUST THE RISERS TO GRADE PRIOR TO GROUTING.
12. GROUTING SHALL BE SUFFICIENTTO PREVENT LEAKS BETWEEN THE PRECAST COMPONENTS OF THE COMPLETED STRUCTURE & SHALL BE PERFORMED INSIDE, BETWEEN & OUTSIDE OF All RISERS, JOINTS & PIPE PENETRATIONS
13. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M-198 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
14. All REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. All PRECAST CONCRETE SHALL BE CLASS 4000.
15. RECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
16. MATING SURFACES OF MANHOLE RINGS AND COVERSSHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITIONS.

E. CONSTRUCTION AND SEQUENCING

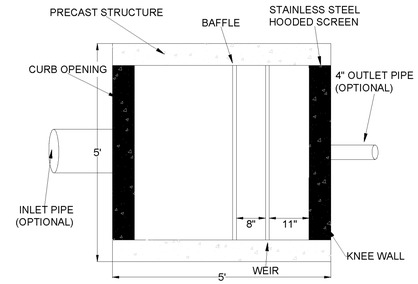
1. EXAMINATION
   A. VERIFY LAYOUT AND ORIENTATION OF PRE-TX SYSTEM AREA INCLUDING EDGE OF PAVEMENT, TIP DOWN, CURBS AND SIDEWALK, BIOFILTRATION SYSTEM, AND CONNECTIONS.
   B. VERIFY EXCAVATION BASE IS READY TO RECEIVE WORK AND EXCAVATIONS, DIMENSIONS, AND ELEVATIONS ARE AS INDICATED ON DRAWINGS.
2. PREPARATION
   A. CALL DIG SAFE AND RECEIVE APPROVAL BEFORE PERFORMING WORK.
   B. REQUEST UNDERGROUND UTILITIES TO BE LOCATED AND MARKED WITHIN AND SURROUNDING CONSTRUCTION AREAS.
   C. IDENTIFY REQUIRED LINES, LEVELS, CONTOURS, AND DATUM.
   D. CLEAR AND GRUB THE PROPOSED PRE-TX SYSTEM AREA.
3. EXCAVATION AND INSTALLATION
   A. THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE. COORDINATE WITH THE OWNER, AND ENGINEERS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
   B. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS TO DIVERT STORM WATER AWAY FROM THE PRE-TX SYSTEM AREA.
   C. EXCAVATE TO THE BOTTOM INVERT OF THE SYSTEM.
   D. TO MINIMIZE COMPACTION OF ADJACENT BIOFILTRATION SYSTEMS, WORK EXCAVATORS OR BACKHOES FROM THE SIDES TO EXCAVATE THE PRE-TX SYSTEM AREA TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS.
   E. ROUGH GRADE THE PRE-TX SYSTEM AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE PRE-TX SYSTEM FACILITIES TO WITHIN 1 FOOT OF STRUCTURE BOTTOM .
   F. PLACE 1 FOOT BED OF COARSE STONE TO ELEVATION OF BASE OF STRUCTURE.
   G. ESTABLISH ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT AND TIP DOWN, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
4. INSTALLATION
   A. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
   B. VERIFY ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT, PAVEMENT GRADING FOR INLET GRATE FOR PRETX-DROP, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS, OUTLET INVERT FOR KNEE WALL.
   C. FOR PRETX-SURFACE:
      a. VERIFY ELEVATIONS FOR ADJACENT CURBS.
      b. VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
      c. VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
      d. VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
   D. FOR PRETX-DROP.
      a. VERIFY ALL INLET PIPES ENTER THE STRUCTURE UPSTREAM OF BAFFLE.
      b. VERIFY FRAME AND GRATE OFFSET ON INLET SIDE AND UPSTREAM OF BAFFLE.
      c. VERIFY CURB LOCATION WITH RESPECT TO FRAME AND GRATE ORIENTATION.
   E. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
   F. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VACTOR.
   G. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
5. BACKFILLING
   A. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
   B. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN.
   C. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
   D. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
   E. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
   F. STABILIZE All REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/ OREROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
6. CLEAN UP
   A. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIA LS, RUBBISH, EXCESS SOIL, ETC., FROM THE PROJECT SITE. REPAIR PROMPTL Y ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.

PRETX-CURB ELEVATION GUIDE

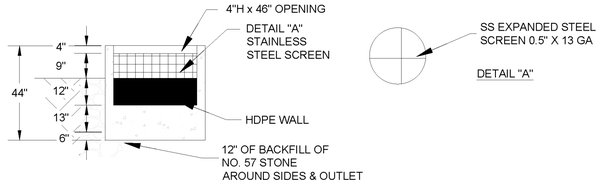
POINT	DESCRIPTION	HEIGHT IN REFERENCE TO PT. A
A	EDGE OF PAVEMENT	0 INCHES
B	OUTSIDE TOP SLAB	8 INCHES
C	TOP OF BIORETENTION	12 INCHES
D	SUMP INVERT	36 INCHES
E	OUTSIDE BOTTOM	42 INCHES



1 D1 PRETX CURB DETAIL
NOT TO SCALE

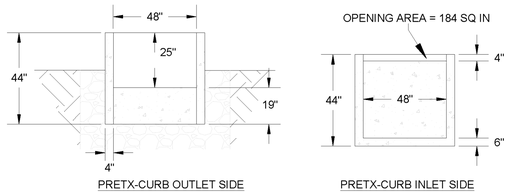


2 D1 PRETREATMENT CATCH BASIN PLAN VIEW
NOT TO SCALE

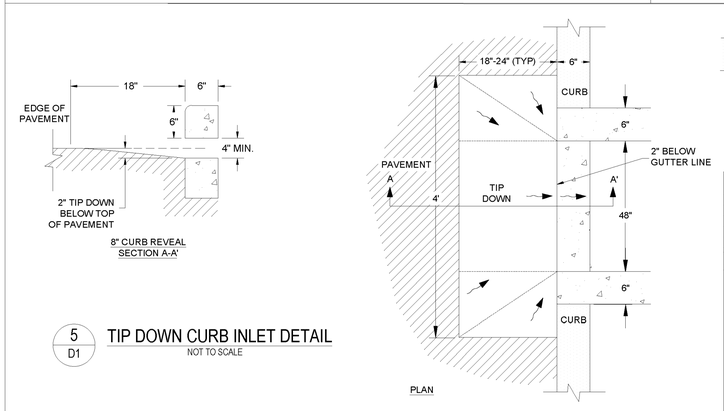


3 D1 PRETX CURB OUTLET SIDE
NOT TO SCALE

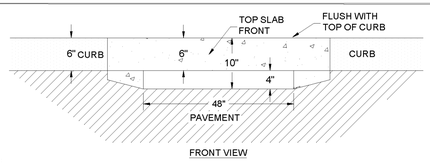
OUTLET SIDE INSTALLED W/ SCREEN



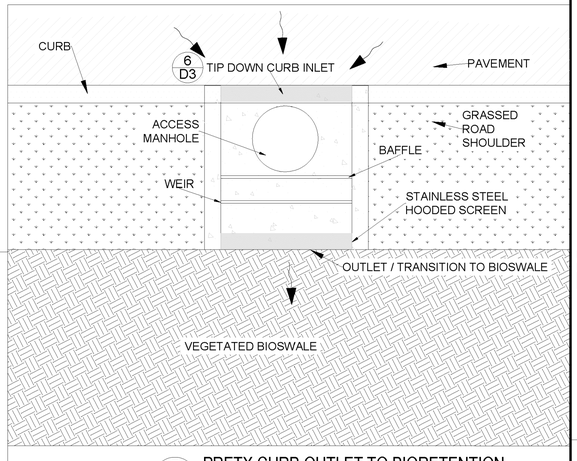
4 D1 PRETX CURB SIDE DETAIL
NOT TO SCALE



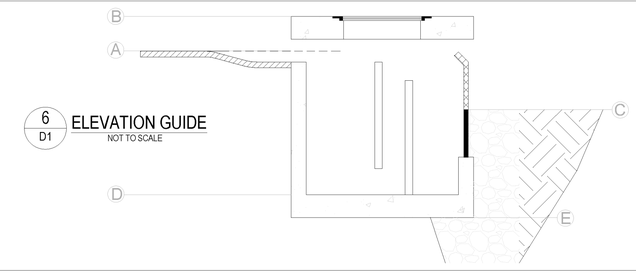
5 D1 TIP DOWN CURB INLET DETAIL
NOT TO SCALE



FRONT VIEW



7 D1 PRETX CURB OUTLET TO BIORETENTION PLAN VIEW CONFIGURATION
NOT TO SCALE



6 D1 ELEVATION GUIDE
NOT TO SCALE

D-1 PRETX™ CURB INLET SOLID HDPE WALL PRETREATMENT DETAIL

TO FIND A VALUE ADDED RESELLER IN YOUR AREA VISIT
WWW.CONVERGENTWATER.COM/STORMWATER-PRODUCTS
OR CONTACT CONVERGENT WATER TECHNOLOGIES AT
1.800.711.5428

REVISED 11/20/18; ELEVATION DETAILS ADDED; CHECKED BY RR

..\..\..\Legend\ACF Updated R logo.jpg

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Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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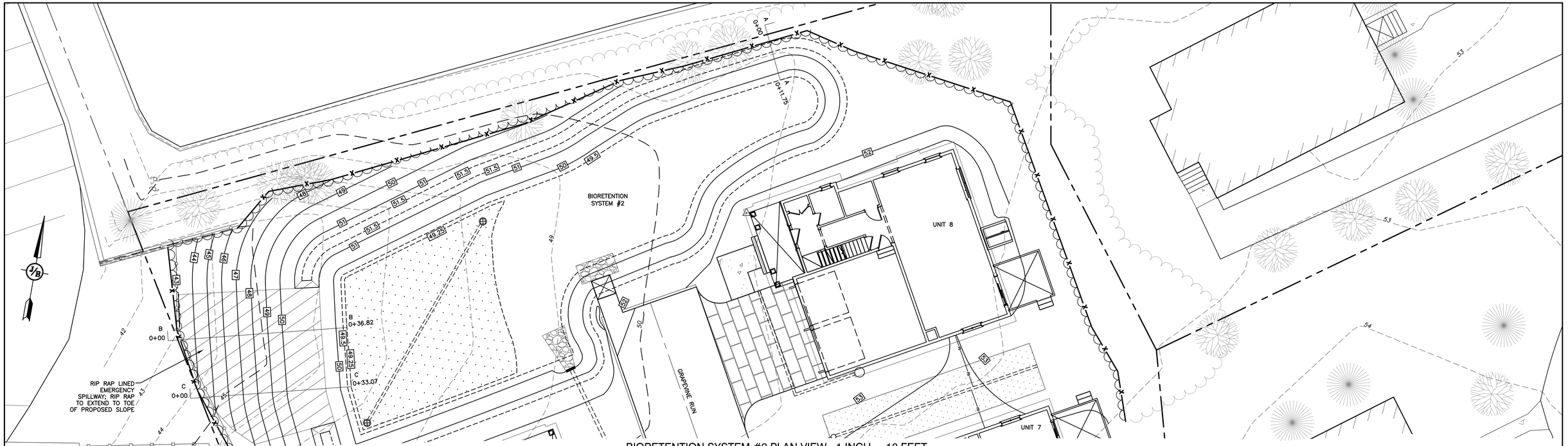
STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 — LICENSED PROFESSIONAL ENGINEER — 12/20/2022

REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

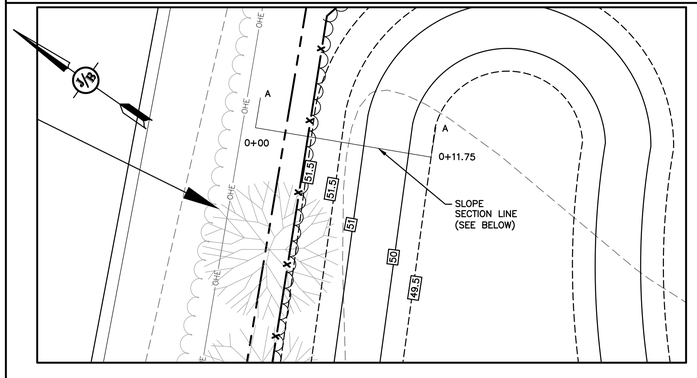
Designed and Produced in NH
Jones & Beach Engineers, Inc.
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Stratham, NH 03885
Civil Engineering Services
603-772-4746
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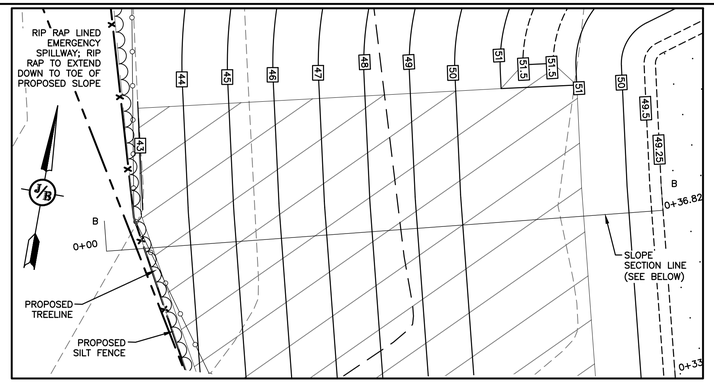
Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

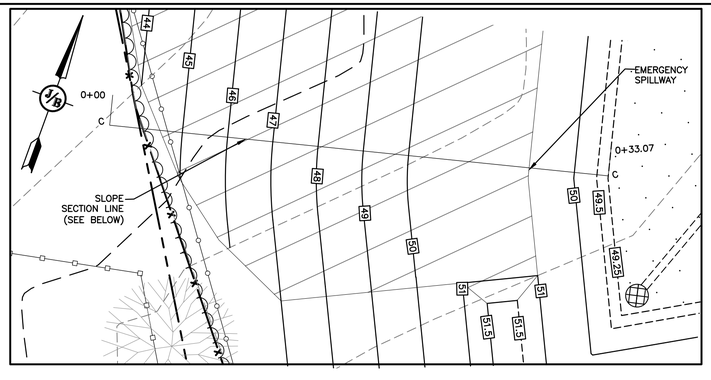
DRAWING No.
D6
SHEET 17 OF 23
JBE PROJECT NO. 21254

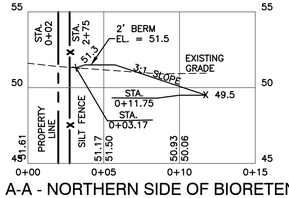


BIORETENTION SYSTEM #2 PLAN VIEW - 1 INCH = 10 FEET





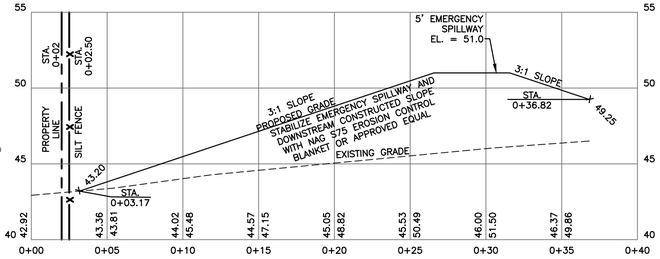




CROSS SECTION A-A - NORTHERN SIDE OF BIORETENTION #2

1 INCH = 5 FEET

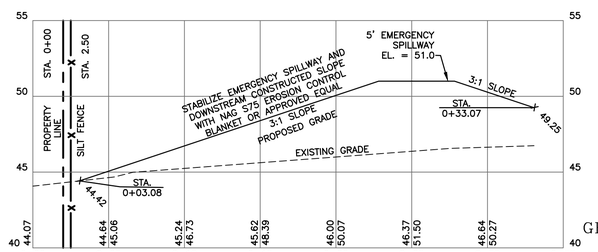
GRAPHIC SCALE
(IN FEET)
1 inch = 5 ft Horiz.
1 inch = 5 ft Vert.



CROSS SECTION B-B - SECTION THROUGH EMERGENCY SPILLWAY

1 INCH = 5 FEET

GRAPHIC SCALE
(IN FEET)
1 inch = 5 ft Horiz.
1 inch = 5 ft Vert.



CROSS SECTION C-C - SECTION THROUGH EMERGENCY SPILLWAY

1 INCH = 5 FEET

GRAPHIC SCALE
(IN FEET)
1 inch = 5 ft Horiz.
1 inch = 5 ft Vert.

Design: JAC	Draft: DJM	Date: 01/05/22
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Drawing Name: 21254-PLAN.dwg		

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STATE OF NEW HAMPSHIRE · PAIGE S. LIBBEY No.16670 · LICENSED PROFESSIONAL ENGINEER · 2/22/2022

REV.	DATE	REVISION	BY
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Plan Name:	SLOPE CROSS SECTIONS
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

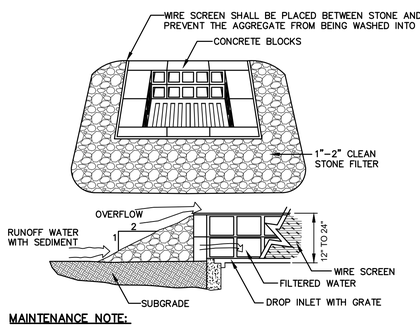
DRAWING No.

X1

SHEET 18 OF 23
JBE PROJECT NO. 21254

TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED OR DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. 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 NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) 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.
8. 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.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. 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% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
    d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.

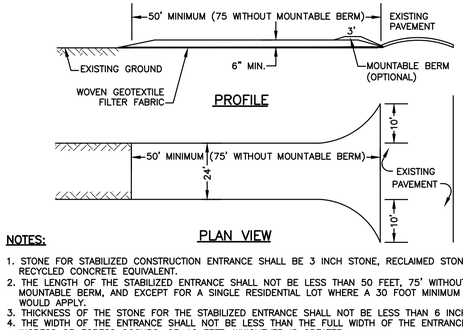


MAINTENANCE NOTE:

1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED IN A SUITABLE UPLAND AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

TEMPORARY CATCH BASIN INLET PROTECTION (Block and Gravel Drop Inlet Sediment Filter)

NOT TO SCALE



NOTES:

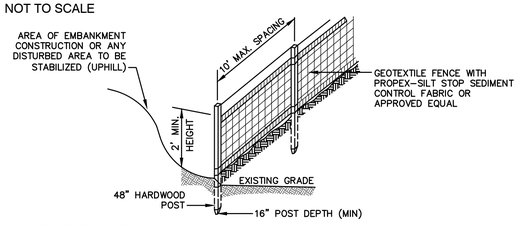
1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, 75' WITHOUT A MOUNTABLE BERM, AND EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. 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 FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL 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 STONE 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 THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

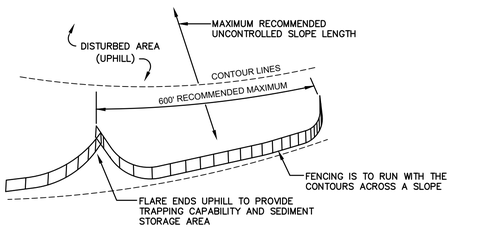
SILT FENCE

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS:

1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.



7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
   B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND 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, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
      NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
      PHOSPHATE(P2O5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

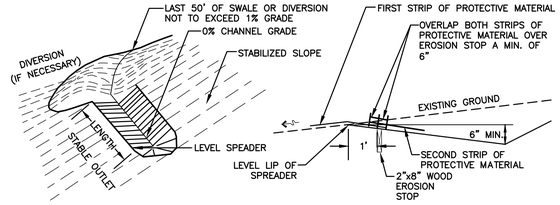
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
* C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES



ISOMETRIC VIEW — CROSS SECTION

NOTES:

1. CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO PERCENT GRADE TO ENSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. AN EROSION STOP SHALL BE PLACED VERTICALLY A MINIMUM OF SIX INCHES DEEP IN A SLIT TRENCH ONE FOOT BACK OF THE LEVEL LIP AND PARALLEL TO THE LIP. THE EROSION STOP SHALL EXTEND THE ENTIRE LENGTH OF THE LEVEL LIP.
4. ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING TWO STRIPS OF JUTE OR EXCELSIOR MATTING ALONG THE LIP. EACH STRIP SHALL OVERLAP THE EROSION STOP BY AT LEAST SIX INCHES.
5. ENTRANCE CHANNEL TO THE LEVEL SPREADER SHALL NOT EXCEED A 1 PERCENT GRADE FOR AT LEAST 50 FEET BEFORE ENTERING THE SPREADER.
6. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER MUST NOT RECONCENTRATE IMMEDIATELY BELOW THE SPREADER.
7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.
8. MAINTENANCE: THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE SPREADER HAS BEEN DAMAGED. SEDIMENT DEEPER THAN 4" ACCUMULATION SHOULD BE REMOVED. IF RILLING HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED AND REVEGETATED. THE VEGETATION SHOULD BE MOWED OCCASIONALLY TO CONTROL WEEDS AND THE ENCROACHMENT OF WOODY VEGETATION. CLIPPINGS SHOULD BE REMOVED AND DISPOSED OF OUTSIDE THE SPREADER AND AWAY FROM OUTLET AREA. FERTILIZATION SHOULD BE DONE AS NECESSARY TO KEEP THE VEGETATION HEALTHY AND DENSE.

LEVEL SPREADER

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE'S SITE DEVELOPER (OR OWNER) TO FILE A NOTICE OF INTENT (NOI) FORM WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) IN ORDER TO GAIN COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. A PRE CONSTRUCTION MEETING IS TO BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION.
2. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
3. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
4. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
5. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
6. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
7. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS.
8. PREPARE BUILDING PAD(S) TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
9. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
10. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
11. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS AND/OR PROPERTY.
13. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
14. PAVE ROADWAY AND DRIVEWAYS WITH INITIAL 'BASE COURSE'.
15. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
16. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
17. FINISH PAVING ROADWAY AND DRIVEWAYS WITH 'FINISH' COURSE.
18. ROADWAY AND DRIVEWAYS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
21. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%-85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
22. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
23. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
24. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
25. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 — PROFESSIONAL ENGINEER — LICENSED — 12/20/2022

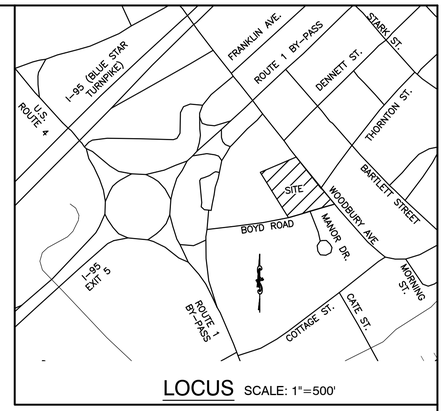
REV.	DATE	REVISION	BY
7	12/20/22	REVISED PER REVIEW ENGINEER AND CITY COMMENTS	DJM
6	10/18/22	REVISED PER REVIEW ENGINEER AND TAC COMMENTS	DJM
5	9/23/22	REVISED PER UTILITY COMPANY	DJM
4	9/20/22	REVISED PER REVIEW ENGINEER COMMENTS	DJM
3	9/14/22	ISSUED TO DEPARTMENT OF PUBLIC WORKS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

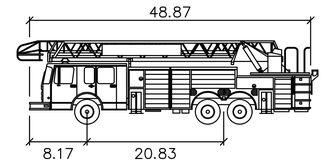
Plan Name: EROSION AND SEDIMENT CONTROL DETAILS
Project: "GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON, 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

DRAWING No. E1
SHEET 19 OF 23
JBE PROJECT NO. 21254





LOCUS SCALE: 1"=500'



Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

= VEHICLE BODY

= FRONT WHEELS

= REAR WHEELS

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – PROFESSIONAL ENGINEER – LICENSED – 12/20/2022

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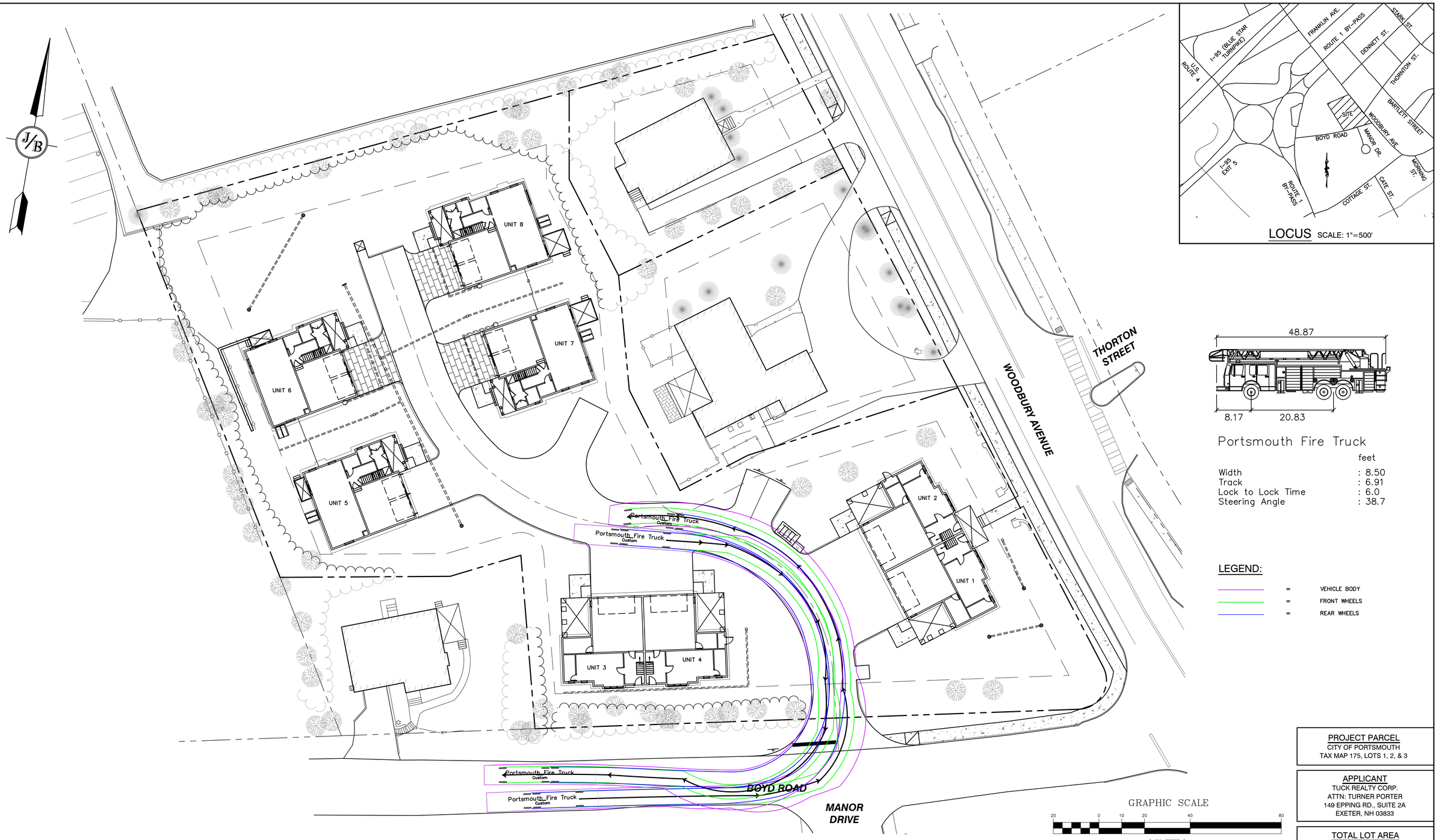
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	TRUCK TURNING PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owners of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.

T1

SHEET 20 OF 23
JBE PROJECT NO. 21254



LOCUS SCALE: 1"=500'

Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

- VEHICLE BODY
- FRONT WHEELS
- REAR WHEELS

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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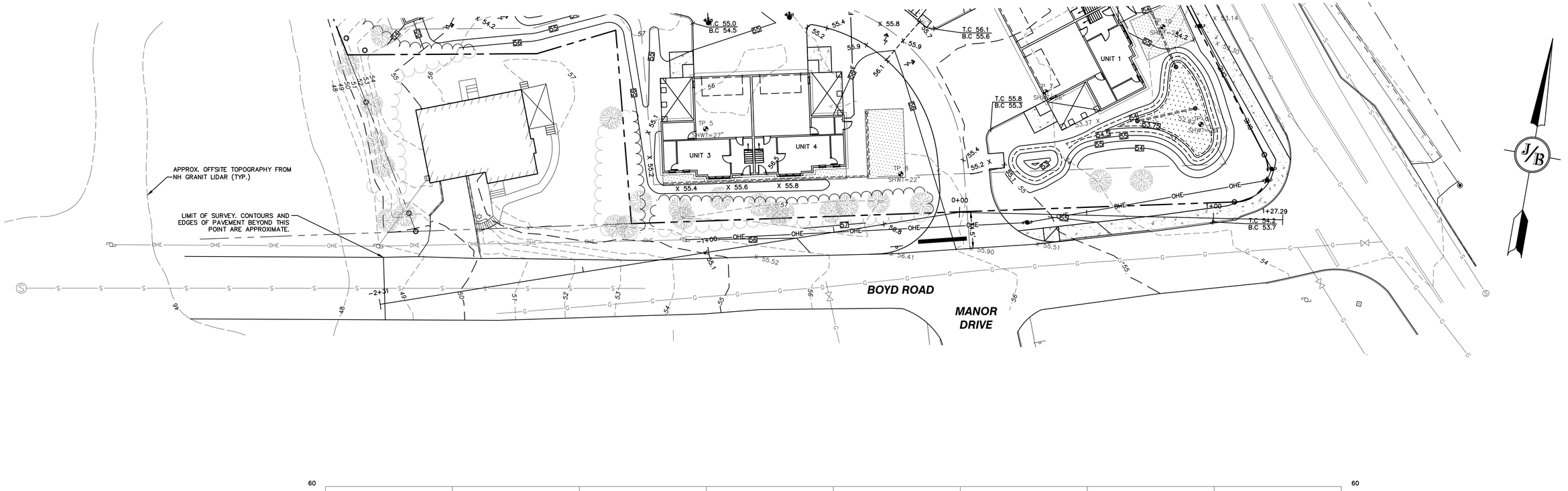
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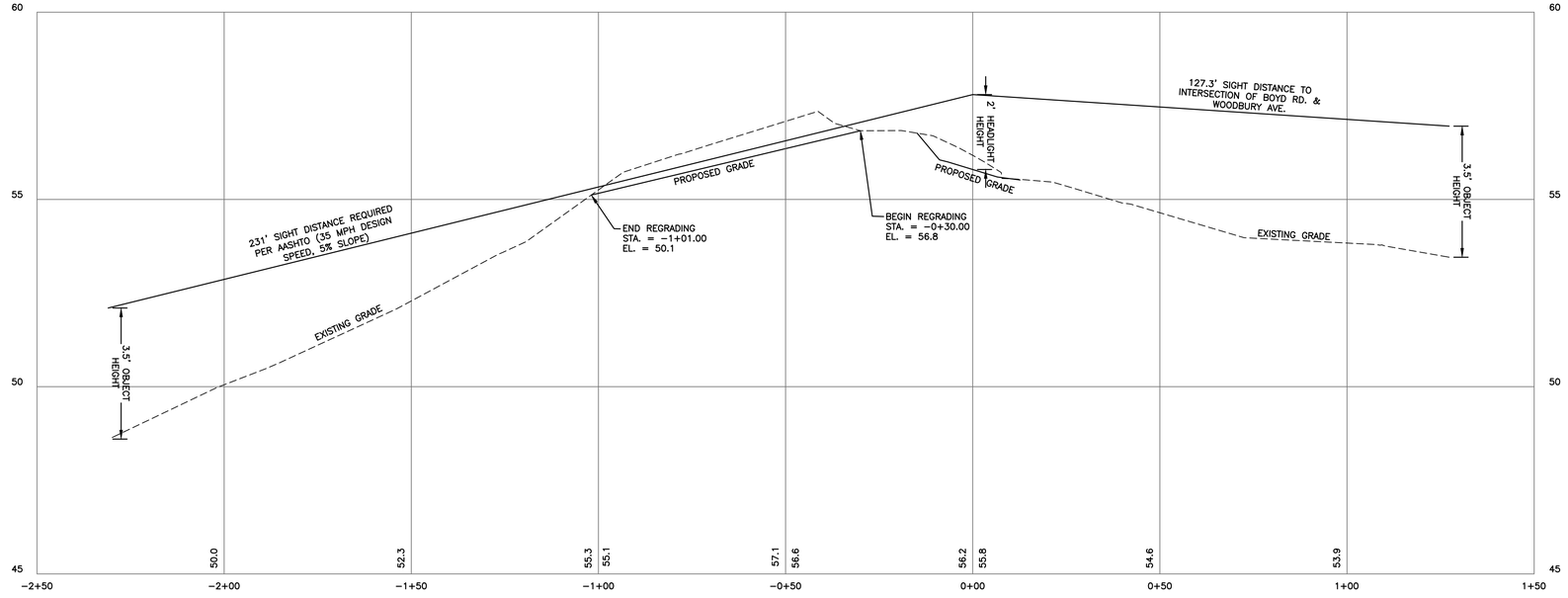
Plan Name: **TRUCK TURNING PLAN**

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owners of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
T2
SHEET 21 OF 23
JBE PROJECT NO. 21254





GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

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PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	HIGHWAY ACCESS PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owners of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
H1
SHEET 22 OF 23
JBE PROJECT NO. 21254

OFFSITE CATCH BASIN

UNIT 8

UNIT 7

UNIT 6

UNIT 5

UNIT 4

UNIT 3

UNIT 2

UNIT 1

T.O.W 51.7
B.O.W 48.8

T.O.W 51.8
B.O.W 51.0

T.C 52.9
B.C 52.4

T.C 53.3
B.C 52.8

T.C 53.8
B.C 53.3

T.C 54.2
B.C 53.7

T.C 55.0
B.C 54.5

T.C 56.2
B.C 55.7

T.C 56.1
B.C 55.6

T.C 55.8
B.C 55.3

T.C 54.2
B.C 53.7

CB 2248
RIM=51.41
INVERT NOT FOUND

CB 2235
RIM=51.84
INVout=48.44 – 4" PVC
L = 33', SLOPE UNKNOWN

THORTON STREET

WOODBURY AVENUE

BOYD ROAD

MANOR DRIVE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
149 EPPING RD., SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
80,484 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
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Drawing Name: 21254-PLAN.dwg		

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FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: OFFSITE DRAINAGE PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
DR1
SHEET 23 OF 23
JBE PROJECT NO. 21254

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

23 December 2022

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Request for Site Plan Approval at 1 Congress Street, Proposed Site Development

Dear Mr. Stith and TAC Members:

On behalf of Mark McNabb and One Market Square, LLC we are pleased to submit the attached plan set for **Site Plan** review for the above-mentioned project and request that we be placed on the agenda for your **January 3, 2023,** TAC Meeting. The project includes the re-use of the existing commercial buildings at 1 and 3 Congress Street, some existing building demolition, and proposed new construction of a 3 Story Structure with Attic Hip Top Mansard Roof to the rear of the existing buildings with the associated and required site improvements. The area behind the existing building is currently a surface parking lot. The surface parking will be lowered to below street level and be included with the new construction.

This submission is intended to address comments from the TAC Meeting of November 1, 2022. The project had been submitted as a site plan application which included some developer proposed off-site improvements to adjacent city streets. During the TAC Meeting part of the discussion was a desire to bifurcate the application into two parts: the Site Plan Approval and the Off-Site Improvements. Since the Off-Site Improvements are proposed on public property (city streets) it was determined that permitting that part of the proposed development would be best accomplished as a separate process. This submission, therefore, will only address those comments from the TAC Committee that pertain to the Site Plan approval. The specific comments, with response in bold text, are repeated below:

1. Please identify all temporary licenses that will be needed for construction in the city ROW. **The License Plan identifies the required licenses for the project. The licensing will consist of licensing some of the building awnings. The awnings on Congress Street are pre-existing.**
2. Please be prepared to discuss construction details, maintenance plans, and any easements required for improvements proposed for adjacent city streets. **The proposed developer funded city street improvements will be addressed in a separate submission.**
3. Please provide an easement plan identifying and describing all proposed temporary and permanent easements. Please include all proposed temporary and proposed easements and licenses for the areas from Fleet Street to the end of Ladd Street, and from the municipal garage to the end of High Street. **There are no proposed easements associated with the onsite building development project.**
4. New designs will need to go back to HDC. **The submitted building has been approved.**

5. Please provide an updated average grade plane plan and an average building height plan with the supporting calculations. **See Sheet C7 and supporting calculations provided.**
6. Please consider relocating the 3 dumpsters off of Haven Court. **Those dumpsters are not the responsibility of 1 Congress Street, they are used by the J. J. Newberry's building.**
7. Applicant needs to coordinate with the city on proposed improvements to High Street, Ladd Street, and Hanover Street prior to TAC recommendation. **The proposed developer funded city street improvements will be addressed in a separate submission.**
8. Please provide an easement plan if 3 or more easements are proposed. **No easements are proposed.**
9. Show existing 6" CI water on Existing plan. **Sheet C1 Existing Conditions has been revised.**
10. Replace SMH 2323. **So noted on Sheet C4.**
11. Replace existing sewer with 8" PVC or 12" depending on projected flow, provide separate sheet for State approval with Profile. Proximity to water main will necessitate a waiver from DES. **See added Sheet P1.**
12. Proposed SMH 'A' should be placed just upstream of the first sewer service. **Revised – see Sheet C4.**
13. Applicant should consider running storm drainage on the other side of High Street due to existing utility conflicts, relocating the gas main to under the sidewalks is preferable to the disturbing the telephone lines. **Drainage revised to be an added feature to the existing street. Basins proposed to be added at the existing curb line on the south / west side. No gas relocation proposed. The brick sidewalk on that side of the street will be re-constructed.**
14. Water main to be replaced with 8" ductile iron from the 12" pipe in Congress Street to the 4" line in Ladd Street. Do not reuse valves, tap main in Congress directly with new 12 x 8 tapping saddle and valve and abandon 6" system at 12" main. Provide 8" valve at intersection of Ladd and High to test against and tie into 4" thereafter directly (no tapping saddle). Provide temporary water for adjacent buildings during main installation. **Revised – see location and notes on Sheet C4.**
15. Confirm there will be at least 5.5' of sidewalk behind all Portsmouth style lanterns or provide other street lighting. Need conduit plan for the area. **This plan reflects the placement of the proposed building on the lot with the appropriate utility tie ins; therefore, there are no proposed changes to the High Street layout. The existing sidewalk (which is being replaced) has an insufficient width to provide 5.5 feet of clear space to the curb. This plan reflects an alternative lighting design. We propose the Portsmouth style lanterns mounted on round poles as you enter High Street (2 locations). Thereafter the building will provide the lighting in a series of building mounted wall sconces. Cut sheets are provided in the supplemental material.**
16. Use NHDOT standard catch basin Type B detail with CB liner/ booted connections etc. **See Detail R on Sheet D4.**
17. CB hoods to be Eliminator, City Standard on all structures in ROW. **See Detail T on Sheet D4.**
18. Provide valve box sleeve and cover over all Hayes style curb boxes in ROW. Hayes boxes are no longer accepted as a finished surface in the road or sidewalks. **See Detail V on Sheet D4.**

19. Provide reconstruction cross section for High Street, paver type, setting bed type and thickness, underlying asphalt thicknesses, roadbed gravels, typical grades etc. **See Detail W on Sheet D7.**
20. Provide clear intended limits of work lines on plans for review. **See location and notes on Sheet C4.**
21. Use Portsmouth Standard water and sewer installation details. **See supplied Portsmouth standards sheet for sewer. Water details await confirmation of layout.**
22. Provide details for pavers in ROW Detail H/C3 may not be appropriate for all areas. **The change of not including off-site improvements as a part of this plan means that the only paver surface in the ROW is the Brick Sidewalk; standard Portsmouth Detail included in the plan set.**
23. Erosion control notes on plans are not suitable for urban environment, please edit accordingly. **Sheet D1 has been edited.**
24. Need stair profile and details for staircase off Fleet to show interactions between retaining wall and stairs and railings. **This improvement is no longer a part of this application.**
25. Installation of electrical and possible communication conduit/manholes/pull boxes will be required in Haven Court prior to placing new gas or surface treatments. **This is acceptable provided timing can be agreed to.**
26. Curb on High Street will likely need full replacement. **Understand.**
27. Provide watertight basement system. **This can be noted as a condition of approval.**
28. Provide cross sections of foundation system depths in proximity to High Street. **The detail is on Sheet PB A. 8 of the Architectural plans.**
29. All materials used in Reconstructing public areas will meet DES / DOT / City standards and will need to be reviewed and approved prior to use. **Those improvements are no longer a part of this application.**
30. Replacement of CB1 may be required due to different pipe configurations. **So noted on Sheet C4.**
31. Confirm High Street slopes will not exceed ADA required maximum cross slopes. **The current plan is to replace the existing sidewalk.**
32. Handrail on stairs in alley must be ADA compliant. **This improvement is no longer a part of this application.**
33. Keep existing sidewalk and parking conditions in the High at Congress intersection. Do not want to lose more parking. **The plans reflect no changes to the High Street layout.**

The following plans are included in our submission:

- Cover Sheet – This shows the Development Team, Legend, Site Location, and Site Zoning.
- Standard Boundary Survey Plan – This plan shows the existing property boundaries. The survey was performed before the lot merger; the lots have been officially merged. The site is still bifurcated by a Zoning District boundary line along the old property line.
- License Plan – This shows the location of proposed awnings which will require a license from the City Council.
- Existing Conditions Plan C1 – This plan shows the existing site conditions in detail.
- Demolition Plan C2 – This plan shows portions of the existing buildings and other site features which will be removed.
- Project Site Plan C3 – This plan shows the site development and proposed building placement.
- Architectural Plans – These are Floor Plans, Roof Plan, Building Elevations and Rendered Views of the proposed building.

- Landscape Plans – These plans show proposed landscape with plant list and some lighting details.
- Utility Plan C4 – This plan shows proposed site utilities.
- Grading Plan C5 – This plan shows proposed site grading.
- Parking Level Plan C6 – This plan shows the layout of the parking (basement) level with required parking calculations.
- Average Grade Plane C7 – This plan shows the average grade plane for the proposed building.
- High Street Profile P1 – This plan shows the profile of High Street. Some utilities added.
- Detail Sheets D1 – D7 – These plans show site details.

Also please find attached the following in support of the Application:

- Lighting Cut Sheets

We look forward to the review of this submission and Staff / City Department input on this project.

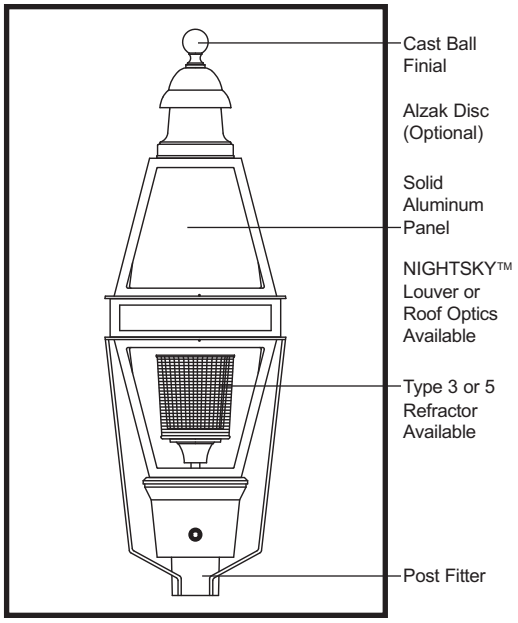
Sincerely,

John R. Chagnon

John R. Chagnon, PE
CC: Mark McNabb, Tracy Kozak, Terrance Parker, FX Bruton

Average Grade Work Sheet						
Project	One Congress Street				Calculated	
Address:	1 Congress Street, Portsmouth, NH				10/26/2022	
6' offset from Building; Prop Grades 10' OC						
SECTION	Elev	Elev	Elev	Elev	Total	
SOUTH	27.84	27.79	27.74	27.97	111.34	
	28.02				28.02	
						AVG PER SECTION
			#	5	139.36	27.87
WEST	35.00	34.83	34.61	34.44	138.88	
	34.25	34.04	33.86	33.68	135.83	
	33.50	33.32	33.14	33.03	132.99	
	32.50				32.5	AVG PER SECTION
			#	13	440.20	33.86
NORTH	31.79	31.10	30.41	29.72	123.02	
	29.03	28.28	27.70	27.09	112.10	
	26.54				26.54	
						AVG PER SECTION
			#	9	261.66	29.07
EAST	27.83	27.71	27.59	27.47	110.60	
	27.62	27.56	27.43	27.26	109.87	
	27.39	27.64	27.44	27.24	109.71	
	27.04	26.84	26.64	26.44	106.96	
	26.24				26.24	AVG PER SECTION
			#	17	463.38	27.26
Total	1,304.60	>	AVERAGE GRADE			
#	44		29.65			

962TC GLEN ELLYN SERIES SPECIFICATIONS



EPA = 2.75 (ft^2)
WEIGHT = 25 LBS

GENERAL

The 962TC Glen Ellyn series is a tall, Colonial four-sided fixture. It features a decorative cast sloped, paneled roof, a cast cage with straight edging, cage support legs, acrylic lens and a lift hinge access door and/or hinged roof for relamping. The roof shall be appointed with a cupola and cast decorative pedestal ball finial.

POST FITTER

The fitter or base shall be heavy wall cast aluminum, 356 alloy for high tensile strength. It shall have an inside diameter opening to fit a 3" diameter pole or tenon. When ordered with a Sternberg aluminum pole, the fitter shall be set screwed to the pole top or tenon.

BALLAST

The 962TC shall have an integral ballast compartment. The ballast housing shall be heavy wall cast aluminum, 356 alloy for high tensile strength. The housing shall be mounted cast in one piece to the fitter to ensure a water-tight compartment. The ballast shall be attached to the ballast housing to ensure high capacity heat sinking of ballast temperatures, keeping the ballast cooler and ensuring long life. The ballast shall be mounted on a pull out door for easy ballast maintenance.

ELECTRICAL

Fixture shall be U.L. or E.T.L. listed in U.S. and Canada. H.I.D. ballasts shall be high power factor with lamp starting down to -30 degrees C. Medium base and mogul base porcelain sockets are 4KV rated. The ballast/socket assembly shall be pre-wired when ballast is located in the fixture. All compact fluorescent (PL) ballasts shall be instant start electronic with a starting temperature of down to 0 degrees F. They shall have a 4-pin socket to accept quad or triple tube lamps. Ballasts shall be DOE EISA compliant.

FIXTURE HOUSING

The 962TC fixture shall be 14" wide and the overall height shall have 42". It shall be made of heavy wall cast aluminum, 356 alloy and lenses shall be made of vandal resistant acrylic, available in clear (CA), clear seeded (CSA), clear textured (CTA), prismatic (PA) and white (WA) acrylic. The fixture cage shall be cast in one piece and shall have a lift hinged door. The four paneled roof shall be closed with solid aluminum panels. Model 962TCGT shall have an open roof that will be lensed.

OPTICAL OPTIONS

Refractors shall be 6" diameter borosilicate glass with an I.E.S. Type 3 (RE3) or Type 5 (RE5) distribution. It shall be secured to the socket stem with $^3/_8$" plated steel threaded pipe nipple and rest on a cast aluminum holder with anti-shock gasket. The refractor will be secured to cast holder with a quarter-turn internal aluminum twist ring for ease of maintenance.

The **NIGHTSKY® OPTI-SHIELD® Louver Optic System** (LO) shall be a multi-tier reflector with 7" diameter rings to produce an I.E.S. cut-off Type 3 or 5 distribution. The Louver Optic System shall be made of highly specular anodized aluminum and shall come standard with medium base socket.

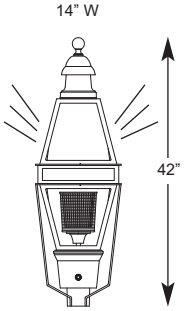
LIST NO.
962TC
GLEN ELLYN
SERIES

(Continued on back page)

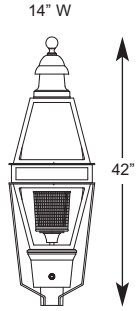
962TC GLEN ELLYN

FIXTURES / ARMS PM-WB

FIXTURES / OPTICAL SYSTEMS

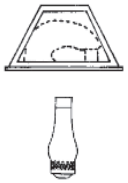


962TCGT
Glow Top



962TC

ROH
Roof Optics
3 or 5

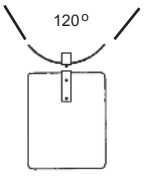


FC
Frosted
Chimney

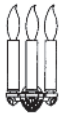
Alzak Disc



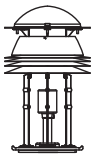
RE3
RE5
Refractor



HSS
House Side
Shield



3L
3 Light

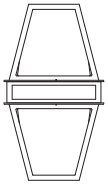


LO3
LO5
Louver
Optics

LENSES



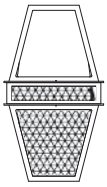
CSA
Clear
Seeded
Acrylic



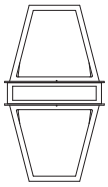
CA
Clear
Acrylic



CTA
Clear
Textured
Acrylic



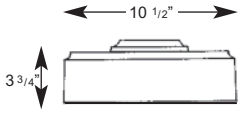
PA
Prismatic
Acrylic



WA
White
Acrylic

PIER MOUNTS (PB)

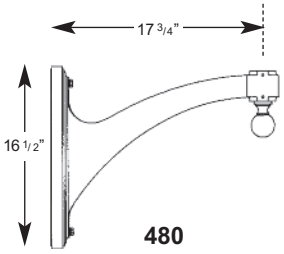




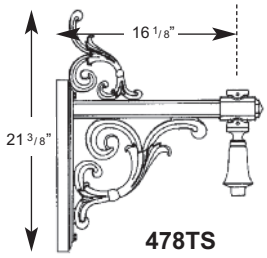
450PB

ARMS - POST MOUNT (PM) or WALL BRACKETS (WB)

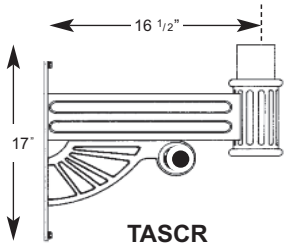
See Arms Section for more information



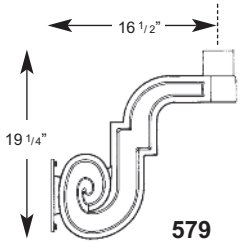
480



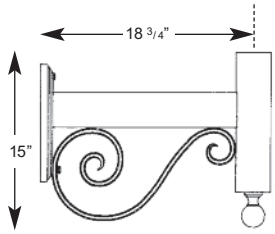
478TS



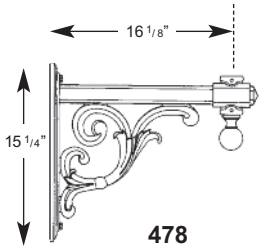
TASCR



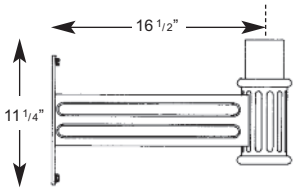
579



6236



478



TA



BUILDING A PART NUMBER

POST & ARM FIXTURES

NO. OF ARMS	ARM MOUNTED FIXTURE / POSTARM	CENTER POST TOP FIXTURE (PT)	POST (See Post Section)	POST CAP	LIGHT SOURCE BALLAST WATTS / TYPE / VOLTS	OPTICS	OPTIONS	LENS	FINISH
	—	962TC PT	2112FP5		100 HPS120	RE3	HPS100/MED	CSA	BK



WALL FIXTURES

FIXTURE / WALLBRACKET	LIGHT SOURCE BALLAST WATTS / TYPE / VOLTS	OPTICS	LENS	OPTIONS	FINISH
962TC/480WB	100 HPS120	RE3	CA	HPS100/MED	BK



PIER FIXTURES
Uses same information boxes as wall fixture

962TC/450PB
FIXTURE / PIER BASE

PART NUMBER SELECTIONS

FIXTURES
- 962TC
- 962TCGT[1]

OPTICS
- RE3G
- RE5G
- ALZAK
- HSS
- LO3
- LO5
- RO3[5,6]
- RO5[5,6]
- FHC[3]
- 3L

POST ARMS
- 478PM
- 478TSPM
- 480PM
- 6236PM
- 579PT
- TAPT
- TASCRPT

PIER BASES
- PB44
- 450PB

WALL BRACKET ARMS
- 478WB
- 478TSWB
- 480WB
- 480DWB
- 6236WB
- 579WB
- TAWB
- TASCRWB

LENSES
- CSA
- CA
- CTA
- PA
- WA

BALLASTS[4,7]
- 35HPS[2]
- 50HPS
- 70HPS
- 100HPS
- 150HPS
- 250HPS
- 50MHP
- 70MHP
- 100MHP
- 150MHP
- 200MHP[8]
- 250MHP[8]
- PLT26
- PLT32
- PLT42
- PLT57
- PLT70
- INCAND

LAMPS[7]
- HPS35/MED
- HPS50/MED
- HPS70/MED
- HPS100/MED
- HPS150/MED
- HPS250/MOG/ED18
- MHP50/MED
- MHP70/MED
- MHP100/MED
- MHP150/MED
- MHP200/MOG/ED28[8]
- MHP250/MOG/ED28[8]
- PLT26
- PLT32
- PLT42
- PLT57
- PLT70

STANDARD FINISHES*
- BKT Black Textured
- WHT White Textured
- PGT Park Green Textured
- ABZT Architectural Medium Bronze Textured
- DBT Dark Bronze Textured

*Smooth Finishes are available upon request

CUSTOM FINISHES
- OI Old Iron
- RT Rust
- WBR Weathered Brown
- CD Cedar
- WBK Weathered Black
- TT Two Tone

STERNBERG SELECT FINISHES
- VG Verde Green
- SI Swedish Iron
- OWGT Old World Gray Textured

OPTIONS
- PEC1 Photocell-Bimetal 120 Volt
- PEC2 Photocell-Bimetal 208-277 Volt
- PEC1-E Photocell-Electronic 120 Volt
- PEC2-E Photocell-Electronic 208-277 Volt
- FHS Single Fuse and Holder-120, 277 Volt
- FHD Dual Fuse and Holder-208, 240, 480 Volt
- QR Quartz Re-Strike
- PF Pineapple Finial or Font (TA, TASCR)
- BF Ball Finial or Font (TA, TASCR)
- LAMPS Select from List

NOTES:

1 RE3G, RE5G, FHC or 3L optic only.
2 35HPS is 120 volt only.
3 Medium base socket only when used to house lamp.
4 Medium base sockets standard with ballasts up to 150 watts HID. 4-pin for PL.
5 Medium base lamp only, ED17. Consult factory for mogul base.
6 Can support PLH or PLT up to 60 watts.
7 Metal halide systems are pulse start.
8 Consult factory for limitations.

555 Lawrence Ave. Roselle, IL 60172 • 847-588-3400 • Fax 847-588-3440
www.sternberglighting.com Email: info@sternberglighting.com

962TC GLEN ELLYN SERIES SPECIFICATIONS

LIST NO. 962TC GLEN ELLYN SERIES

NIGHTSKY® STAR-SHIELD® Roof Optics distribution shall be delivered by multi-segmented roof mounted reflector systems which eliminate uplight and provide cut-off. The reflector cavity shall be made of specular anodized aluminum. Roof Optics Type 3 (RO3) or Type 5 (RO5) horizontal are available for medium base lamps.

Frosted Glass Hurricane Chimney (FHC) is an optic option which adds an authentic touch and can be used with Roof Optics.

House Side Shield (HSS) is an option which will block up to 120° of light in any one direction.

3-Light (3L) candelabra set is an option for incandescent application.

PHOTOCELLS

Photocells shall be either the thermo bi-metal button type or the electronic button type. On single post top fixtures the photocell shall be mounted in the fitter and pre-wired to ballast. On multiple head fixture assemblies photocells shall be mounted in the pole shaft on an access plate and are not pre-wired as ballast housing assemblies and fitters are packaged separately for ease of wiring to source. The thermo bi-metal photocell shall be designed to turn on at 1.0 footcandle and turn off at not more than 5 footcandles. The electronic button type photocell is instant on and a 5-10 second turn off and shall turn on at 1.5 footcandles with a turn-off at 2-3 footcandles. Photocells are either 120 volt or 208 thru 277 volt.

ARMS

All arms are made of cast aluminum and/or extruded aluminum. Arms with decorative filigree have meticulously detailed scroll work and gracefully curved brackets. All 962TC fixtures will have its fitter either welded to the arm or will be mechanically attached at the factory to ensure arms will be plumb, secure and level over the life of the installation. Each arm shall be bolted to a post mount adapter, which is welded to the pole to ensure proper alignment to the base. Twin TA, TASCR and 579 arms will be attached to a decorative center hub which will slip-fit the center tenon of the pole (not shown). Arms are pre-wired for ease of installation.

FINISH

Prior to coating, each assembly shall be chemically cleaned and etched in a 5-stage washing system which includes alkaline cleaning, rinsing, phosphoric etching, reverse osmosis water rinsing, and non-chrome sealing to ensure corrosion resistance and excellent adhesion for the finish coating. The finish coating shall be electrostatically applied semi-gloss, super durable polyester powder baked at 400 degrees for a durable and superior, color retentive finish. Our optional antique Verde Green finish and Swedish Iron finish are hand brushed using a 3-step process. The total assembly shall be wrapped in shockproof wrapping or fully enclosed in corrugated cartons.

WARRANTY

Five-year limited warranty. See product and finish warranty guide for details.

Powered by ADVANCE® Quality Ballasts

480 ARMS & WALL BRACKETS

The 480 arm includes a diverse family of sizes and orientations that allow for many mounting configurations that meet almost any project design requirements. These heavy cast arms look robust and substantial while still showing well-proportioned dimensions, scale and classic detailing. Matching well with traditional luminaires these arms can be pole or wall mounted in single or multiple head configurations.



BUILD A PART NUMBER		
ORDERING EXAMPLE: 480-PM-BKT		
Arm	**Mounting Style**	**Finish**

Arms

• 480 • 480H • 480DH • 480LF • 480D

D=Down Sweeping H=Hanging LF=Long Font

Mounting Styles

- **PM** Post Mount
- **WB** Wall Bracket
- **WBBB** Wall Bracket With Ballast Box

Finish (Click here to view paint finish sheet)

Standard Finishes[1]

- **BKT** Black Textured
- **WHT** White Textured
- **PGT** Park Green Textured
- **ABZT** Architectural Medium Bronze Textured
- **DBT** Dark Bronze Textured

[1] Smooth finishes are available upon request.

Custom Finishes[2]

- **CM** Custom Match
- **OI** Old Iron
- **RT** Rust
- **WBR** Weathered Brown
- **CD** Cedar

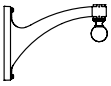
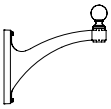
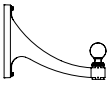
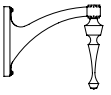
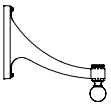
- **WBK** Weathered Black
- **TT** Two Tone

[2] Custom colors require upcharge.

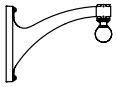
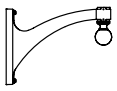
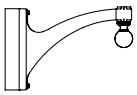
Sternberg Select Finishes

- **VG** Verde Green
- **SI** Swedish Iron
- **OWGT** Old World Gray Textured

Arms

Cat. #	Detail	Dimension	Available Mounting Styles	Weight / EPA
480		17-3/4" L 15-1/4"H	PM WB WBBB	6.3 LBS 0.78 SQ FT
480H		17-3/4" L 18-3/8"H	PM WB WBBB	6.3 LBS 0.78 SQ FT
480DH		17-3/4" L 13-3/4"H	PM WB WBBB	6.3 LBS 0.78 SQ FT
480LF		17-3/4" L 15-1/4"H	PM WB WBBB	7.7 LBS 0.82 SQ FT
480D		17-3/4" W 18-3/4"H	PM WB WBBB	6.3 LBS 0.78 SQ FT

Mounting Style

Mounting Style	Detail	Back Plate/ Rough in Dimensions	Extension	Fit
PM		2-1/2" W 13-3/4"H	17-3/4"	3" - 6" Poles
WB*		4-3/4" W 15-1/4"H	17-3/4"	Flat Wall
WBBB*		6" W 16-5/8"H	22-3/4"	Flat Wall

*Click Mounting Style for installation instructions.

SternbergLighting
ESTABLISHED 1923 / EMPLOYEE OWNED

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
info@sternberglighting.com
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450 LEXINGTON SERIES

ARCHITECTURAL POLE

DIMENSIONS
10.5" Ø
3" TALL

5 YEAR WARRANTY

UL LISTED

ETL LISTED

CLICK FOR FAQ's

JOB NAME

FIXTURE TYPE

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 450FP4-12-.188-BCC-GFILPIUC-SH/BKT

Base Model	Shaft	Height	Wall Thickness	Post Center Cap	Option Burial	Option Photocell	Option Ground Fault Breaker	Option Flag Pole Holder	Option Banner Arms	Option Planter Arms	Option Sign Arms	Option Speaker Hub	Option Sign Bracket	Option Steel Wreath Hook	Finish

Model
- 450

Shaft
- **T4:** 4"-3" Tapered Smooth
- **P4:** 4" Straight Smooth
- **FP4**[1]**:** 4" Straight Fluted

[1] Not available in .250 wall.

Height
- 8'
- 10'
- 12'
- 14'

Wall Thickness
- **.125:** 1/8" Wall Thickness
- **.188:** 3/16" Wall Thickness
- **.250:** 1/4" Wall Thickness

Post Center Cap (if required)
(Click here to view post cap sheet)
- BCC
- FCC
- SCC
- TFCC
- SSCC
- RCC
- PCC

Options (Click here to view accessories sheet)
- **DB4** Direct Burial mounting style pole, with 4' direct burial section (or advise other length)
- **HXB** Helix Base mounting style pole
- **PCD** Electronic Button Photocontrol, mounted on an access door (120v-277v)
- **PCD4** Electronic Button Photocontrol, mounted on an access door (480v)
- **GFI IUC** 15 Amp duplex GFCI receptacles with a standard in-use cover
- **GFI LPIUC** 15 Amp duplex GFCI receptacles with a low-profile in-use cover
- **DCO LPIUC** Duplex receptacles with a low-profile in-use cover (NO GFICI PROTECTION)
- **GFB** Remote Ground Fault Breaker installed in pole base (for use with NON-GFCI receptacles)
- **FH** Cast Aluminum flag holder mount, for use with 1" diameter flag pole
- **SBA** Single Banner Arm, "PM" style mount
- **DBA** Double Banner Arms, "PM" style mount
- **SBAR** Single Banner Arm and Ring, for triangle banners, "PM" style mount
- **HSBA** Single Banner Arm, HUB mount style mount
- **HDBA** Double Banner Arms, HUB mount style mount
- **BDBA6** Double Banner Arms, Break-Away style, to break with 60MPH wind gust
- **BDBA9** Double Banner Arms, Break-Away style, to break with 90MPH wind gust
- **C4SBA** Single Banner Arm, Clamp-Style mount, for 4" diameter poles
- **C4DBA** Double Banner Arms at 180°, Clamp-Style mount, for 4" diameter poles
- **DHPA** Double Hooked Planter Arm
- **SHPA** Single Hooked Planter Arm
- **DSPA** Double Stepped Planter Arm
- **SSPA** Single Stepped Planter Arm
- **PA478** Cast aluminum decorative planter arm
- **SA78** Small cast aluminum decorative sign arm, with 24" long channel for blade sign by others
- **SA478** Large cast aluminum decorative sign arm, with 24" long channel for blade sign by others
- **SABA** Banner arm style sign arm, with 24" long channel for blade sign by others
- **SH** Female threaded speaker hub, advise thread size
- **SB** Sign Bracket, vertically mounted on pole shaft
- **WHK** Steel wreath hook

Finish (Click here to view paint finish sheet)

Standard Finishes[2]
- **BKT** Black Textured
- **WHT** White Textured
- **PGT** Park Green Textured
- **ABZT** Architectural Medium Bronze Textured
- **DBT** Dark Bronze Textured

[2] Smooth finishes are available upon request.

Custom Finishes[3]
- **CM** Custom Match
- **OI** Old Iron
- **RT** Rust
- **WBR** Weathered Brown
- **CD** Cedar
- **WBK** Weathered Black
- **TT** Two Tone

[3] Custom colors require upcharge.

Sternberg Select Finishes
- **VG** Verde Green
- **SI** Swedish Iron
- **OWGT** Old World Gray Textured

Standard Urban Finishes (Click here to view paint finish sheet)
- **UGMT** Gun Metal Textured
- **UGM** Gun Metal Matte
- **UBT** Urban Bronze Textured
- **UB** Urban Bronze Matte
- **USLT** Urban Silver Textured
- **USL** Urban Silver Matte
- **UWHT** Urban White Textured
- **UWH** Urban White Matte

Specifications

Construction
The base shall be made of heavy wall, 356 alloy cast aluminum. It shall have a 3/4" thick floor cast as an integral part of the base. It shall have a cast anchor bolt cover designed with a curved relief. The shadt shall be double circumferentially welded internally and externally to the base for added strength.

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450 LEXINGTON SERIES

ARCHITECTURAL POLE

Tenon

Standard tenon size to be 3" OD x 3" tall. Consult factory for additional sizes.

Shaft

The **straight smooth shaft** shall be made of ASTM 6063 extruded aluminum and tempered to a T6 condition

The **tapered smooth shaft** shall be made of ASTM 6063 extruded aluminum and tempered to a T6 condition

The **straight fluted shaft** shall be made of ASTM 6061 extruded aluminum and tempered to a T6 condition.

Installation

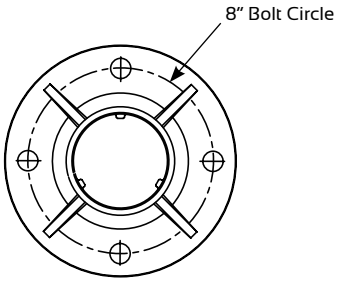
Four 1/2" diameter, hot-dipped galvanized "L" type anchor bolts shall be provided with the post for anchorage, they shall be mounted in a 8" bolt circle. Post will be provided with an access door which shall be secured with tamper proof stainless steel hardware, includes a grounding stud behind the access door.

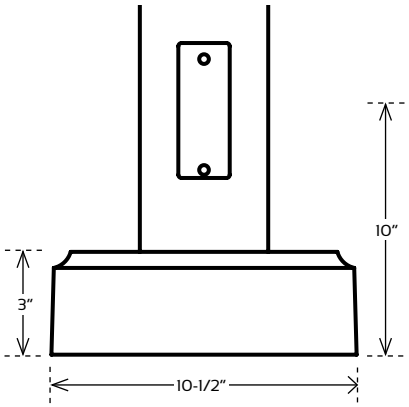
Warranty

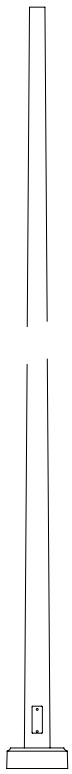
Five-year limited warranty. See product and finish warranty guide for details.

Finish

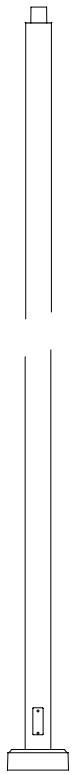
Refer to website for details.







TAPERED SMOOTH SHAFT



STRAIGHT SMOOTH SHAFT



STRAIGHT FLUTED SHAFT

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450 LEXINGTON SERIES

ARCHITECTURAL POLE

EPA Chart - AASHTO 2009

POLE HEIGHT	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
FP4 4" Smooth Fluted Pole - 0.125" Wall Thickness							
8	6.94	5.42	4.30	3.44	2.77	2.25	1.82
10	5.16	3.92	3.00	2.30	1.76	1.33	0.99
12	3.83	2.79	2.02	1.43	0.97	0.61	
14	2.79	1.89	1.22	0.71			
FP4 4" Smooth Fluted Pole - 0.188" Wall Thickness							
8	10.42	8.23	6.62	5.39	4.44	3.68	3.07
10	7.98	6.21	4.89	3.89	3.12	2.50	2.00
12	6.22	4.72	3.61	2.77	2.12	1.60	1.18
14	4.85	3.56	2.60	1.87	1.31	0.86	
16	3.74	2.60	1.76	1.12	0.62		
P4 4" Straight Smooth Shaft - 0.125" Wall Thickness							
8	7.03	5.56	4.54	3.77	3.18	2.71	2.33
10	5.27	4.09	3.31	2.73	2.28	1.93	1.64
12	3.97	3.00	2.40	1.95	1.60	1.34	1.12
14	2.95	2.14	1.67	1.32	1.06	0.86	0.70
16	2.11	1.42	1.06	0.80	0.60		
P4 4" Straight Smooth Shaft - 0.188" Wall Thickness							
8	10.50	8.37	6.86	5.72	4.84	4.14	3.58
10	8.10	6.38	5.20	4.32	3.63	3.09	2.66
12	6.36	4.93	3.99	3.29	2.75	2.32	1.98
14	5.01	3.81	3.05	2.48	2.05	1.71	1.44
16	3.93	2.89	2.27	1.82	1.47	1.21	1.00
P4 4" Straight Smooth Shaft - 0.25" Wall Thickness							
10	10.60	8.41	6.88	5.73	4.84	4.13	3.57
12	8.47	6.65	5.41	4.48	3.76	3.19	2.74
14	6.84	5.29	4.27	3.51	2.92	2.47	2.10
16	5.54	4.19	3.35	2.72	2.24	1.87	1.57
T4"-3" Smooth Tapered Shaft - 0.125" Wall Thickness							
8	3.89	2.99	2.32	1.91	1.59	1.34	1.14
10	2.77	2.04	1.49	1.20	0.97	0.80	0.66
12	1.92	1.31	0.85	0.64			
T4"-3" Smooth Tapered Shaft - 0.188" Wall Thickness							
8	5.95	4.66	3.70	3.06	2.57	2.19	1.88
10	4.44	3.39	2.61	2.14	1.77	1.49	1.26
12	3.34	2.45	1.79	1.44	1.17	0.96	0.79
14	2.46	1.70	1.13	0.87	0.67	0.52	
T4"-3" Smooth Tapered Shaft - 0.25" Wall Thickness							
10	5.93	4.60	3.61	2.97	2.49	2.10	1.80
12	4.59	3.47	2.63	2.14	1.77	1.47	1.24
14	3.55	2.58	1.85	1.48	1.19	0.97	0.79
16	2.70	1.84	1.21	0.92	0.70	0.54	

* Consult factory for other heights.
** All EPA values expressed in square feet.

SternbergLighting
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962TC-XRLED GLEN ELLYN SERIES

LED

EPA 3.65 (ft²)
WEIGHT 36 LBS

5 YEAR WARRANTY

LUMEN RANGE 1,550 to 5,210

LIFE SPAN L70 MINIMUM 50,000 HOURS

UL LISTED

CLICK FOR FAQ'S

JOB NAME

FIXTURE TYPE

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 2A-962TC-XRLED-12L45T5-MDL14-CA-HSS-FHD/478PM/2112FP5/SCC/BKT

Mounting Config.	Fixture	LED	CCT	Type	Driver	Lens	Option House Side Shield	Option Fuse	Option Internal Lens	Arm See Arm Spec Sheets	Pole See Pole Spec Sheets	Finish

Mounting Configuration
(Click here to view mounting configuration sheet)

- 1W
- 2A
- 3A90
- 1AM
- PT
- 2A90
- 3APT
- 2AM
- 1A
- 2APT
- 4A
- 450PB
- 1APT
- 3A
- 4APT

W = Wall Mount **PT** = Post Top **A** = Arm Mount **AM** = Arm Mid-Mount **PB** = Pier Base

Fixture

- 962TC
- 962TCGT (Glow Top)[1]

[1] Add 10 watts.

LED

- XRLED-9L
- XRLED-12L

CCT - Color Temperature (K)

- 45(00)
- 35(00)
- 27(00)

Type

- T2
- T3
- T4
- T5

Driver

- **MDL07**[2] (120v-277v, 700mA)
- **MDL14** (120v-277v, 1400mA)
- **MDH07**[2] (347v-480v, 700mA)
- **MDH14** (347v-480v, 1400mA)

[2] For use with 9L system only.

Lens (Click here to link to lens options)

- **SV1** (Flat Soft Vue Light Diffuse Acrylic)
- **SV2** (Flat Soft Vue Moderate Diffuse Acrylic)
- **CA** (Clear Acrylic)
- **CTA** (Clear Textured Acrylic)
- **CSA** (Clear Seeded Acrylic)
- **PA** (Pristmatic Acrylic)
- **WA** (White Acrylic)

Options (Click here to view accessories sheet)

- **HSS** House Side Shield
- **FHD**[3] Dual Fuse & Holder
- **SV1D** Soft Vue Light Diffuse, Internal Dome Lens
- **SV2D** Soft Vue Moderate Diffuse, Internal Dome Lens

[3] Ships loose for installation in base.

Arm (Click here to link to arm specification page)

See Arms & Wall Brackets specification sheets.

- 478
- 480
- 6236
- 579
- TA
- TASCR

Pole (Click here to link to pole specification page)

See Pole specification sheets.

Finish (Click here to view paint finish sheet)

Standard Finishes[4]

- **BKT** Black Textured
- **WHT** White Textured
- **PGT** Park Green Textured
- **ABZT** Architectural Medium Bronze Textured
- **DBT** Dark Bronze Textured

[4] Smooth finishes are available upon request

Custom Finishes[5]

- **CM** Custom Match
- **OI** Old Iron
- **RT** Rust
- **WBR** Weathered Brown
- **CD** Cedar
- **WBK** Weathered Black
- **TT** Two Tone

[5] Custom colors require upcharge.

Sternberg Select Finishes

- **VG** Verde Green
- **SI** Swedish Iron
- **OWGT** Old World Gray Textured

Specifications

Fixture

The 962TC fixture shall be 14" wide and the overall height shall have 42". It shall be made of heavy wall cast aluminum, 356 alloy and lenses shall be made of vandal resistant acrylic. The fixture cage shall be cast in one piece and shall have a lift hinged door. The four paneled roof shall be closed with solid aluminum panels. The Luminaire shall be UL approved in US and Canada.

Fitter

The fitter or base shall be heavy wall cast aluminum, 356 alloy for high tensile strength. It shall have an inside diameter opening to accept a 3" diameter pole or tenon. When ordered with a Sternberg aluminum pole, the fitter shall be set screwed to the pole top or tenon.

LEDs

The luminaire shall use high output, high brightness LED's. They shall be mounted in arrays, on printed circuit boards designed to maximize heat transfer to the heat sink surface. The arrays shall be downward facing to minimize up-light. The LED's and printed circuit boards shall be shall be environmentally friendly and 100% recyclable, they shall also be protected from moisture and corrosion by a conformal coating of 1 to 3 mils. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. The High Performance white LED's will have a life expectancy of approximately 50,000 hours with not less than 70% of original brightness (lumen maintenance), rated at 25°C. The High Brightness, High Output LED's shall be 4500K (3500K or 2700K option) color temperature with a typical of 70 CRI. Consult factory for custom color CCT. The luminaire shall have a minimum _____ (see table) delivered initial lumen rating when operated at steady state with an average ambient temperature of 25°C (77°F).

Optics

The luminaire shall be provided with individual, refractor type optics applied to each LED. The luminaire shall provide Type ___ (2, 3, 4 or 5) light distribution per the IESNA classifications. Testing shall be done in accordance with IESNA LM-79.

See next page

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962TC-XRLED GLEN ELLYN SERIES

LED

Electronic Drivers

The LED driver shall be U.L. Recognized.
It shall be securely mounted inside the fixture, for optimized performance and longevity. It shall be supplied with a quick-disconnect electrical connector on the power supply, providing easy power connections and fixture installation. It shall have overload as well as short circuit protection, and have a DC voltage output, constant current design, 50/60HZ. It shall be supplied with line-ground, line-neutral and neutral-ground electrical surge protection in accordance with IEEE/ANSI C62.41.2 guidelines. It shall be dimmable using a 0-10v signal.

For sources over 50w: The driver shall have a minimum efficiency of 90%. The driver shall be rated at full load with THD<20% and a power factor of greater than 0.90. The driver shall contain over-heat protection.

For sources under 50w: The driver shall have a minimum efficiency of 88%.

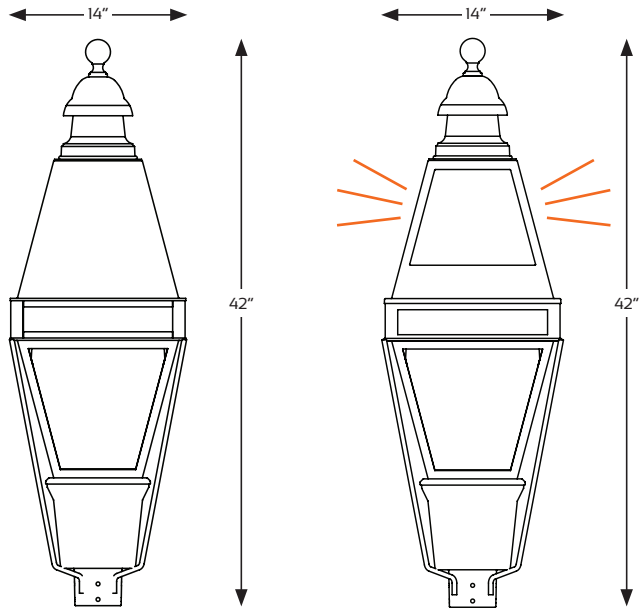
Warranty

Five-year warranty. See product and finish warranty guide for details.

Finish

Refer to website for details.

Fixtures



962TC

962TCGT
(Glow Top)

Performance (Based on CSA Lens)

LIGHT SOURCE	T2 DELIVERED LUMENS	EFFICACY (LPW)	T3 DELIVERED LUMENS	EFFICACY (LPW)	T4 DELIVERED LUMENS	EFFICACY (LPW)	T5 DELIVERED LUMENS	EFFICACY (LPW)	WATTAGE*
09L27T_-MDL07	1610	73.1	1600	72.6	1550	70.3	1670	75.9	22
09L35T_-MDL07	1895	86	1880	85.5	1820	82.8	1965	89.4	22
09L45T_-MDL07	2035	92.5	2025	92	1960	89	2115	96.1	22
09L27T_-MDL14	2860	59.6	2810	58.5	2745	57.1	2960	61.6	48
09L35T_-MDL14	3370	70.2	3310	68.9	3230	67.3	3485	72.6	48
09L45T_-MDL14	3625	75.5	3560	74.1	3470	72.3	3745	78	48
12L27T_-MDL14	4060	67.6	3960	66	3945	65.7	4120	68.6	60
12L35T_-MDL14	4780	79.6	4660	77.7	4640	77.4	4850	80.8	60
12L45T_-MDL14	5140	85.6	5010	83.5	4990	83.2	5210	86.9	60

*Glow top option adds 10 watts.

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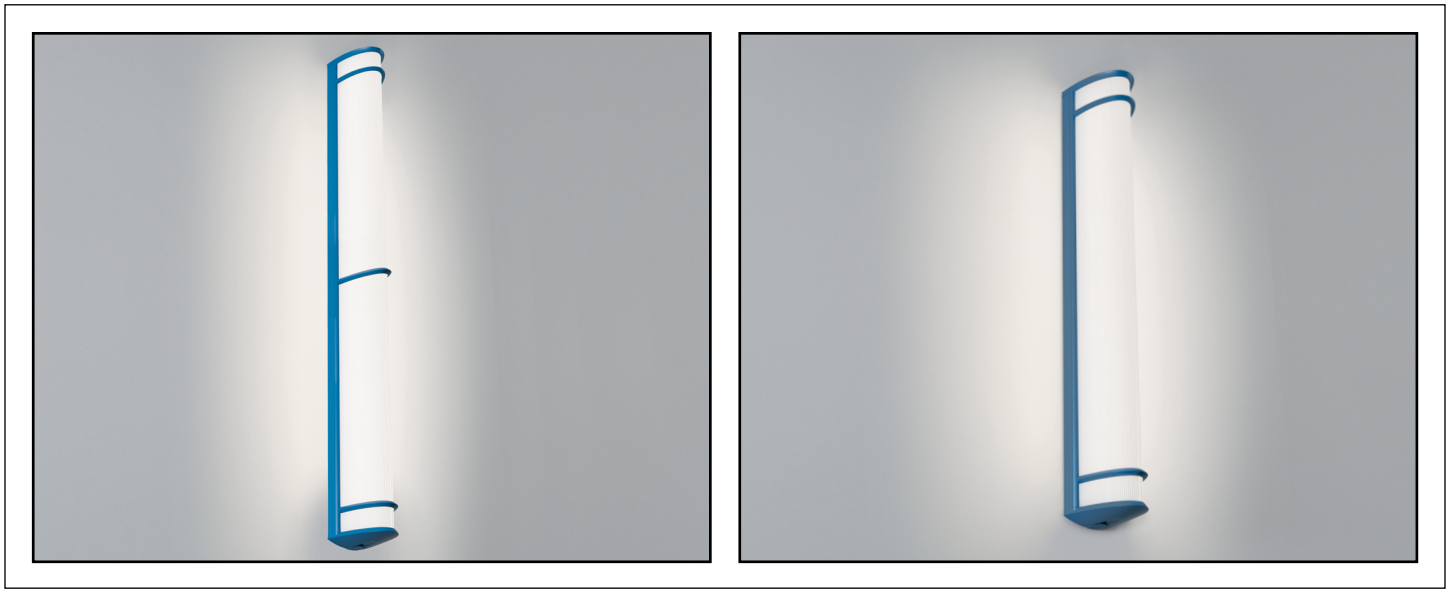
RAVEN™

0W1340/0W1342/0W1344/0W1346/0W1348
Outdoor models with Accent Bars

VISA LIGHTING

VisaLighting.com/products/Raven

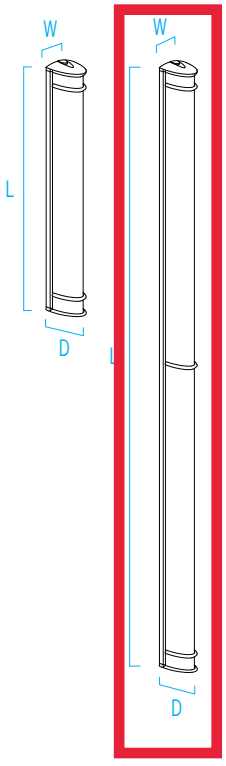
Type: Project: Location:



DIMENSIONS[1]

L = Length D = Depth W = Width WT = Weight

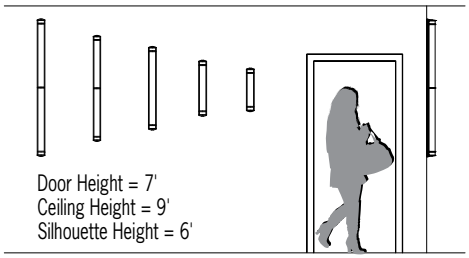
	0W1348	0W1340	0W1342	0W1344	0W1346
L	18-1/2" (470 mm)	24-3/4" (629 mm)	36-1/2" (927 mm)	48-3/8" (1229 mm)	60-1/8" (1527 mm)
D	4" (102 mm)				
W	3 -3/8" (86 mm)				



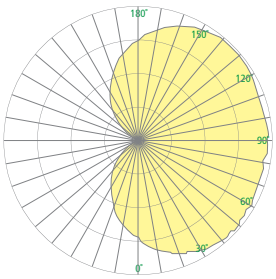
FEATURES

- Integral driver
- Vertical or horizontal mounting
- Mounts to 2 X 4 electrical junction box (by others) with provided hardware. Requires auxiliary mounting fasteners (provided). Orient junction box to match fixture's linear dimension (horizontal or vertical)
- Tamper resistant fasteners
- High impact extruded aluminum backplate/side rails, die-cast end caps and trim bars; gasketed and sealed construction
- Extruded clear prismatic performance lens and extruded white acrylic diffuser
- High impact extruded white acrylic, F1 rated; UV stable; UL-94 HB Flame Class rated
- No VOC powder coat finish
- ETL listed for wet location mounting 4' above grade

RELATIVE SCALE DRAWING



PHOTOMETRICS



ADA XPS ETL Listed 5 Year Warranty

RAVEN (cont.)

0W1340/0W1342/0W1344/0W1346/0W1348

Outdoor models with Accent Bars

Fill in shaded boxes using information listed below

		–			
			MVOLT		
MODEL[1] 0W1348 0W1340 0W1342 0W1344 0W1346 See page 1	**SOURCE**[2] • L30K(H) • L30K(L) L35K(H) L35K(L) • L40K(H) • L40K(L)		**VOLTAGE** MVOLT	**FINISH** See last page for finish order codes	**OPTION**[3] XPS

SOURCE[2] (Select One)

Dimmable 0-10V to 1%, Minimum 80CRI, within 3-step MacAdam

Source	CCT	0W1348		0W1340		0W1342		0W1344		0W1346	
		Delivered Lumens	Power/ Watts	Delivered Lumens	Power/ Watts	Delivered Lumens	Power/ Watts	Delivered Lumens	Power/ Watts	Delivered Lumens	Power/ Watts
• L30K(H)	3000K	1100	10	1400	13	2800	26	3300	29	3900	35
• L30K(L)	3000K	750	7	800	7	1900	17	2200	19	2800	23
L35K(H)	3500K	1100	10	1400	13	2800	26	3300	29	3900	35
L35K(L)	3500K	750	7	800	7	1900	17	2200	19	2800	23
• L40K(H)	4000K	1100	10	1400	13	2900	26	3400	29	4100	35
• L40K(L)	4000K	750	7	800	7	2000	17	2300	19	2800	23

OPTION[3]

⚠ Option availability may be interdependent with Other Options

XPS	Express 10 day shipping. Items marked with a bullet (•) are not available with **XPS**

VOLTAGE

MVOLT	120-277V, 50/60 Hz

LUMEN MAINTENANCE RATING

L80 (reported)	>50,000hrs

Tamper Resistant Fastener



RAVEN (cont.)

0W1340/0W1342/0W1344/0W1346/0W1348
Outdoor models with Accent Bars

RAVEN PRODUCT FAMILY

Accent Bars	**Outdoor**	• 0W1348 • 0W1340 • 0W1342 • 0W1344 • 0W1346
	Indoor	• CV1818 • CV1800 • CV1802 • CV1804 • CV1806
No Accent Bars	**Outdoor**	• 0W1350 • 0W1352 • 0W1354 • 0W1356 • 0W1358
	Indoor	• CV1820 • CV1822 • CV1824 • CV1826 • CV1828

See Visalighting.com/products/Raven for more information

SUGGESTED VARIATIONS

- 2700k–5000k color temperatures
- Increase fixture length up to 8' (indoor only)

RAVEN (cont.)

0W1340/0W1342/0W1344/0W1346/0W1348

Outdoor models with Accent Bars

VISA LIGHTING

FINISHES

Specify color code when ordering. For accurate color matching, individual paint and finish samples are available upon request.
For more information about our finishes visit visalighting.com/finishes

Powder Coat Paint Finishes (Standard)

AGGY Agate Grey	**ALGN** Alpine Green	**BJBG** Baja Beige	**BMAT** Bronze Matt	**BRNZ** Bronze	**BSIL** Blade Silver	**CVBL** Cove Blue
DEOR Deoro Gold	**GLWT** Glacier White	**GSIL** Graphite Siver	**HRGR** Harbor Grey	**JTBK** Jet Black	**OCBL** Ocean Blue	**SHGR** Shoreline Grey
SBGN Sagebrush Green	**SLGR** Slate Grey	**SSTP** Sierra Taupe	**TRCN** Terracotta Canyon	**TRWT** Traffic White	**VBLK** Velvet Black	**VNRD** Vineyard Red

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COMMERCIAL DEVELOPMENT

1 CONGRESS STREET
PORTSMOUTH, NEW HAMPSHIRE
SITE PERMIT PLANS

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3 PLEASANT STREET
SUITE #400
PORTSMOUTH, NH 03801
TEL. (603) 427–0725

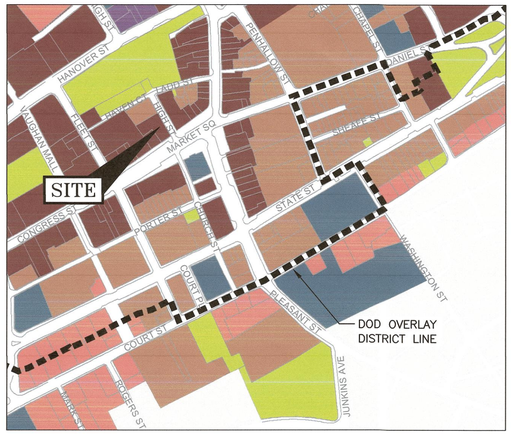
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AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801
Tel. (603) 430–9282
Fax (603) 436–2315

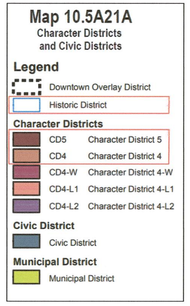
ARCHITECT:
ARCOVE LLC
3 CONGRESS STREET
SUITE 1
PORTSMOUTH, NH 03801
TEL. (603) 731–5187

LANDSCAPE ARCHITECT:
TERRA FIRMA LANDSCAPE ARCHITECTURE
163A COURT STREET
PORTSMOUTH, NH 03801
TEL. (603) 430–8388

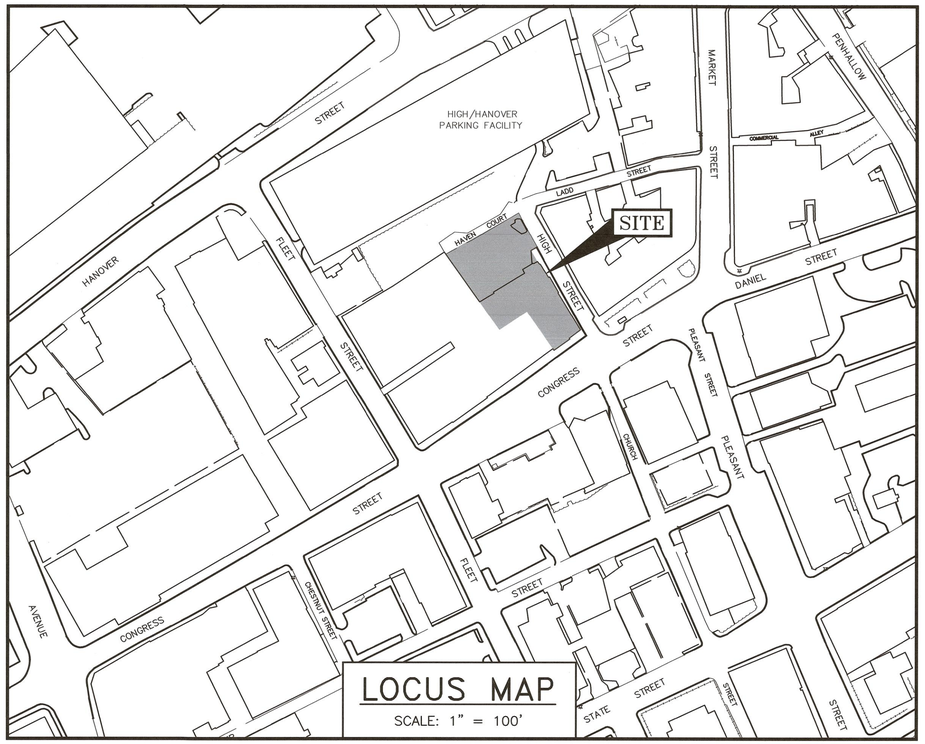
GEOTECHNICAL:
GEOTECHNICAL SERVICES INC.
18 COTE AVENUE, UNIT 11
GOFFSTOWN, N.H. 03045
Tel. (603) 624–2722

LAND USE ATTORNEY:
BRUTON & BERUBE, PLLC
601 CENTRAL AVENUE
DOVER, N.H. 03820
Tel. (603) 749–4529









LOCUS MAP
SCALE: 1" = 100'

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 _____

INDEX OF SHEETS

–	BOUNDARY PLAN
–	LICENSE PLAN
C1	EXISTING CONDITIONS PLAN
C2	DEMOLITION PLAN
C3	PROJECT SITE PLAN
–	ARCHITECTURAL PLANS
–	LANDSCAPE PLANS
C4	UTILITY PLAN
C5	GRADING PLAN
C6	PARKING LEVEL PLAN
C7	AVERAGE GRADE PLANE
P1	HIGH STREET PROFILE
D1–D7	DETAILS

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:
FAIRPOINT COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427–5525

DIG SAFE
MA – ME – NH – RI – VT
1-888-344-7233
CALL TOLL FREE

PERMIT LIST:
NHDES SEWER DISCHARGE PERMIT: TO BE SUBMITTED
PORTSMOUTH HDC: PENDING
PORTSMOUTH SITE PLAN: PENDING

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
UGE	UGE	UNDERGROUND ELECTRIC
OHW	OHW	OVERHEAD ELECTRIC/WIRES
	UD	FOUNDATION DRAIN
		EDGE OF PAVEMENT (EP)
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		UTILITY POLE
		WALL MOUNTED EXTERIOR LIGHTS
		TRANSFORMER ON CONCRETE PAD
		ELECTRIC HANDHOLD
WS GS	WS GS	SHUT OFFS (WATER/GAS)
	GV	GATE VALVE
	HYD	HYDRANT
CB	CB	CATCH BASIN
	SMH	SEWER MANHOLE
	DMH	DRAIN MANHOLE
	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
TYP	TYP	TYPICAL

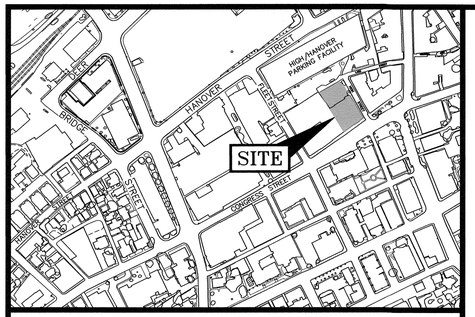
SITE PERMIT PLANS
COMMERCIAL DEVELOPMENT
1 CONGRESS STREET
PORTSMOUTH, N.H.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

PLAN SET SUBMITTAL DATE: 20 DECEMBER 2022

3406

\\CMS3\JN JA0\13400\13406\2021 Survey and Site Plan\Plans & Specs\Dwg\3406 Cover 2022.dwg, 2022-12-22 4:53:58 PM, Adobe PDF



LOCATION MAP SCALE: 1" = 300'

PLAN REFERENCES:

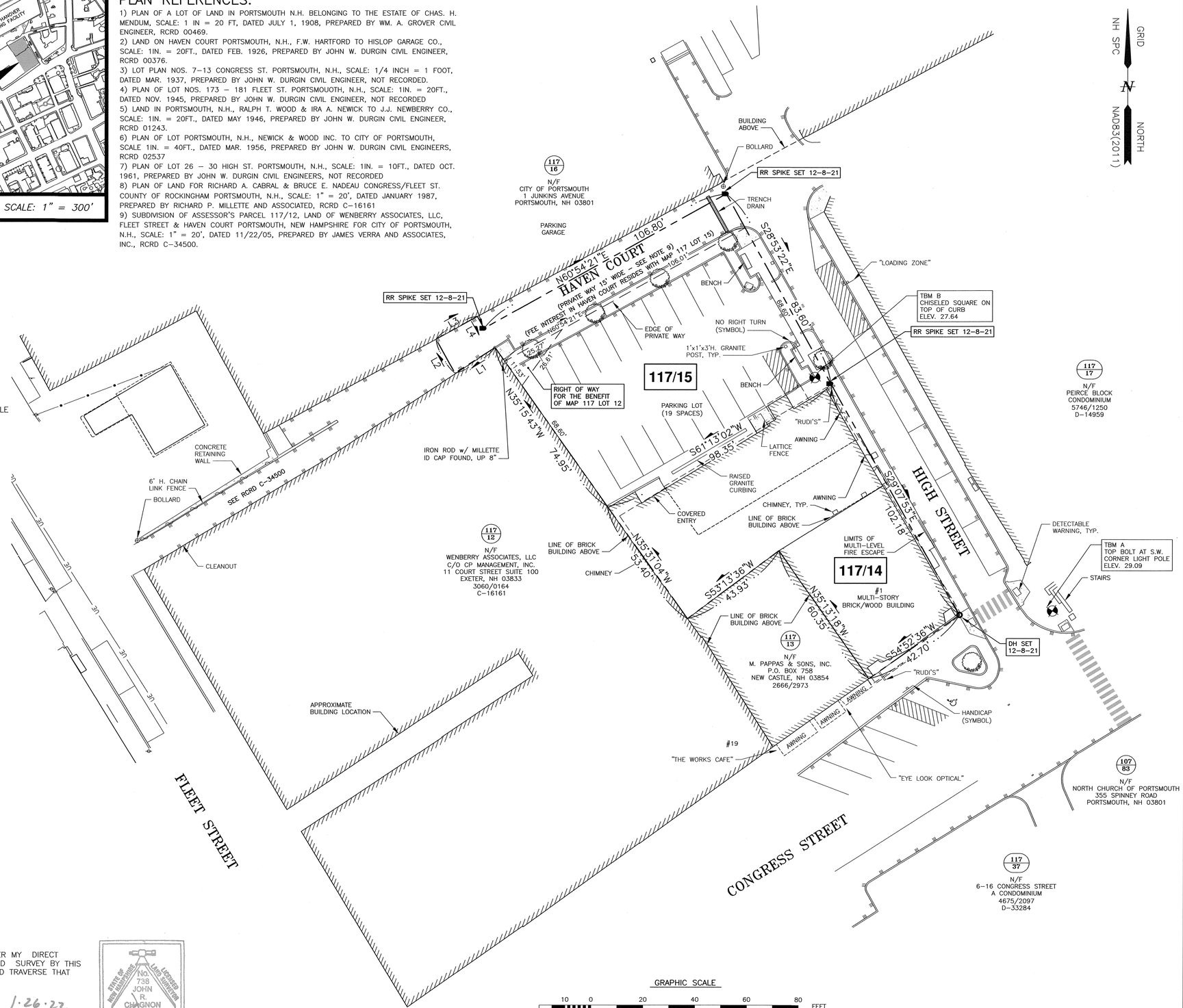
1) PLAN OF A LOT OF LAND IN PORTSMOUTH N.H. BELONGING TO THE ESTATE OF CHAS. H. MENDUM, SCALE: 1 IN = 20 FT, DATED JULY 1, 1908, PREPARED BY WM. A. GROVER CIVIL ENGINEER, RCRD 00469.
2) LAND ON HAVEN COURT PORTSMOUTH, N.H., F.W. HARTFORD TO HISLOP GARAGE CO., SCALE: 1IN. = 20FT., DATED FEB. 1926, PREPARED BY JOHN W. DURGIN CIVIL ENGINEER, RCRD 00376.
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6) PLAN OF LOT PORTSMOUTH, N.H., NEWICK & WOOD INC. TO CITY OF PORTSMOUTH, SCALE 1IN. = 40FT., DATED MAR. 1956, PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, RCRD 02537
7) PLAN OF LOT 26 – 30 HIGH ST. PORTSMOUTH, N.H., SCALE: 1IN. = 10FT., DATED OCT. 1961, PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, NOT RECORDED
8) PLAN OF LAND FOR RICHARD A. CABRAL & BRUCE E. NADEAU CONGRESS/FLEET ST. COUNTY OF ROCKINGHAM PORTSMOUTH, N.H., SCALE: 1" = 20', DATED JANUARY 1987, PREPARED BY RICHARD P. MILLETTE AND ASSOCIATED, RCRD C–16161
9) SUBDIVISION OF ASSESSOR'S PARCEL 117/12, LAND OF WENBERRY ASSOCIATES, LLC, FLEET STREET & HAVEN COURT PORTSMOUTH, NEW HAMPSHIRE FOR CITY OF PORTSMOUTH, N.H., SCALE: 1" = 20', DATED 11/22/05, PREPARED BY JAMES VERRA AND ASSOCIATES, INC., RCRD C–34500.

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
11/27	MAP 11/LOT 21
○IR FND	IRON ROD FOUND
○IP FND	IRON PIPE FOUND
●IR SET	IRON ROD SET
◉DH FND	DRILL HOLE FOUND
⊙DH SET	DRILL HOLE SET
▣NHHB	NHDOT BOUND FOUND
▣TB	TOWN BOUND
▣BND w/DH	BOUND WITH DRILL HOLE
▣ST BND w/DH	STONE BOUND WITH DRILL HOLE

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S57°27'42"W	18.36'
L2	N28°53'22"W	15.00'
L3	N61°07'46"E	18.19'
L4	S29°05'39"E	5.28'



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.

JOHN R. CHAGNON, LLS 738 — DATE 1.26.22

STATE OF NEW HAMPSHIRE No. 738 JOHN R. CHAGNON LAND SURVEYOR SIGNATURE

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4 AND CHARACTER DISTRICT 5.

4) DIMENSIONAL REQUIREMENTS: SEE PORTSMOUTH ORDINANCE FOR REQUIREMENTS.

5) LOT AREAS:

MAP 117 LOT 14	MAP 117 LOT 15
7,266 S.F.	8,840 S.F.
0.1668 ACRES	0.2029 ACRES

COMBINED LOT AREA:
16,106 S.F.
0.3697 ACRES

6) PARCELS ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULTS OF A STANDARD BOUNDARY SURVEY ON TAX MAP 117, LOTS 14 AND 15 IN PORTSMOUTH, NH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

9) HAVEN COURT IS A PRIVATE WAY 15 FEET WIDE. ALL RIGHTS, TITLE AND INTEREST UNTO SAID HAVEN COURT WERE CONVEYED WITH ASSESSOR'S MAP 117 LOT 15, AS DESCRIBED IN RCRD 983/179, SUBJECT TO RIGHTS OF OTHERS (OTHERS NOT DEFINED ON THIS SURVEY).

NO.	DESCRIPTION	DATE
1	NEW OWNER	1/26/22
0	ISSUED FOR RECORDING	12/8/21

REVISIONS

STANDARD BOUNDARY SURVEY
TAX MAP 117
LOTS 14 & 15

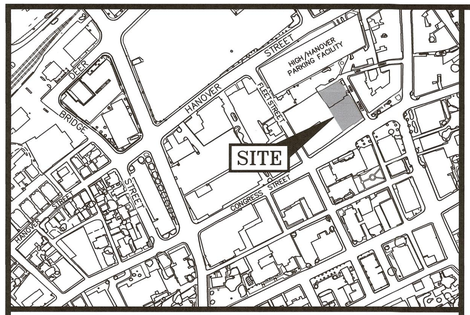
OWNER OF RECORD:
ONE MARKET SQUARE, LLC

PROPERTY LOCATED AT:
1 CONGRESS STREET & HIGH STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' NOVEMBER 2021

FB 309 PG 15 — 3406

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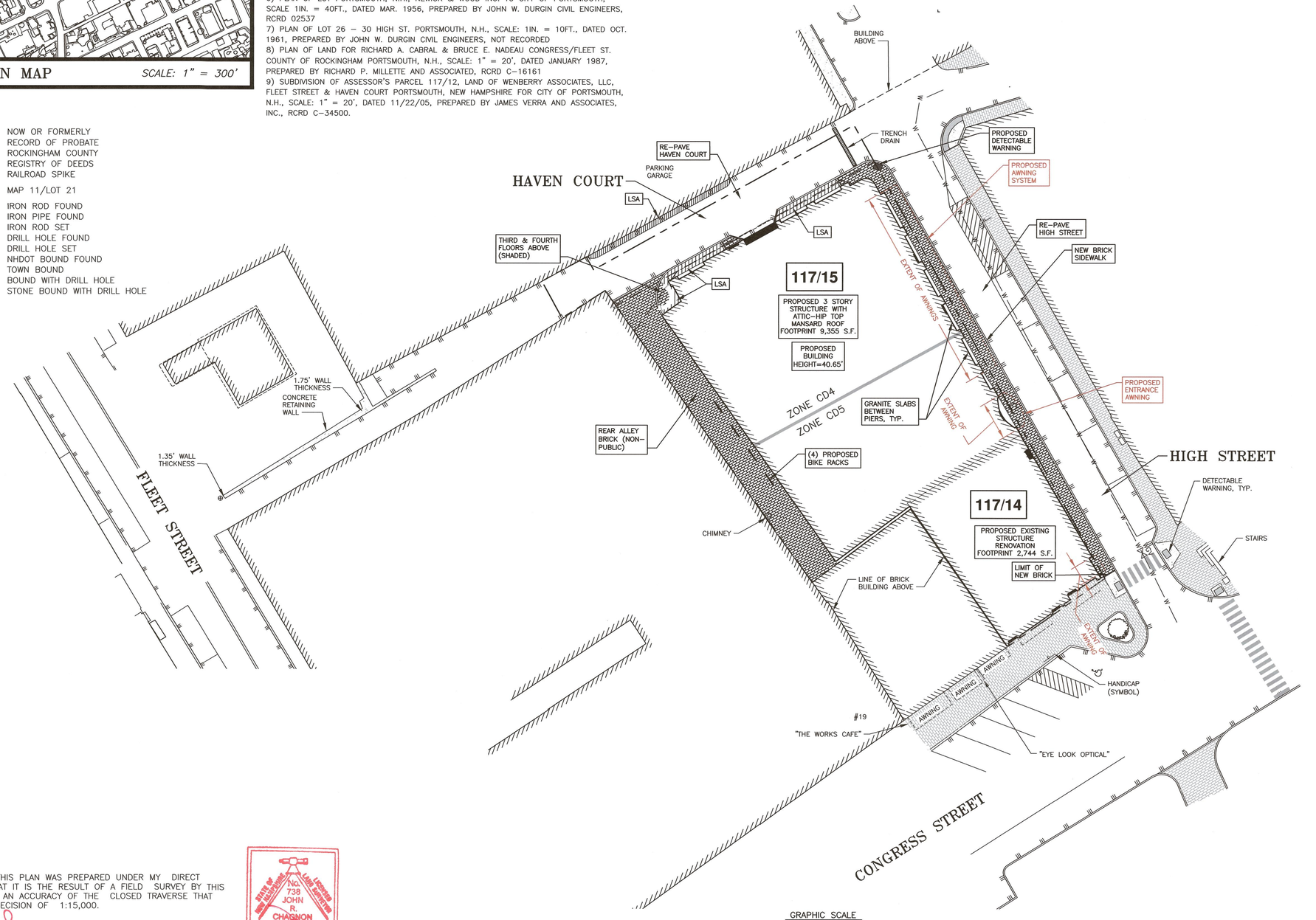
LOCATION MAP SCALE: 1" = 300'

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
11/21	MAP 11/LOT 21
○ IR FND	IRON ROD FOUND
○ IP FND	IRON PIPE FOUND
● IR SET	IRON ROD SET
◉ DH FND	DRILL HOLE FOUND
◉ DH SET	DRILL HOLE SET
▣ NHHB	NHDOT BOUND FOUND
▣ TB	TOWN BOUND
▣ BND w/DH	BOUND WITH DRILL HOLE
▣ ST BND w/DH	STONE BOUND WITH DRILL HOLE

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7) PLAN OF LOT 26 – 30 HIGH ST. PORTSMOUTH, N.H., SCALE: 1IN. = 10FT., DATED OCT. 1961, PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, NOT RECORDED
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9) SUBDIVISION OF ASSESSOR'S PARCEL 117/12, LAND OF WENBERRY ASSOCIATES, LLC, FLEET STREET & HAVEN COURT PORTSMOUTH, NEW HAMPSHIRE FOR CITY OF PORTSMOUTH, N.H., SCALE: 1" = 20', DATED 11/22/05, PREPARED BY JAMES VERRA AND ASSOCIATES, INC., RCRD C–34500.



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.

JOHN R. CHAGNON, LLS 738

12.20.22
DATE

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4 AND CHARACTER DISTRICT 5.

4) DIMENSIONAL REQUIREMENTS: SEE PORTSMOUTH ORDINANCE FOR REQUIREMENTS.

5) LOT AREAS:

MAP 117 LOT 14	MAP 117 LOT 15
7,266 S.F.	8,840 S.F.
0.1668 ACRES	0.2029 ACRES

COMBINED LOT AREA:
16,106 S.F.
0.3697 ACRES

6) PARCELS ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED LICENSE AREAS ON HIGH STREET AND HAVEN COURT.

NO.	DESCRIPTION	DATE
1	ON SITE ONLY	12/20/22
0	ISSUED FOR COMMENT	11/29/22

REVISIONS

LICENSE PLAN
ONE MARKET SQUARE, LLC AND CITY OF PORTSMOUTH
HIGH STREET & HAVEN COURT
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' NOVEMBER 2022

FB 309 PG 15 3406

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ADDITIONAL ABUTTERS:

107/83
N/F
NORTH CHURCH OF PORTSMOUTH
355 SPINNEY ROAD
PORTSMOUTH, NH 03801

117/37
N/F
6-16 CONGRESS STREET
A CONDOMINIUM
4675/2097
D-33284

117/17
N/F
PEIRCE BLOCK
CONDOMINIUM
5746/1250
D-14959

117/16
N/F
CITY OF PORTSMOUTH
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801

117/13
N/F
M. PAPPAS & SONS, INC.
P.O. BOX 758
NEW CASTLE, NH 03854
2666/2973

117/12
N/F
WENBERRY ASSOCIATES, LLC
C/O CP MANAGEMENT, INC.
11 COURT STREET SUITE 100
EXETER, NH 03833
3060/0164
C-16161

117/14
#1
MULTI-STORY
BRICK/WOOD BUILDING

117/15

#19

HAVEN COURT
(PRIVATE WAY 15' WIDE - SEE NOTE 9)
(FEE INTEREST IN HAVEN COURT RESIDES WITH MAP 117 LOT 15)

CONGRESS STREET

GRID NORTH
NH SPC
NAD83(2011)

TBM A
TOP BOLT AT S.W.
CORNER LIGHT POLE
ELEV. 29.09

TBM B
CHISELED SQUARE ON
TOP OF CURB
ELEV. 27.64

RR SPIKE SET 12-8-21

DH SET
12-8-21

S28°53'22"E 83.60'

S29°07'53"E 102.18'

S54°52'36"W 142.70'

S61°13'02"W 98.35'

S53°13'36"W 43.93'

N60°54'21"E 106.80'

N35°13'18"W 60.35'

N35°31'04"W 53.40'

N35°15'43"W 74.95'

(SEE NOTE 10)

L1 N35°31'04"W 53.40'
L2 N60°54'21"E 106.80'
L3 S53°13'36"W 43.93'
L4 S29°07'53"E 102.18'

LOTS 14 & 15 WILL BE MERGED AND THIS DIVISION LINE ABANDONED

RIGHT OF WAY FOR THE BENEFIT OF MAP 117 LOT 12

IRON ROD w/ MILLETTE ID CAP FOUND, UP 8"

ABANDONED CONDUITS (NO OHW)

(2) PARKING METERS
"LOADING ZONE"
ELECTRIC HAND HOLE
HAND HOLE
STAIRS
BUILDING ABOVE
SMH 2323
8" PVC
10" VC
CB1
DMH 1
TO CB2 (OUT OF VIEW)
BOLLARD
CB3 (TD)
BENCH
NO RIGHT TURN (SYMBOL)
1'x1'x3'H. GRANITE POST, TYP.
PARKING KIOSK
B-1 (27x17)
B-2 (27x49)
B-3 (27x55)
B-4 (28x86)
B-5 (31x02)
B-6 (31x23)
LATTICE FENCE
27x87 THRESHOLD
CHIMNEY, TYP.
LINE OF BRICK BUILDING ABOVE
2" & 4" CONDUIT
27x79 THRESHOLD
28x10 THRESHOLD
28x13 THRESHOLD
27x59 THRESHOLD
27x61 THRESHOLD
LIMITS OF MULTI-LEVEL FIRE ESCAPE
AWNING
"RUDI'S"
"EYE LOOK OPTICAL"
"THE WORKS CAFE"
PARKING LOT (19 SPACES)
EDGE OF PRIVATE WAY
RAISED GRANITE CURBING
COVERED ENTRY
PARKING GARAGE
27x91 THRESHOLD
41x07 FF
40x80 FF
28x07 FF
28x10 FF
27x83 FF
WGV
VGC
VC

"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."

10-18-22
JOHN R. CHAGNON, LLS — DATE

STATE OF NEW HAMPSHIRE — No. 738 JOHN R. CHAGNON — LICENSED LAND SURVEYOR

GRAPHIC SCALE
10 5 0 10 20 30 40 FEET
3 0 5 10 METERS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

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5) LOT AREAS:

MAP 117 LOT 14	MAP 117 LOT 15
7,266 S.F.	8,840 S.F.
0.1668 ACRES	0.2029 ACRES

COMBINED LOT AREA:
16,106 S.F.
0.3697 ACRES

6) PARCELS ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON TAX MAP 117, LOTS 14 AND 15 IN PORTSMOUTH, NH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	ADD TELCOMM LOCATIONS	10/18/22
2	ADD TOPOGRAPHY	2/9/22
1	BORING LOCATIONS	2/7/22
0	PROPERTY LINES	1/26/22

REVISIONS

SCALE 1" = 10' NOVEMBER 2021

EXISTING CONDITIONS PLAN

C1

FB 309 PG 15

3406

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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) ALL WORK WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW).

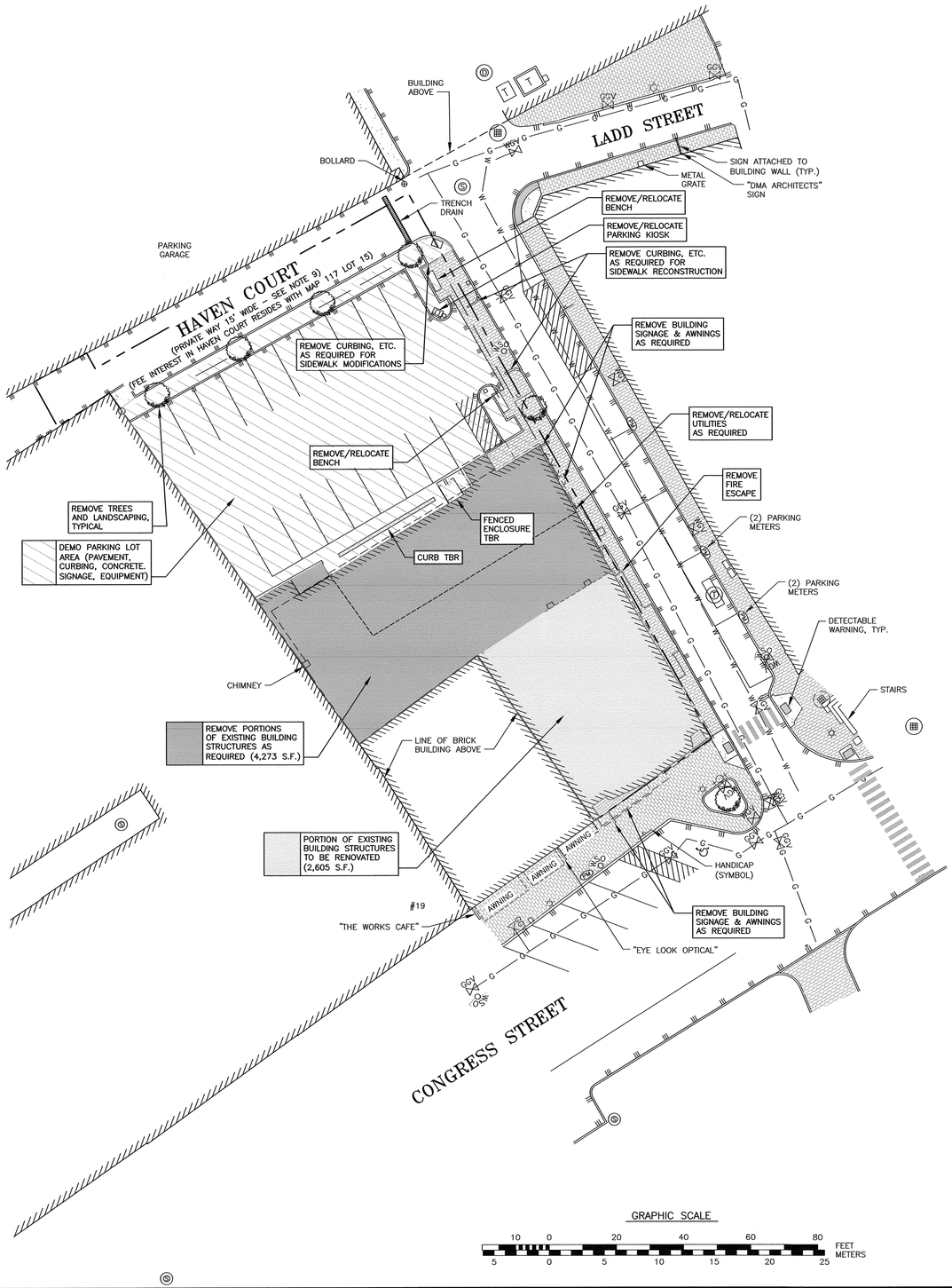
J) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

K) CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED, THE CONTRACTOR SHALL EMPLOY A NH LICENSED LAND SURVEYOR TO REPLACE THEM.

L) 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.

M) 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.

N) 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



GRAPHIC SCALE

10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

NH SPC GRID N NAD83(2011) NORTH

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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 WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

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).

COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	SIDEWALK/CURB NOTES	12/20/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

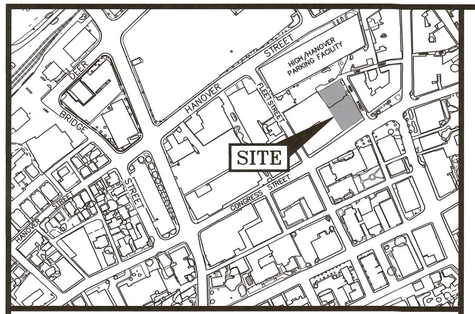
STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON NO. 7851 LICENSED PROFESSIONAL ENGINEER

SCALE 1" = 20' SEPTEMBER 2022

DEMOLITION PLAN C2

FB 309 PG 15 3406

I:\CIVIL\3406\3406 Survey and Site Plan\Plans & Specs\Site\3406 Site 2022.dwg, 2022-12-23 3:56:19 PM, Adobe PDF



LOCATION MAP SCALE: 1" = 300'

Schematic Area Summary
10/18/2022

new construction	total new	existing	proposed
4th floor	7,812	n/a	residential
3rd floor	9,355	n/a	residential
2nd floor	9,355	n/a	office
1st floor (footprint)	**9,355**	**n/a**	**retail/restaurant**
basement	9,581	n/a	parking & support
total new	**45,458**		

existing to remain and be renovated		existing	proposed
4th floor - 1&3 Congress St	2,422	residential	residential
3rd floor - 1&3 Congress St	2,725	residential	residential
2nd floor - 1&3 Congress St	2,725	office	office
1st floor - 1&3 Congress St (footprint)	**2,725**	office&retail	restaurant&retail
basement - 1&3 Congress	2,725	storage/mech	storage/support
total renovation	**13,322**		

TOTAL FOOTPRINT new + reno	12,080
TOTAL BUILDING new + reno	**58,780**
roof decks	**889**

ZONING DEVELOPMENT STANDARD

CD4 (CD-4, DOD, HDC): CHARACTER DISTRICT 4	REQUIRED	EXISTING	PROPOSED
Height	2 stories with short 3rd = 35'	**n/a**	**40' - 7 3/4"**
Penthouses	may exceed bldg height by 2'	**n/a**	**n/a**
Roof appurtenance	may exceed bldg height by 10'	**n/a**	**7' - 5 3/4"**
Façade Types	shopfront	**n/a**	**yes**
Building Types	commercial, live-work, mixed use, flex space & community	n/a	**mixed use (retail, office, apartments)**
Setbacks (ft) *	* 10.5A42.12 Yards may be increased above the max permitted for truncated corners or other subtractive massing techniques, alleys, vehicular accessways, increased sidewalk width or community spaces.		
Front (principle) max	10	n/a	0'-0"
Front (secondary) max	15	n/a	2'-4"
Side	NR	n/a	n/a
Rear, min	>of: 5' from rear line or 10' from cl alley	n/a	11' 2"
Front lotline buildout	50% min	n/a	100.00%
Lot area (sf)	NR		8,840
LOT area per dwelling	NR	0	n/a
Coverage, maximum	90%	0	65.6%
Footprint, max* 10.5a43.40	15,000	**0**	**5,686**
*10.5A43.43 increase for indoor parking if >50% gr floor parking & 30% lot is community space	30,000 ground (20,000 upper)		0
Ground floor area per use, max	15,000		**5,686**
Open space, minimum	10%		34.4%
Permitted uses (cd4 & cd5)	multifamily, live/work, office, retail, restaurant (<500sqc)	surface parking lot	commercial retail
Block length, max (ft)	200	n/a	**168' - 0 3/4"**
Façade modulation length, max (ft)	80	n/a	**77' - 1 7/8"**
Entrance spacing, max (ft)	50	n/a	**39' - 10 3/8"**
Floor height above sidewalk, max	36"	n/a	**36"**
Ground floor height, min	12'	n/a	**13' 5 5/8"**
Second floor height, min	10'	n/a	**11'-3"**
Glazing, shopfront, min	70%	n/a	**70%**
Glazing, other	20%-50%	n/a	**25%**
Roof types(pitch)	flat, gable (6:12-12:12), hip(>3:12), gambrel/mansard(6:12-30:12)	n/a	**hipped mansard**
Parking, off-street; DOD*	when >20 spaces, max spaces = 120% min required. 10.1112.60 mixed used - some shared spaces allowed.	19	**12**
Residential (dwellings)	UNIT<500SF=.5 space/unit; 500-750sf=1 space/unit; >750sf=1.3 space/unit. (+ 1 visitor space/5 units)	N/A	**10**
Professional office	NA in DOD	N/A	N/A
* see CD-5 zoning chart for remainder of parking spaces			

ZONING DEVELOPMENT STANDARD

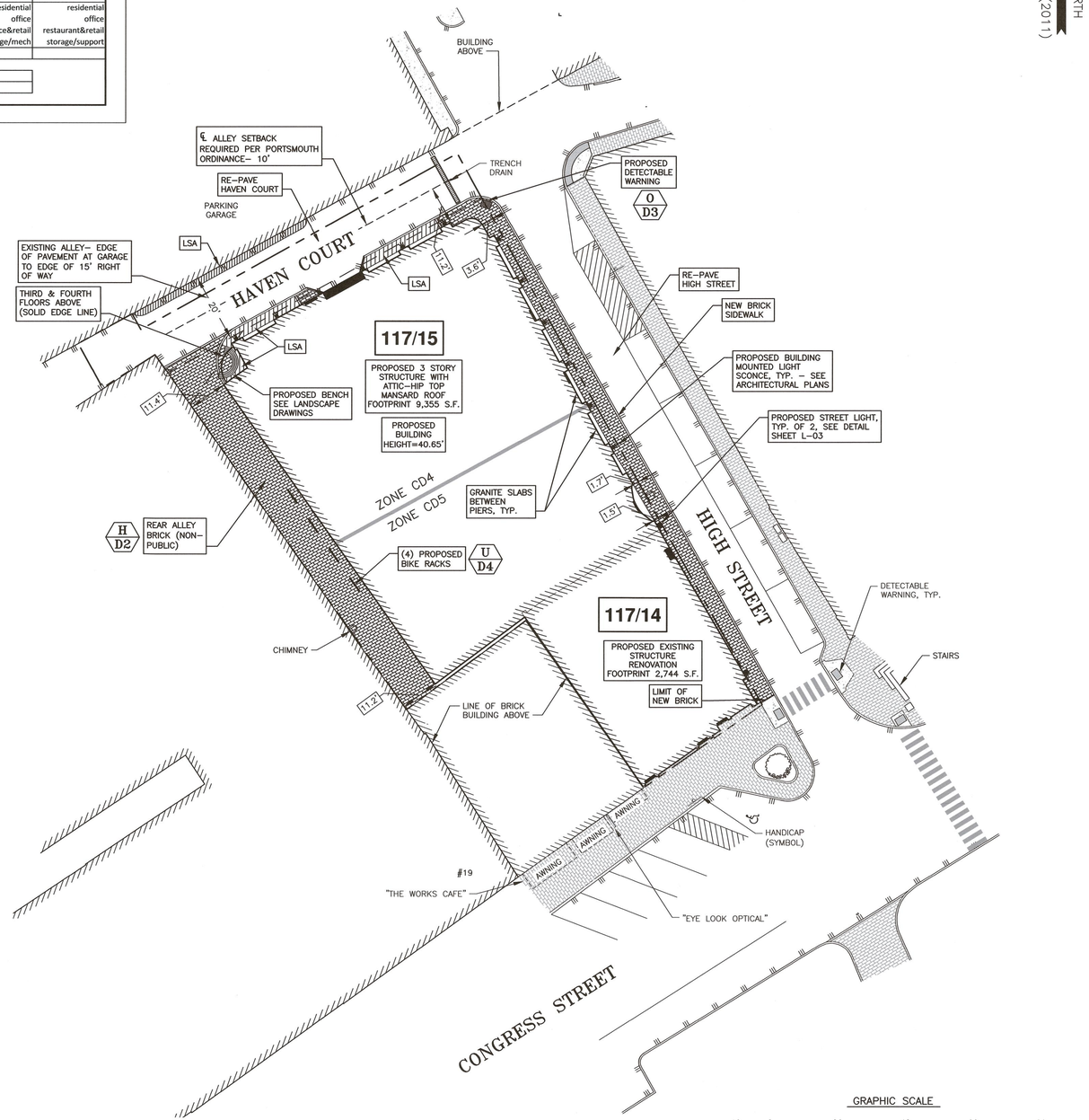
CD5 (CD-5, DOD, HDC): CHARACTER DISTRICT 5	REQUIRED	EXISTING	PROPOSED
Height	2-3 stories with short 4th = 45'	**45' - 5 1/4"**	**40' - 7 3/4"**
Penthouses	may exceed bldg height by 2'	**n/a**	**n/a**
Roof appurtenance	may exceed bldg height by 10'	**8' 6 3/4"**	**7' - 5 3/4"**
Façade Types	shop front	**yes**	**yes**
Building Types	commercial, live-work, mixed use, flex space & community	**mixed use (retail, restaurant, office, apartments)**	**mixed use (retail, office, apartments)**
Setbacks (ft) *	* 10.5A42.12 Yards may be increased above the max permitted for truncated corners or other subtractive massing techniques, alleys, vehicular accessways, increased sidewalk width or community spaces.		
Front (principle) max	5	0'-0"	0'-0"
Front (secondary) max	5	0'-0"	1'-6"
Side	NR	0'-0"	n/a
Rear, min	>of: 5' from rear line or 10' from cl alley	0'-3"	0.00
Front lotline buildout	90% min	100%	100%
Lot area (sf)	NR	7,266	8,840
LOT area per dwelling	NR	n/a	n/a
Coverage, maximum	95%	37.52%	89.1%
Footprint, max* 10.5a43.40	20,000	**2,726**	**3,701**
*10.5A43.43 increase for indoor parking if >50% gr floor parking & 30% lot is community space	50,000 ground (30,000 upper)	0	0
Ground floor area per use, max	15,000	2,726	3,701
Open space, minimum	5%	62.48%	10.9%
Permitted uses (cd4 & cd5)	commercial, live/work, mixed-use, flex space, community, office, retail, restaurant (<500sqc)	commercial, mixed use, office, retail & restaurant	COMMERCIAL (retail, restaurant, hotel-lobby)
Block length, max (ft)	225	**168' - 0 3/4"**	**168' - 0 3/4"**
Façade modulation length, max (ft)	100	**62' - 1 7/8"**	**37' - 11 5/8"**
Entrance spacing, max (ft)	50	**49' - 7 1/4"**	**35' - 6 1/4"**
Floor height above sidewalk, max	36"	**4"**	**4"**
Ground floor height, min	12'	**12' - 8 3/8"**	**13' 5 5/8"**
Second floor height, min	10'	**11'-3"**	**11'-3"**
Glazing, shopfront, min	70%	**31%**	**53%**
Glazing, other	20%-50%	**20%**	**24%**
Roof types(pitch)	flat, gable (6:12-12:12), hip(>3:12), gambrel/mansard(6:12-30:12)	**hipped mansard and gable**	**hipped mansard**
Parking, off-street; DOD*	when >20 spaces, max spaces = 120% min required. 10.1112.60 mixed used - some shared spaces allowed.	0	**11**
Residential (dwellings)	UNIT<500SF=.5 space/unit; 500-750sf=1 space/unit; >750sf=1.3 space/unit. (+ 1 visitor space/5 units)	5	**8**
Professional office	NA in DOD	N/A	N/A
* see CD-4 zoning chart for remainder of parking spaces			

THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____



PLAN REFERENCE:

STANDARD BOUNDARY SURVEY, TAX MAP 117, LOTS 14 & 15, FOR PETER H. JARVIS & SONS, LLC. 1 CONGRESS STREET & HIGH STREET, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE. PREPARED BY AMBIT ENGINEERING, INC. DATED NOVEMBER 2021, ISSUED FOR RECORDING 12/8/21. R.C.R.D. PLAN D–43095.

BUILDING DATA:

PROPOSED BUILDING:
12,099 S.F. FOOTPRINT

NH SPC GRID NORTH NAD83(2011)

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4 AND CHARACTER DISTRICT 5. SEE TABLES THIS SHEET.

4) DIMENSIONAL REQUIREMENTS: SEE PORTSMOUTH ORDINANCE FOR REQUIREMENTS.

5) LOT AREAS:

MAP 117 LOT 14	MAP 117 LOT 15
7,266 S.F.	8,840 S.F.
0.1668 ACRES	0.2029 ACRES

COMBINED LOT AREA:
16,106 S.F.
0.3697 ACRES

6) PARCELS ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED DEVELOPMENT ON TAX MAP 117, LOTS 14 AND 15 IN PORTSMOUTH, NH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

9) HAVEN COURT IS A PRIVATE WAY 15 FEET WIDE. ALL RIGHTS, TITLE AND INTEREST UNTO SAID HAVEN COURT WERE CONVEYED WITH ASSESSOR'S MAP 117 LOT 15, AS DESCRIBED IN RCRD 983/179, SUBJECT TO RIGHTS OF OTHERS (OTHERS NOT DEFINED ON THIS PLAN).

10) PROPOSED USE: RETAIL, OFFICE, RESIDENTIAL.
FIRST FLOOR: RETAIL.
2ND FLOOR: OFFICE.
3RD FLOOR & UP: 18 RESIDENTIAL UNITS.

COMMERCIAL DEVELOPMENT ONE CONGRESS STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	STREET/SIDEWALK	12/20/22
1	BUILDING FOOTPRINT	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 739 JOHN R. CHAGNON SIGNATURE

JOHN R. CHAGNON No. 7951 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

SCALE 1" = 20' SEPTEMBER 2022

PROJECT SITE PLAN

C3

FB 309 PG 15

3406

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arcove.com

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ambitengineering.com

Terra Firma Landscape
Landscape Architecture
163a Court St
Portsmouth NH 03801
(603) 531-9109
terrafirmalandarch.com

1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

Scale:	1/8" = 1'-0"
Date:	12/22/2022
Project Number:	1002

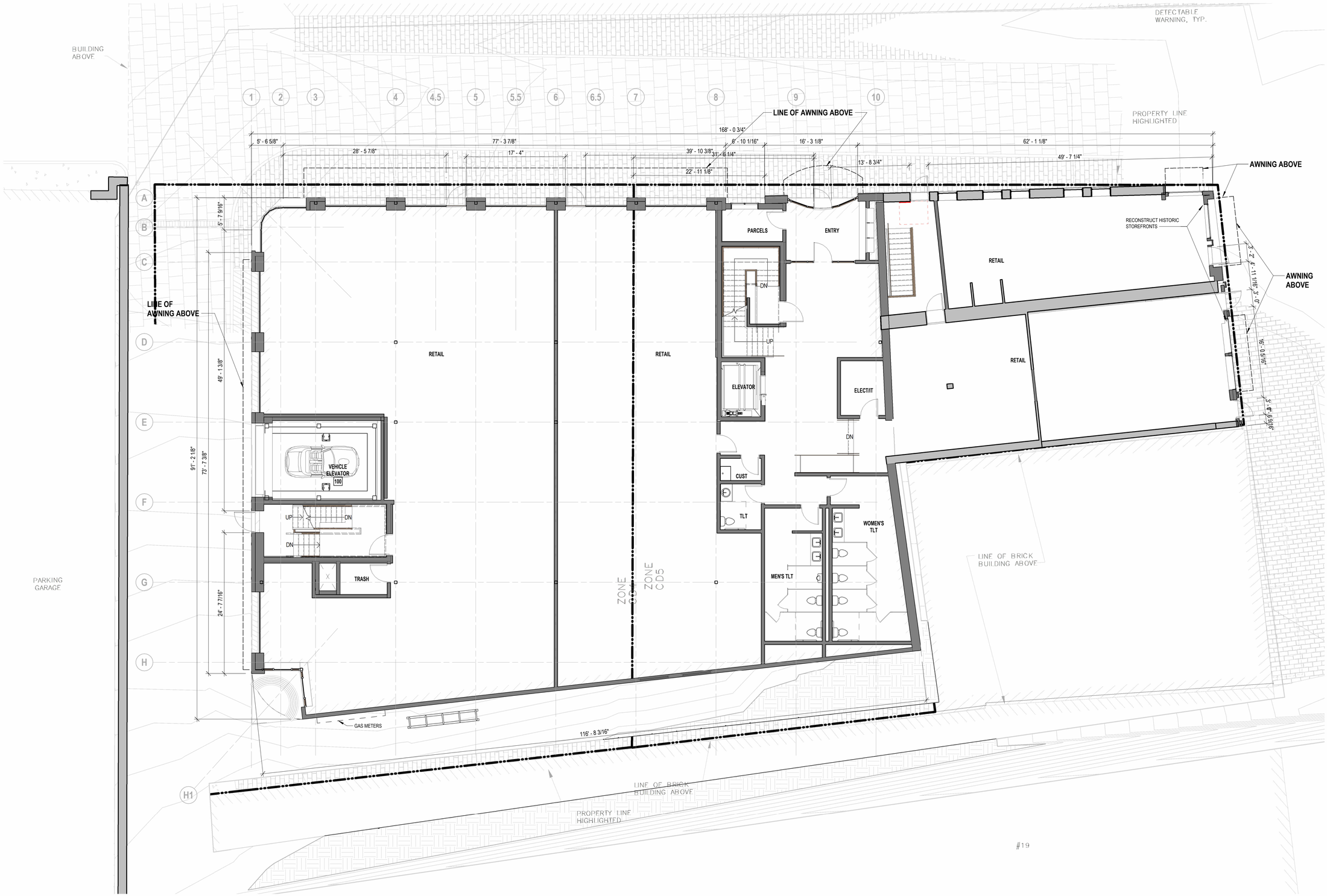
REVISIONS		
NO.	DESCRIPTION	DATE

SITE PLAN REVIEW

BASEMENT FLOOR PLAN

PB.A0

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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

Scale: 1/8" = 1'-0"
Date: 12/22/2022
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NO.	DESCRIPTION	DATE

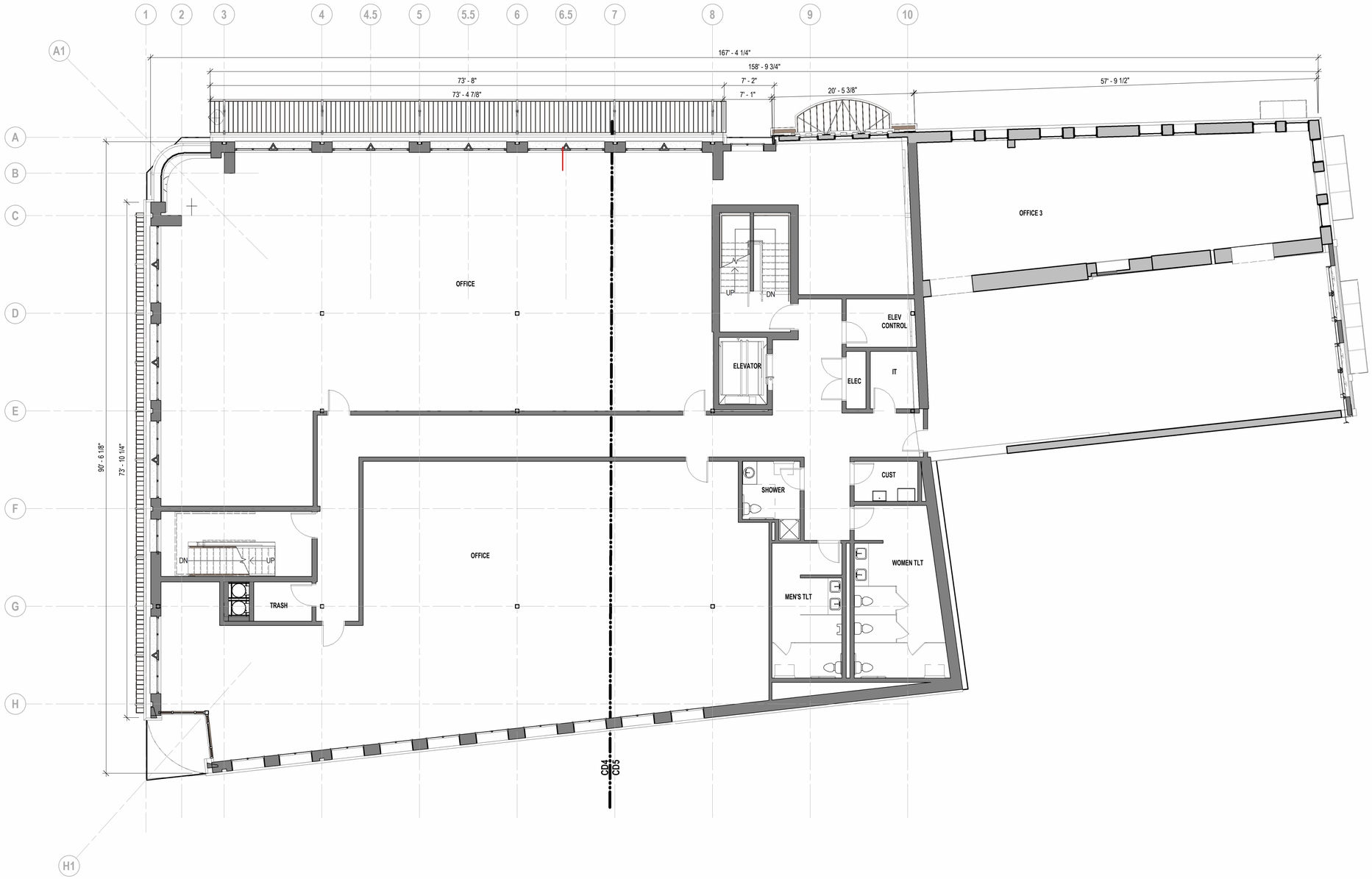
SITE PLAN REVIEW

FIRST FLOOR PLAN

PB.A1

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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

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NO.	DESCRIPTION	DATE

SITE PLAN REVIEW

SECOND FLOOR PLAN

PB.A2

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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

Scale: 1/8" = 1'-0"
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REVISIONS		
NO.	DESCRIPTION	DATE

SITE PLAN REVIEW

THIRD FLOOR PLAN

PB.A3

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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

Scale:	1/8" = 1'-0"
Date:	12/22/2022
Project Number:	1002

REVISIONS		
NO.	DESCRIPTION	DATE

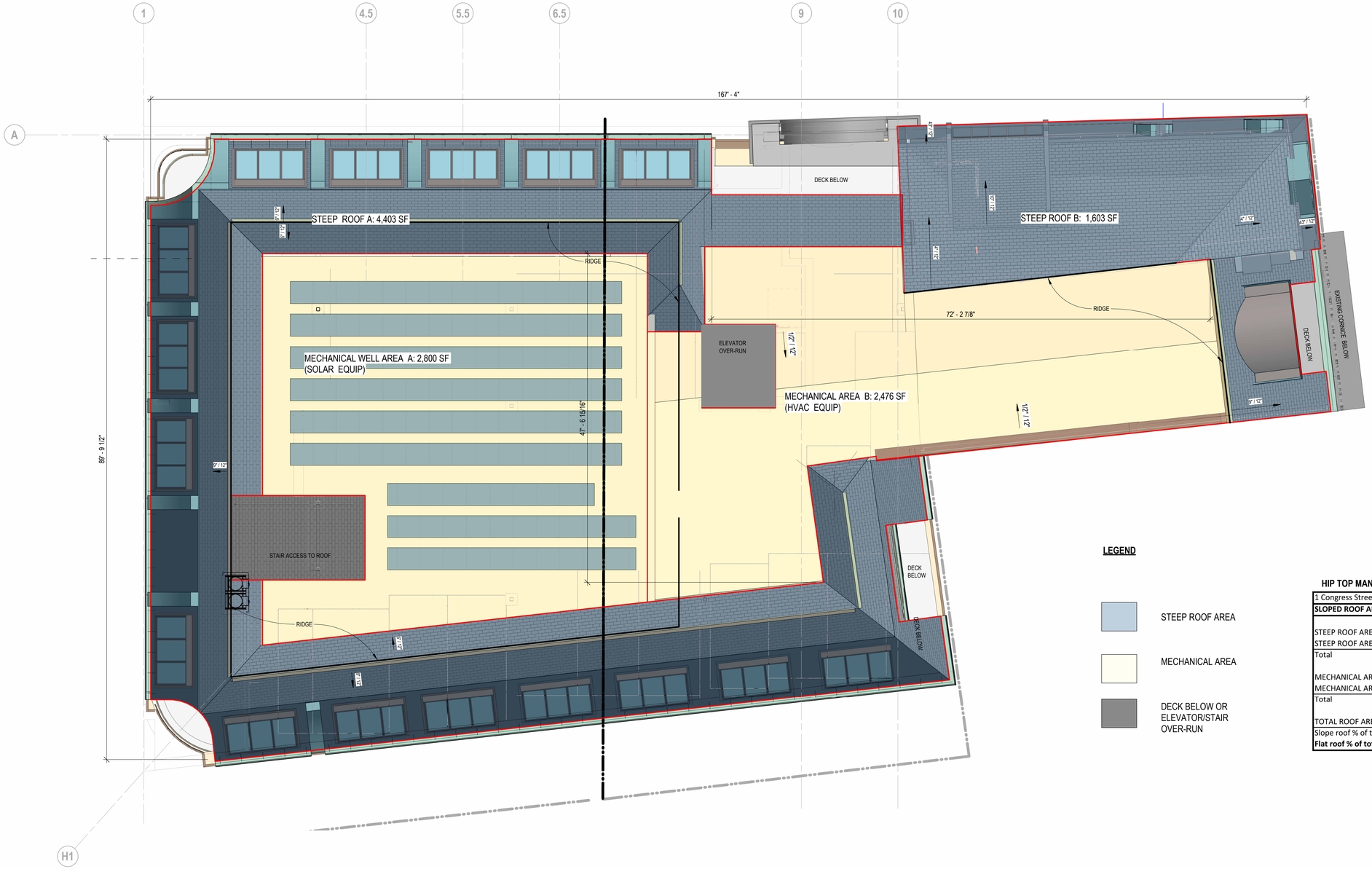
SITE PLAN REVIEW

FOURTH FLOOR PLAN

PB.A4

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LEGEND

- STEEP ROOF AREA
- MECHANICAL AREA
- DECK BELOW OR ELEVATOR/STAIR OVER-RUN

HIP TOP MANSARD ROOF

1 Congress Street	
SLOPED ROOF AREAS	12/22/2022
STEEP ROOF AREA A	4,403
STEEP ROOF AREA B	1,603
Total	6,006
MECHANICAL AREA A	2,800
MECHANICAL AREA B	2,476
Total	5,276
TOTAL ROOF AREA	11,282
Slope roof % of total	53.24%
Flat roof % of total	**46.76%**

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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S KOZAK
No. 2662
STATE OF NEW HAMPSHIRE

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REVISIONS		
NO.	DESCRIPTION	DATE

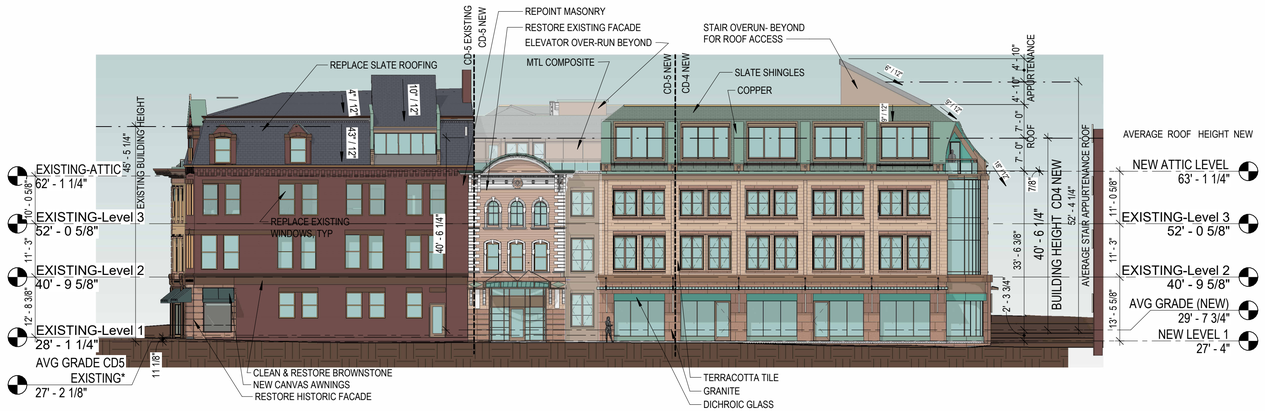
SITE PLAN REVIEW

ROOF PLAN

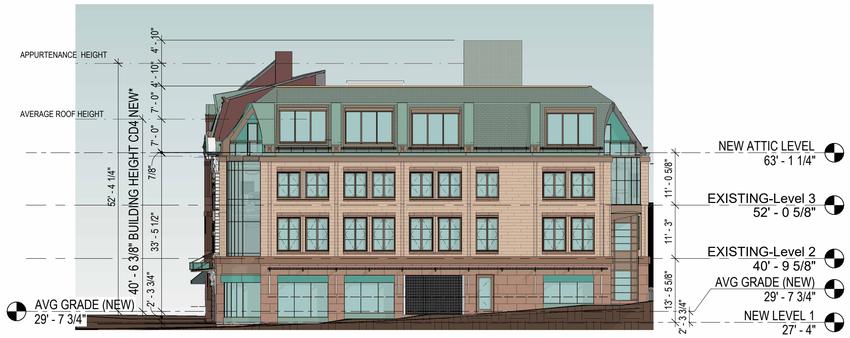
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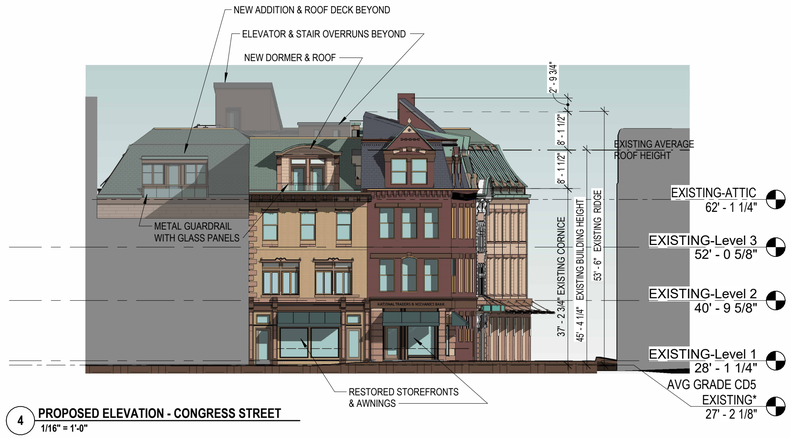
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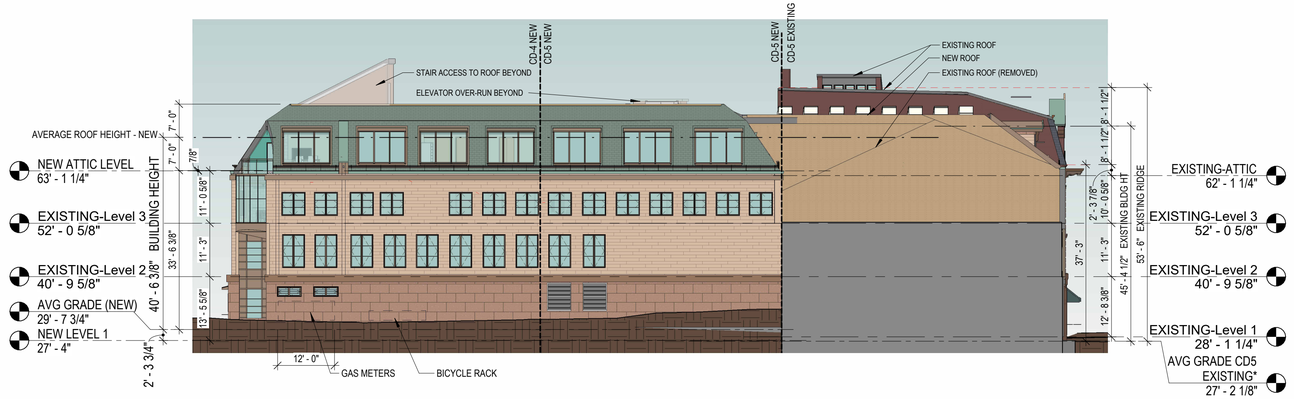
1 **PROPOSED ELEVATION - NE - HIGH STREET**
1/16" = 1'-0"



2 **PROPOSED ELEVATION - NW HAVEN COURT**
1/16" = 1'-0"



4 **PROPOSED ELEVATION - CONGRESS STREET**
1/16" = 1'-0"



3 **SW ELEVATION - REAR ALLEY PB2**
1/16" = 1'-0"

ARCOVE ARCHITECTS
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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

Scale: 1/16" = 1'-0"
Date: 12/22/2022
Project Number: 1002

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NO.	DESCRIPTION	DATE

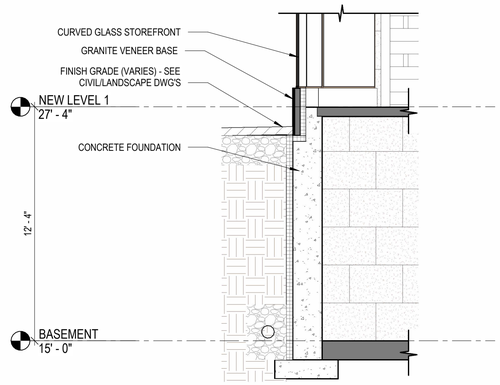
SITE PLAN REVIEW

ELEVATIONS

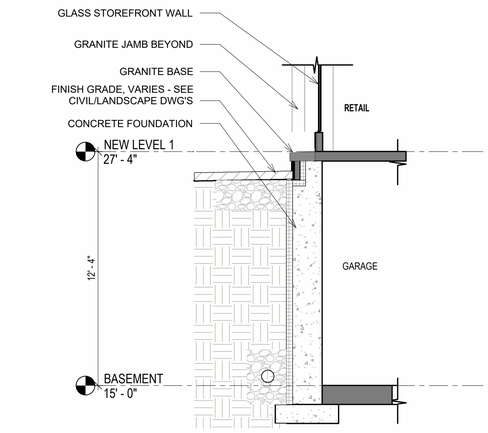
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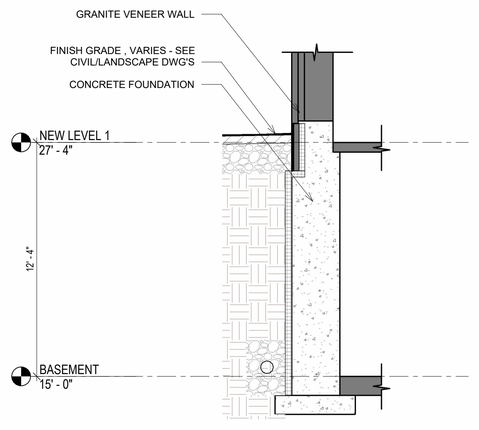
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3 **CORNER-HAVEN-HIGH**
1/4" = 1'-0"



2 **HIGH STREET**
1/4" = 1'-0"



1 **HAVEN-COURT ST**
1/4" = 1'-0"

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SITE PLAN REVIEW

WALL SECTIONS

PB.A8

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VIEW FROM MARKET SQUARE



VIEW FROM HIGH STREET AT LADD STREET



VIEW FROM LADD STREET



VIEW FROM HAVEN COURT AT NEWBERRY'S

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1 CONGRESS STREET

PORTSMOUTH, NH

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THE STATE OF NEW HAMPSHIRE

Scale:
Date: 12/22/2022
Project Number: 1002

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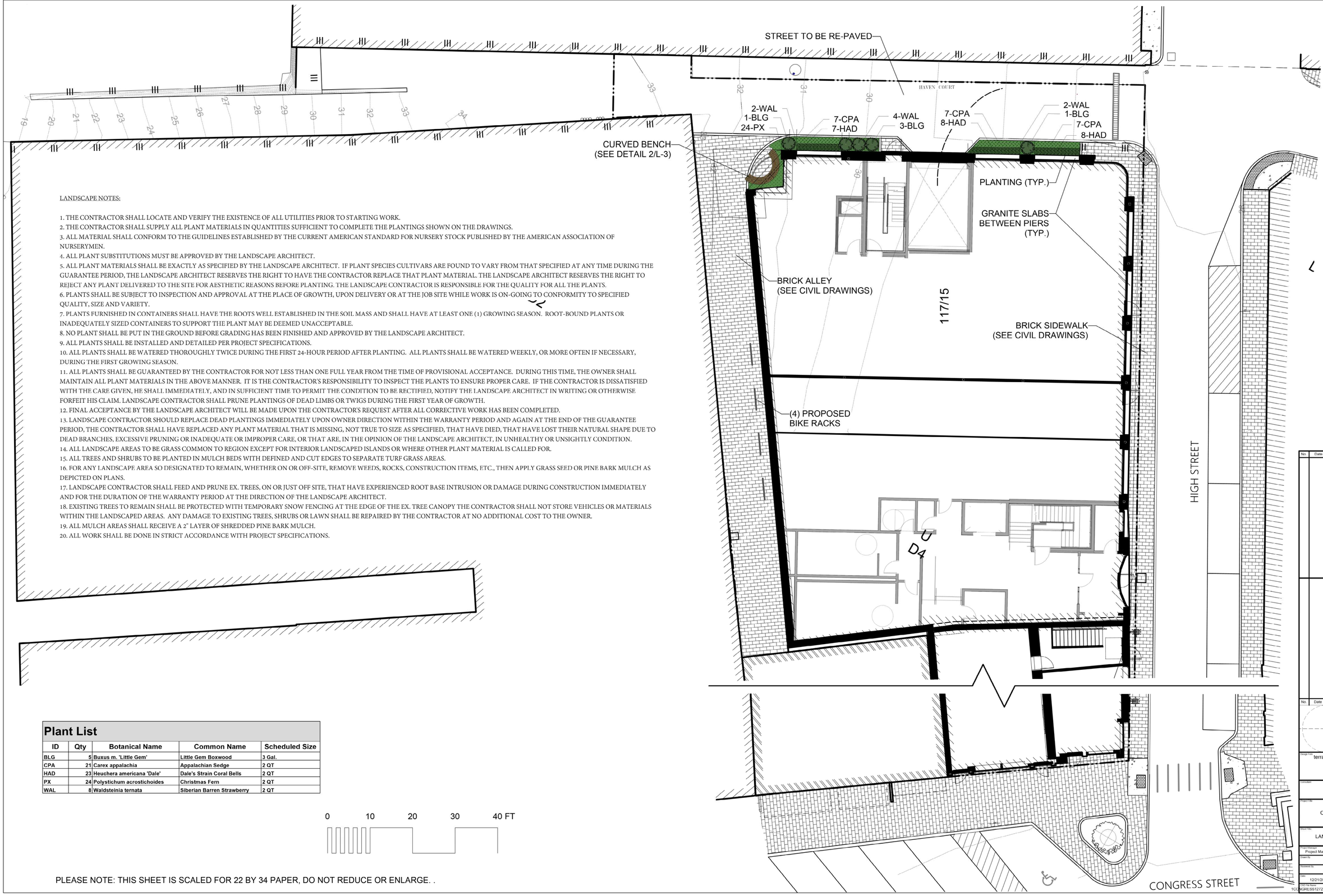
SITE PLAN REVIEW

3D VIEWS

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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.

Plant List

ID	Qty	Botanical Name	Common Name	Scheduled Size
BLG	5	Buxus m. 'Little Gem'	Little Gem Boxwood	3 Gal.
CPA	21	Carex appalachia	Appalachian Sedge	2 QT
HAD	23	Heuchera americana 'Dale'	Dale's Strain Coral Bells	2 QT
PX	24	Polystichum acrostichoides	Christmas Fern	2 QT
WAL	8	Waldsteinia ternata	Siberian Barren Strawberry	2 QT

0 10 20 30 40 FT

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No.	Date	Issue Notes

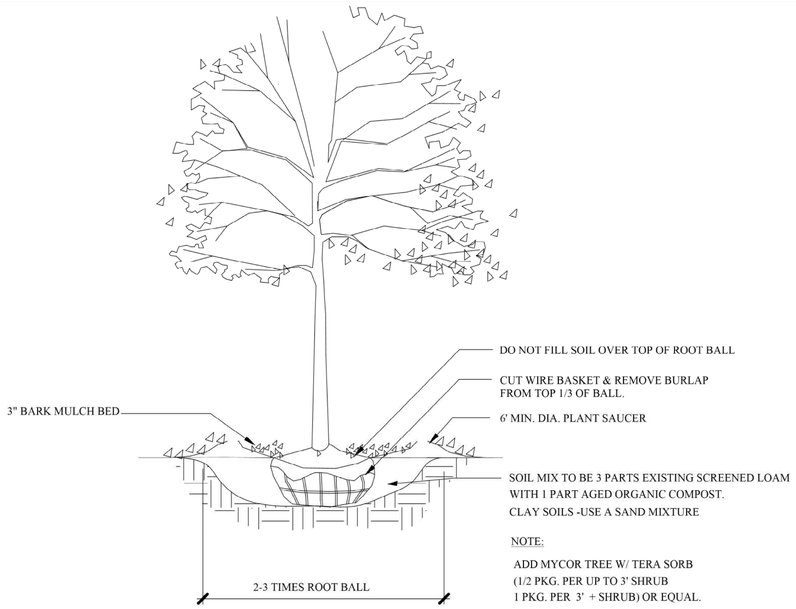
Design Firm: terra firma landscape architecture
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Consultant:

Project Title: ONE CONGRESS STREET

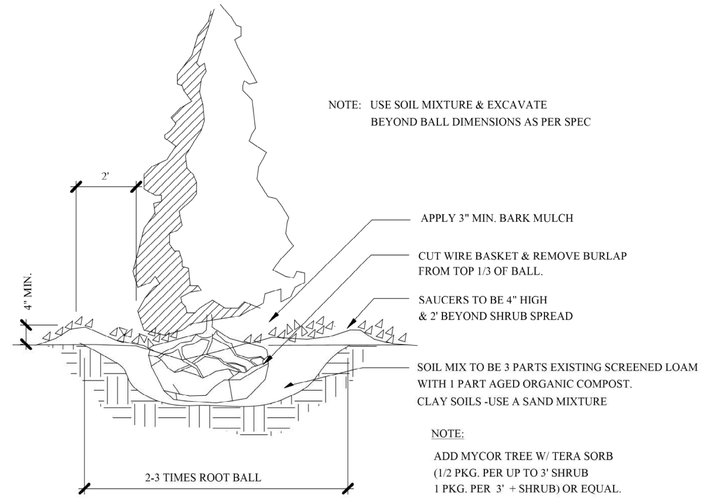
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Project Manager: Project Manager	Project No: ONE CONGRESS STREET
Drawn By:	Scale: 1:120
Approved By:	Sheet No: L-01 of 12
Date: 12/21/2022	
CAD File Name:	C:\CONGRESS12\22separate.vwx



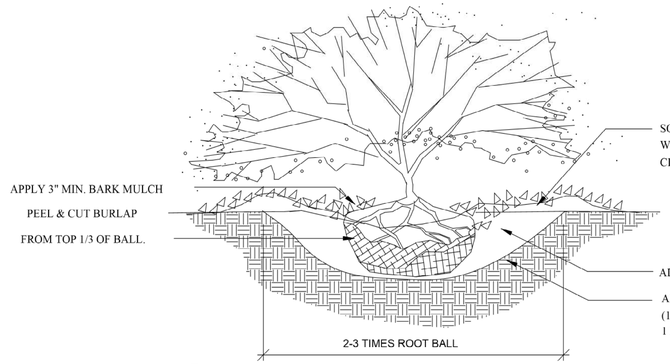
1 L-2

TREE PLANTING - 2"+ CAL.
SCALE: NTS



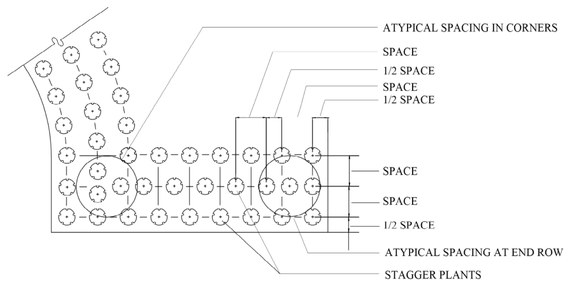
2 L-2

PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS



3 L-2

B&B SHRUB PLANTING
SCALE: NTS

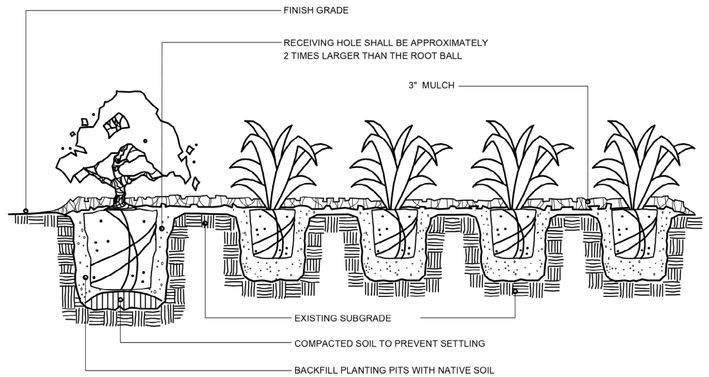


NOTES:

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.

4 L-2

GROUND COVER SPACING DETAIL
SCALE: NTS



NOTE: SHRUBS SHALL BE PLANTED A MINIMUM OF 1" & NO MORE THAN 2" ABOVE FINISH GRADE, DEPENDING UPON SITE CONDITIONS.

5 L-2

SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS

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Sheet Title: LANDSCAPE DETAILS

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Reviewed By:	Sheet No. L-02 of 12
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CONCEPTUAL ASSEMBLY DRAWING, SUBJECT TO ENGINEERING VERIFICATION BY THE FACTORY

Catalog Number: 1A-962TCGT-XRLED-XRLED-12L2700T5-MDH14-CTA / 480PM / 450P410-.250-DB / BCC4 / BK

ARM MOUNTED FIXTURE: 962TC

The 962TC-XRLED Glen Ellyn series is a tall, Colonial four-sided fixture. It features a decorative cast sloped, paneled roof, a cast cage with straight edging, cage support legs, acrylic lens, and a lift hinge access door and/or hinged roof for relamping. The roof is appointed with a cupola and cast decorative pedestal ball finial.

Roof Style: Glow Top Roof (TCGT) (GT-XRLED)

ARM FIXTURE LIGHT SOURCE: -XRLED-12L2700T5-MDH14

Number of LEDS: 12 LEDS, 60 Watts with MD_14 (XRLED-12L)
Color Temp: 2700K (27) (2700)
Distribution: Type 5 (T5)
Driver: MDH14 (1400mA, 347-480V) (MDH14)

ARM FIXTURE OPTIONS: -CTA

Lens: Clear Textured Acrylic (CTA)

ARM: 480PM

The 480PM bracket scales 16 1/2" high x 17 3/4" wide. Aluminum alloy construction.

POLE: 450P410-.250-DB

The 10-1/2" diameter cast 356 aluminum alloy base and aluminum shaft shall be a one-piece construction. For fixtures using remote ballasts or drivers, the servicing of these components requires pulling the pole. The pole shall be U.L. or E.T.L. listed in U.S. and Canada. All pole heights to have a tolerance of ± 2"

Model: 450 Lexington (450)
Shaft Type: Smooth Straight 4 Inch, 6061-T6 Aluminum Alloy (P4)
Height: 10 Ft (10)
Gauge: 0.250" (.250)
Pole Anchoring Method: Direct Burial (Smooth Straight, Smooth Tapered 4") (DB)

POLE CAP: BCC4

BCC3 Pole Cap, 4" Ball.

FINISH: BK

Assembly shall be powder coated to Black Smooth finish. Prior to coating, the assembly shall be chemically cleaned and etched in a 5-stage washing system which includes alkaline cleaning, rinsing, phosphoric etching, reverse osmosis water rinsing, and non-chrome sealing to ensure corrosion resistance.

Wind Load Evaluation

Consult Factory for direct burial poles

Wind Speed: 90 mph
Gust Factor: 1.14

Arms and Accessory	Orientation
480PM	180

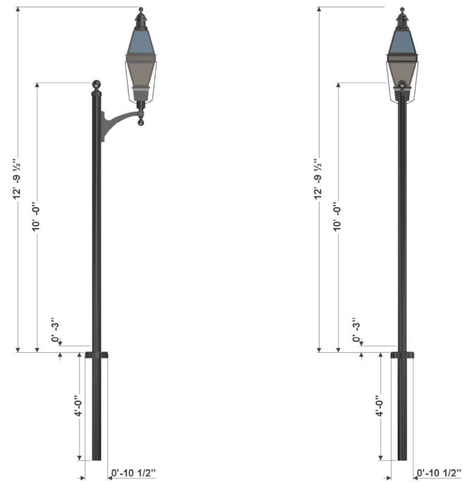
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Access Door Orientation: 0°
Street Side Orientation: 180°

Job Name: Customer Signature: Drawing #45707
Job Location: Date: 1 of 2

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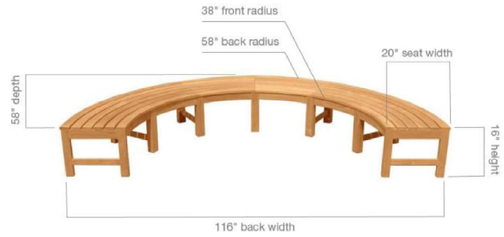
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Job Name: Customer Signature: Drawing #45707
Job Location: Date: 2 of 2

NOTE: COVER PLATE TO BE REMOVED FROM POLE PRIOR TO INSTALLATION

1 L-3 STREET LIGHT DETAIL
SCALE: NTS





COUNTRY CASUAL TEAK (OR EQUAL)
CIRCA 2PIECE 10' DIAMETER HALF-CIRCLE BACKLESS BENCH
TEAK MILDEW SHIELD FINISHE

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301-926-9195
Fax: 301-926-9198
https://www.countrycasualteak.com/

2 L-3 CURVED BENCH DETAIL
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Sheet Title: LANDSCAPE DETAILS

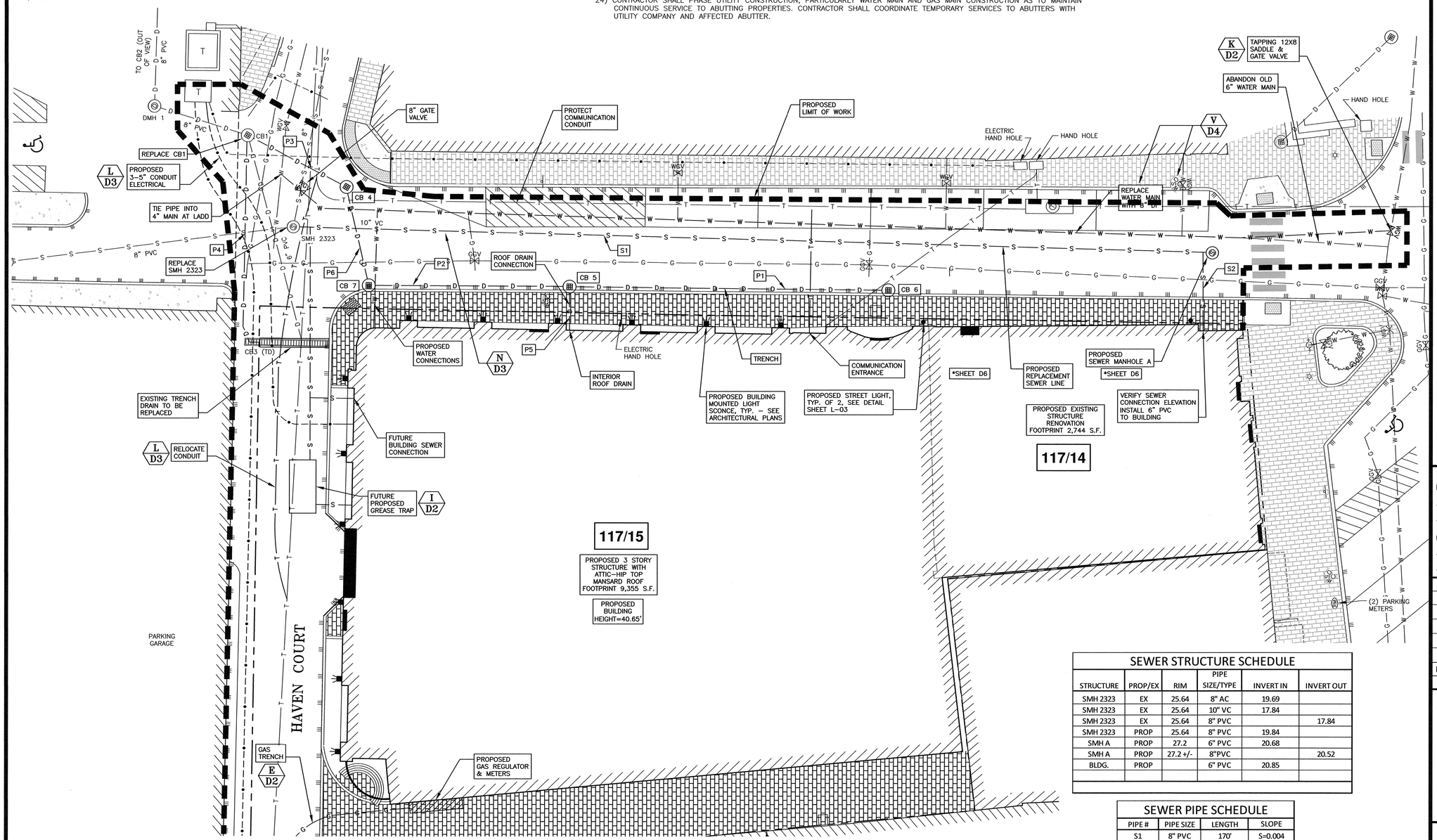
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Project Manager	ONE CONGRESS STREET
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	1:120
Reviewed By	Sheet No.
Date: 12/21/2022	L-03 of 12
CAD File Name: 1CONGRESS12722separate.vwx	

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.

UTILITY NOTES CONTINUED:

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 PAVEMENT AREAS TO REMAIN.
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.



SEWER STRUCTURE SCHEDULE

STRUCTURE	PROP/EX	RIM	PIPE SIZE/TYPE	INVERT IN	INVERT OUT
SMH 2323	EX	25.64	8" AC	19.69	
SMH 2323	EX	25.64	10" VC	17.84	
SMH 2323	EX	25.64	8" PVC		17.84
SMH 2323	PROP	25.64	8" PVC	19.84	
SMH A	PROP	27.2	6" PVC	20.68	
SMH A	PROP	27.2 +/-	8"PVC		20.52
BLDG.	PROP		6" PVC	20.85	

SEWER PIPE SCHEDULE

PIPE #	PIPE SIZE	LENGTH	SLOPE
S1	8" PVC	170'	S=0.004
S2	6" PVC	15'	S=0.01

AMBIT ENGINEERING, INC.
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200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
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NOTES:

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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).

4) PROVIDE TEMPORARY WATER SERVICES TO ALL IMPACTED PROPERTIES DURING NEW WATER MAIN INSTALLATION.

5) PROPOSED SEWER FLOW:
1ST FLOOR: 9,355 SF RETAIL/RESTAURANT: 460-3,000 GPD
2ND FLOOR: OFFICE: 470 GPD
REMAINDER: 18 RESIDENTIAL UNITS: 3,000 GPD
TOTAL PROPOSED FLOW: 3,930-6,470 GPD

COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	RE-DESIGN	12/20/22
2	PROPOSED ELECTRICAL & COMMS	10/27/22
1	BUILDING FOOTPRINT	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7651
LICENSED
PROFESSIONAL ENGINEER

SCALE 1" = 10' SEPTEMBER 2022

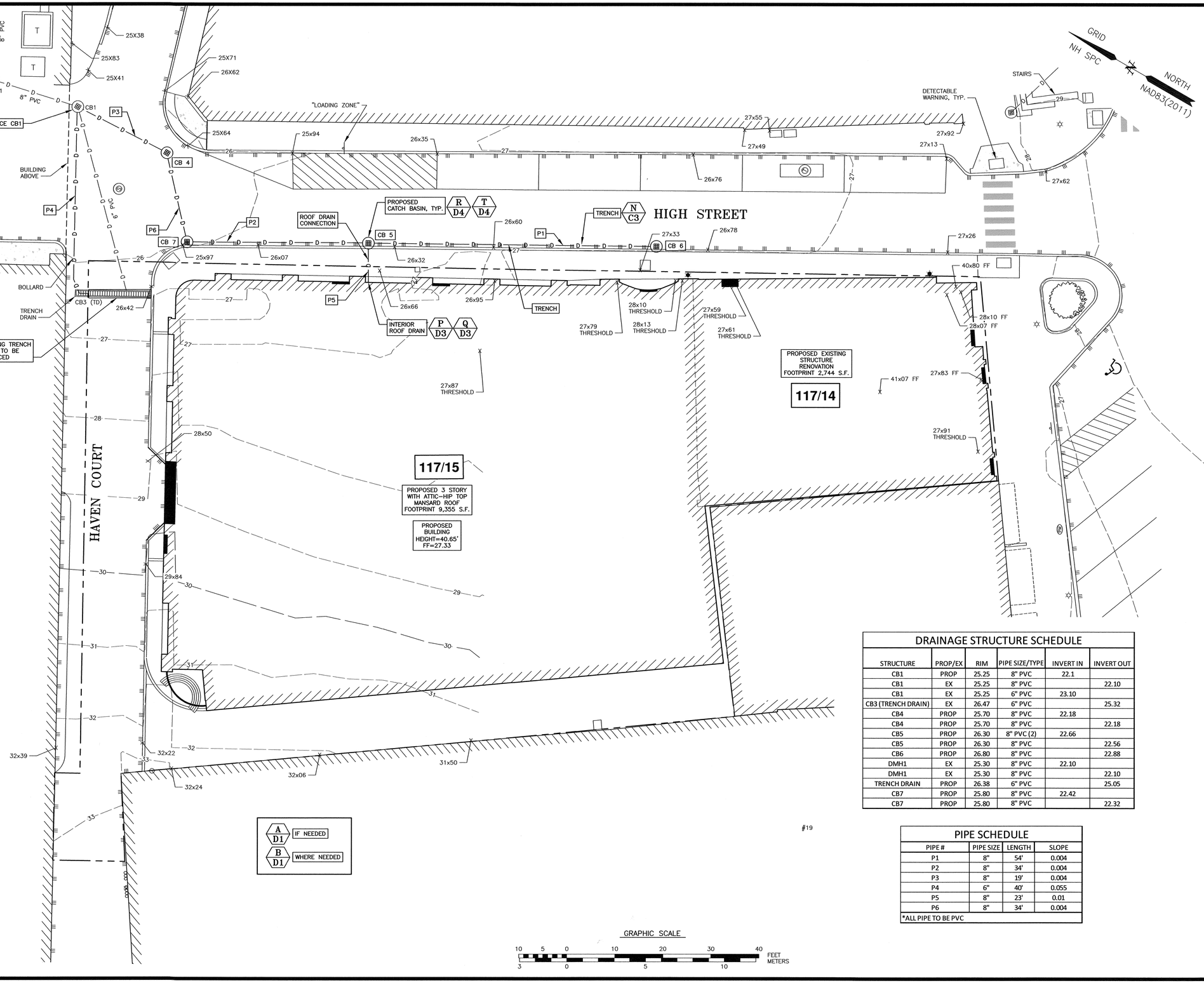
UTILITY PLAN

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DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	PROP/EX	RIM	PIPE SIZE/TYPE	INVERT IN	INVERT OUT
CB1	PROP	25.25	8" PVC	22.1	
CB1	EX	25.25	8" PVC		22.10
CB1	EX	25.25	6" PVC	23.10	
CB3 (TRENCH DRAIN)	EX	26.47	6" PVC		25.32
CB4	PROP	25.70	8" PVC	22.18	
CB4	PROP	25.70	8" PVC		22.18
CB5	PROP	26.30	8" PVC (2)	22.66	
CB5	PROP	26.30	8" PVC		22.56
CB6	PROP	26.80	8" PVC		22.88
DMH1	EX	25.30	8" PVC	22.10	
DMH1	EX	25.30	8" PVC		22.10
TRENCH DRAIN	PROP	26.38	6" PVC		25.05
CB7	PROP	25.80	8" PVC	22.42	
CB7	PROP	25.80	8" PVC		22.32

PIPE SCHEDULE

PIPE #	PIPE SIZE	LENGTH	SLOPE
P1	8"	54'	0.004
P2	8"	34'	0.004
P3	8"	19'	0.004
P4	6"	40'	0.055
P5	8"	23'	0.01
P6	8"	34'	0.004

*ALL PIPE TO BE PVC

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COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	REVISED	12/20/22
1	BUILDING FOOTPRINT, GRADING	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

JOHN R. CHAGNON No. 7051 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

SCALE 1" = 10' SEPTEMBER 2022

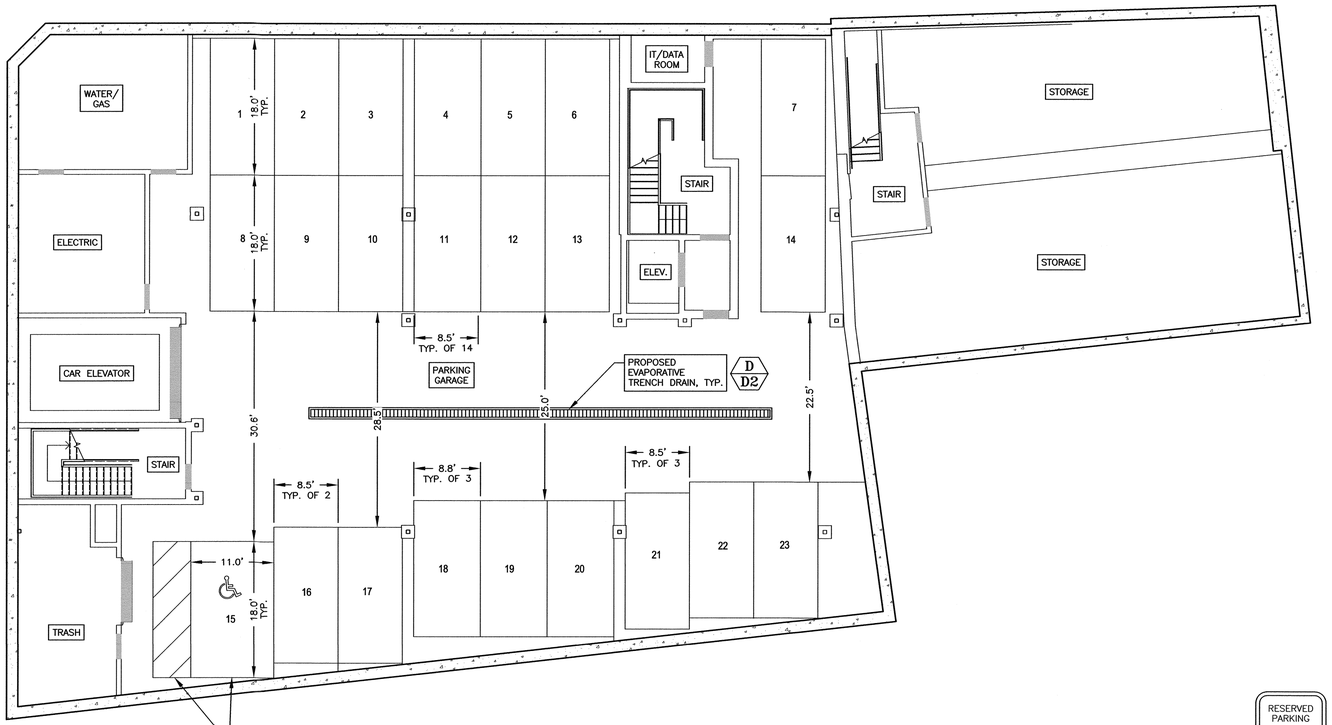
GRADING PLAN

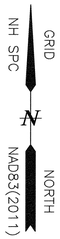
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Residential Vehicular Parking	Qty	parking per unit	parking required	parking available
units > 750 sf	16	1.30	20.80	
units 500-750 sf	1	1.00	1.00	
Units <500 sf	1	0.50	0.50	
resident units total	**18**		**22.30**	
DOD deduct			-4.00	
1 visitor space for every 5 units			3.6	
TOTAL			**21.90**	**23.00**

	Unit NO.	BR's	SF	parking/unit	parking available
	301	2	1,067	1.3	
	302	1	885	1.3	
	303	1	925	1.3	
	304	1	574	1.0	
	305	1	1,014	1.3	
	306	1	986	1.3	
	307	1	982	1.3	
	308	1	913	1.3	
	309	2	1,324	1.3	
	401	2	946	1.3	
	402	1	851	1.3	
	403	1	894	1.3	
	404	st	343	0.5	
	405	1	1,023	1.3	
	406	1	838	1.3	
	407	1	894	1.3	
	408	1	906	1.3	
	409	2	1,200	1.3	
resident units total			16,565	22.3	
DOD deduct				-4.0	
1 visitor space for every 5 units				3.6	
TOTAL parking				**21.90**	**23**

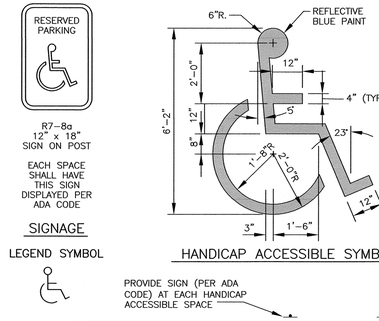
Bicycle Parking	
One space for every 5 units	3.6
TOTAL required, rounded up	**4**

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE

10 5 0 10 20 30 40 FEET
3 0 5 10 METERS



NOTES:

1) SYMBOL TO BE PAINTED IN ALL HANDICAPPED SPACES.

2) SYMBOL, PAINT AND SIGNAGE TO CONFORM TO AMERICANS WITH DISABILITIES ACT (ADA).

3) ALL VAN ACCESSIBLE SPACES SHALL HAVE "VAN ACCESSIBLE" PLATE INSTALLED ON SIGN POST BELOW HANDICAP SIGN.

1 / C6 HANDICAP PARKING DETAIL
NTS

AMBIT ENGINEERING, INC.
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200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE PARKING FOR THE PROPOSED SITE DEVELOPMENT ON ASSESSORS MAP 117 AS LOTS 14 AND 15. IN THE CITY OF PORTSMOUTH.

4) REQUIRED PARKING:
PROPOSED USE: RETAIL, OFFICE, RESIDENTIAL.

FIRST FLOOR: EXEMPT FROM REQUIREMENT.
2ND FLOOR: OFFICE– NOT REQUIRED.
UPPER FLOORS: 18 RESIDENTIAL UNITS

REQUIRED PARKING: 27 (SEE TABLE).
DOD CREDIT: <4>
TOTAL REQUIRED: 23
PROVIDED: 23

COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	BUILDING FOOTPRINT	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS



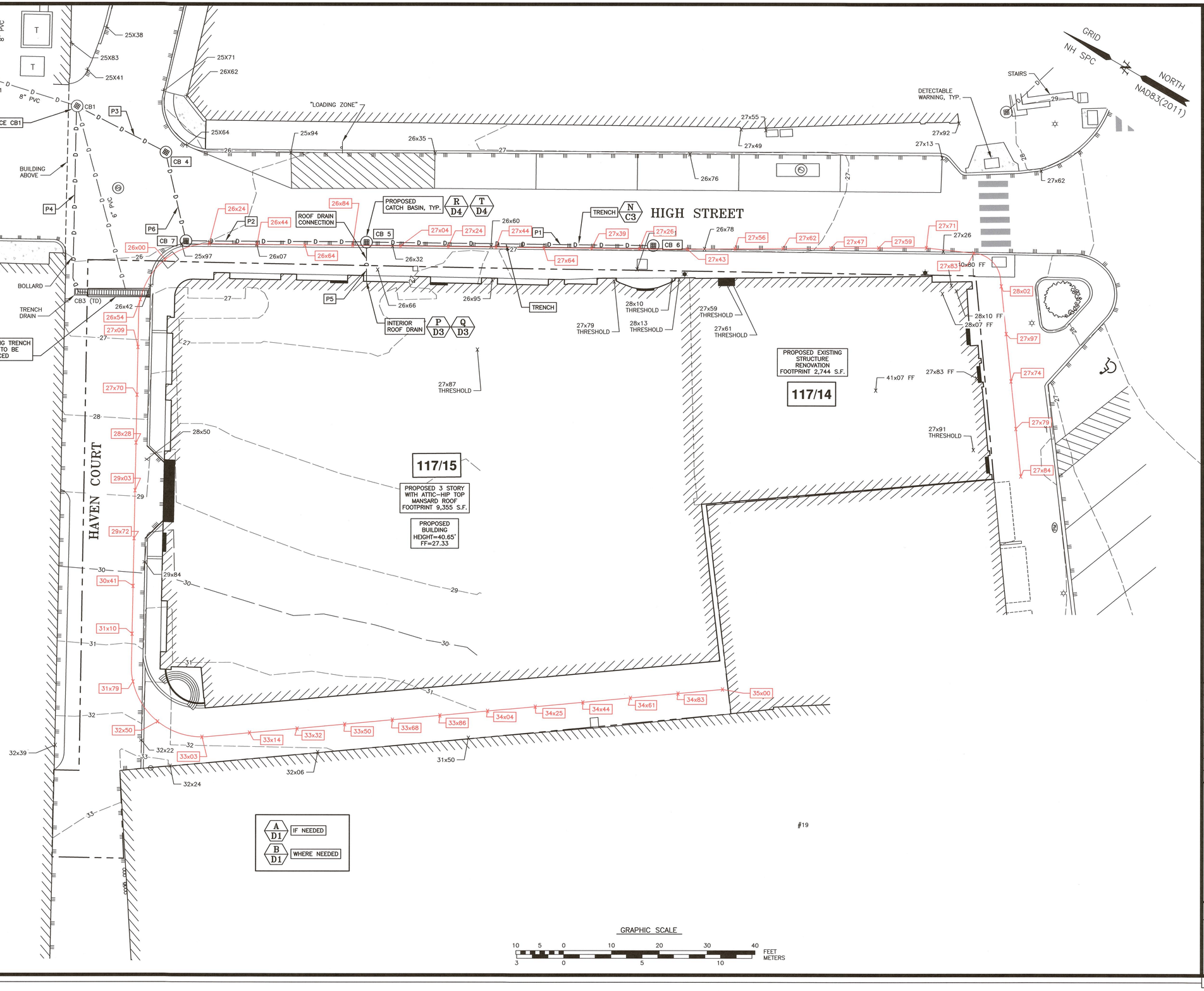
SCALE 1" = 10' SEPTEMBER 2022

PARKING LEVEL PLAN

C6

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COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	REVISED	12/20/22
1	BUILDING FOOTPRINT, GRADING	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

JOHN R. CHAGNON No. 9651 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -

SCALE 1" = 10' SEPTEMBER 2022

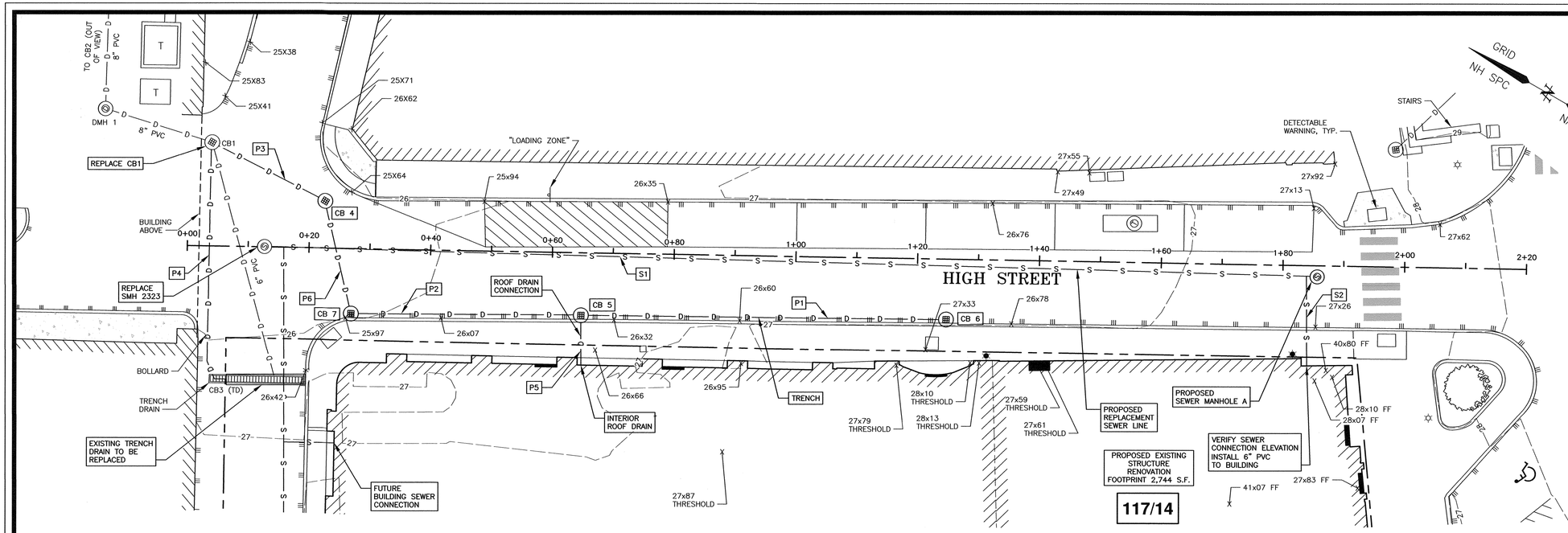
AVERAGE GRADE PLANE

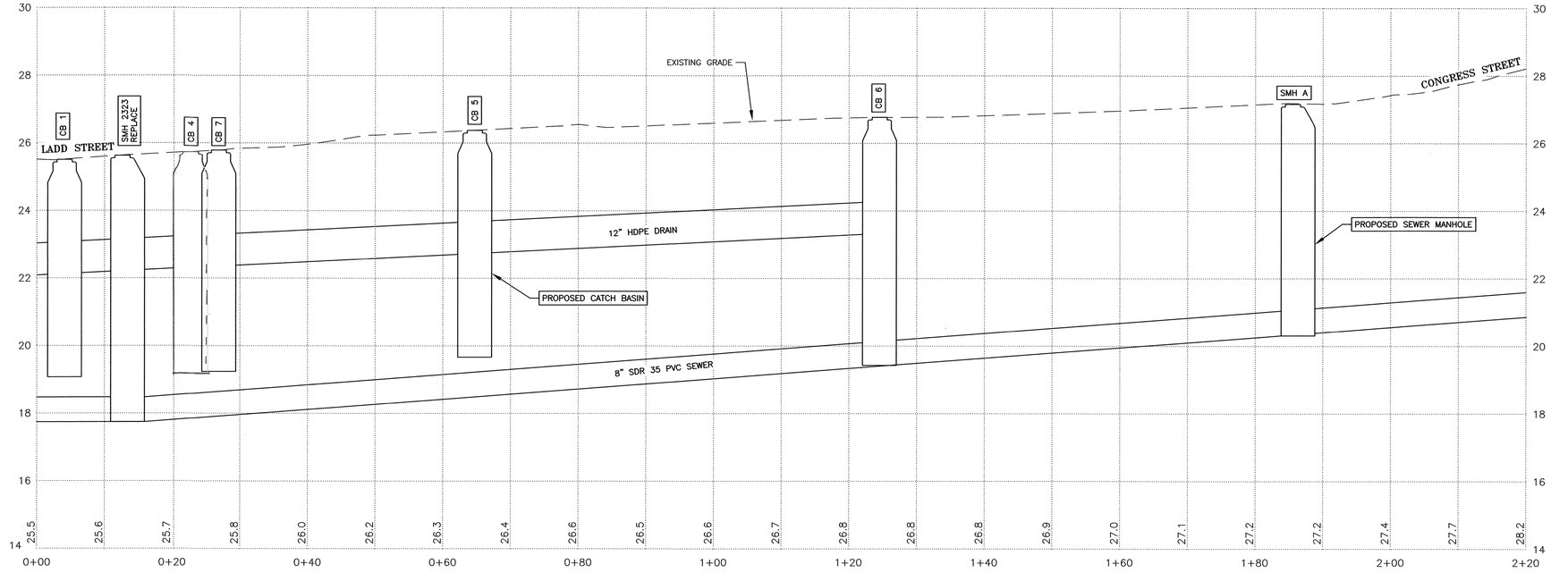
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GRAPHIC SCALE

10 5 0 10 20 30 40 FEET

3 0 5 10 METERS

SCALE: 1" = 10' (HOR.)
1" = 2' (VERT.)

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COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	REVISED	12/20/22
0	ISSUED FOR COMMENT	12/14/22

REVISIONS

JOHN R. CHAGNON No. 7051 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE H:1"=10' V:1"=2' NOVEMBER 2021

PLAN & PROFILE

P1

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EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

IF REQUIRED THE CONTRACTOR SHALL OBTAIN AN **NPDES** PHASE II STORMWATER PERMIT AND SUBMIT A NOTICE OF INTENT (N.O.I) BEFORE BEGINNING CONSTRUCTION AND SHALL HAVE ON SITE A STORMWATER POLLUTION PREVENTION PLAN (**S.W.P.P.P.**) AVAILABLE FOR INSPECTION BY THE PERMITTING AUTHORITY DURING THE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THE **S.W.P.P.P.** AND INSPECTING AND MAINTAINING ALL BMP'S CALLED FOR BY THE PLAN. THE CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (**N.O.T.**) FORM TO THE REGIONAL EPA OFFICE WITHIN 30 DAYS OF FINAL STABILIZATION OF THE ENTIRE SITE OR TURNING OVER CONTROL OF THE SITE TO ANOTHER OPERATOR.

THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
1. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE CONTRACTOR AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
2. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
3. A REPRESENTATIVE OF THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
4. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

INSTALL PERIMETER CONTROLS, i.e., SILTSOXX AND CATCH BASIN PROTECTION AROUND THE LIMITS OF DISTURBANCE BEFORE ANY EARTH MOVING OPERATIONS. THE USE OF HAYBALES IS NOT ALLOWED.

THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES. PLACE FODS AS NEEDED.

CUT AND GRUB ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND REMOVE OTHER DEBRIS AND RUBBISH AS REQUIRED. DEMOLISH BUILDINGS AND FENCES AS NEEDED. REMOVE WALL AND STORE.

ROUGH GRADE SITE.

LAYOUT AND INSTALL ALL BURIED UTILITIES AND SERVICES UP TO 10' OF THE PROPOSED BUILDING FOUNDATIONS. CAP AND MARK TERMINATIONS OR LOG SWING TIES.

CONSTRUCT BUILDING.

CONNECT UTILITIES.

PLACE BINDER LAYER OF PAVEMENT FOR SIDEWALKS.

PLANT LANDSCAPING IN AREAS OUT OF WAY OF BUILDING CONSTRUCTION. PREPARE AND STABILIZE FINAL SITE GRADING BY ADDING TOPSOIL, SEED, MULCH AND FERTILIZER.

AFTER BUILDINGS ARE COMPLETED, FINISH ALL REMAINING LANDSCAPED WORK.

CONSTRUCT SIDEWALKS.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES UPON COMPLETION OF FINAL STABILIZATION OF THE SITE.

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF A BUILDING REDEVELOPMENT WITH ASSOCIATED UTILITIES AND PARKING.

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 0.370 ACRES.

BASED ON THE USCS WEB SOIL SURVEY THE SOILS ON SITE CONSIST OF URBAN LAND WHICH HAS AN UNSPECIFIED HYDROLOGIC SOIL GROUP RATING, ASSUMED D.

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA A CLOSED DRAINAGE SYSTEM TO THE CITY OF PORTSMOUTH CLOSED DRAINAGE SYSTEM WHICH ULTIMATELY FLOWS TO THE PISCATAQUA RIVER.

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.

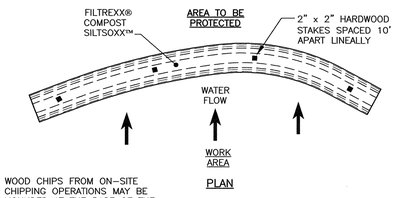
WASTE DISPOSAL

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

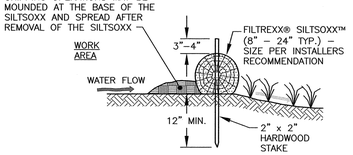
1. CONTRACTOR SHALL CONTACT THE NHDES AND/OR LOCAL JURISDICTION PRIOR TO COMMENCING ANY BLASTING ACTIVITIES.
2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT A BLASTING PLAN THAT IDENTIFIES:
   - WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
   - THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
   - SITE-SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.

NOTE: THAT HIGH STREET SHALL BE SWEEPED DAILY DURING THE EXCAVATION PHASE OF THE BUILDING CONSTRUCTION.



PLAN

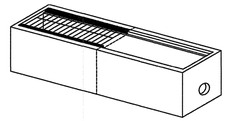
WOOD CHIPS FROM ON-SITE CHIPPING OPERATIONS MAY BE MOUNDED AT THE BASE OF THE SILTSOXX AND SPREAD AFTER REMOVAL OF THE SILTSOXX

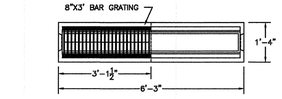


ELEVATION

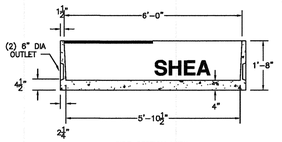
NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX 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 / C5 FILTREXX® SILTSOXX™ FILTRATION SYSTEM (IF NEEDED) NTS

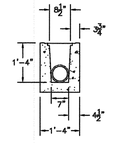




PLAN VIEW



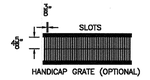
SIDE SECTION VIEW



END SECTION VIEW

ITEM NO.		WEIGHT
TD6	6' SECTION	1,315#
TD3	3' SECTION	711#

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. AVAILABLE IN 3' AND 6' SECTIONS.
3. AVAILABLE IN END, MIDDLE, OR CLOSED SECTIONS.
4. DESIGNED FOR AASHTO HS-20 LOADING.



HANDICAP GRATE (OPTIONAL)

SHEA PRODUCT ID: TD3/TD6
TRENCH DRAIN 8"X16"
WEIGHT (LBS): 711#/1,315#

C / C5 TRENCH DRAIN NTS

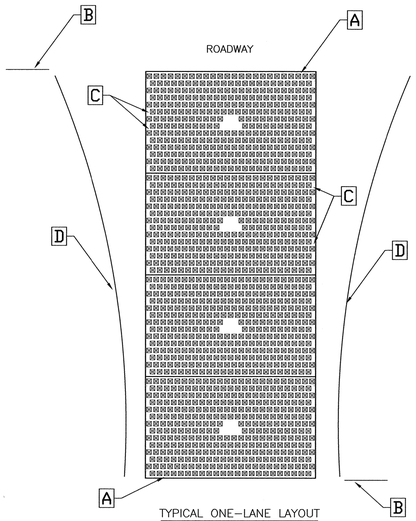
FODS TRACKOUT CONTROL SYSTEM

INSTALLATION:

THE PURPOSE AND DESIGN OF THE FODS TRACKOUT CONTROL SYSTEM IS TO EFFECTIVELY REMOVE MOST SEDIMENT FROM VEHICLE TIRES AS THEY EXIT A DISTURBED LAND AREA ONTO A PAVED STREET. THIS MANUAL IS A PLATFORM FROM WHICH TO INSTALL A FODS TRACKOUT CONTROL SYSTEM. (NOTE: THIS IS NOT A ONE SIZE FITS ALL GUIDE.) THE INSTALLATION MAY NEED TO BE MODIFIED TO MEET THE EXISTING CONDITIONS, EXPECTATIONS, OR DEMANDS OF A PARTICULAR SITE. THIS IS A GUIDELINE. ULTIMATELY THE FODS TRACKOUT CONTROL SYSTEM SHOULD BE INSTALLED SAFELY WITH PROPER ANCHORING AND SIGNS PLACED AT THE ENTRANCE AND EXIT TO CAUTION USERS AND OTHERS.

KEY NOTES:

A. FODS TRACKOUT CONTROL SYSTEM MAT.
B. FODS SAFETY SIGN.
C. ANCHOR POINT.
D. SILT OR ORANGE CONSTRUCTION FENCE.



TYPICAL ONE-LANE LAYOUT

INSTALLATION:
1. THE SITE WHERE THE FODS TRACKOUT CONTROL SYSTEM IS TO BE PLACED SHOULD CORRESPOND TO BEST MANAGEMENT PRACTICES AS MUCH AS POSSIBLE. THE SITE WHERE FODS TRACKOUT CONTROL SYSTEM IS PLACED SHOULD ALSO MEET OR EXCEED THE LOCAL JURISDICTION OR STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.
2. CALL FOR UTILITY LOCATES 3 BUSINESS DAYS IN ADVANCE OF THE OF FODS TRACKOUT CONTROL SYSTEM INSTALLATION FOR THE MARKING OF UNDERGROUND UTILITIES. CALL THE UTILITY NOTIFICATION CENTER AT 811.
3. ONCE THE SITE IS ESTABLISHED WHERE FODS TRACKOUT CONTROL SYSTEM IS TO BE PLACED, ANY EXCESSIVE UNEVEN TERRAIN SHOULD BE LEVELED OUT OR REMOVED SUCH AS LARGE ROCKS, LANDSCAPING MATERIALS, OR SUDDEN ABRUPT CHANGES IN ELEVATION.
4. THE INDIVIDUAL MATS CAN START TO BE PLACED INTO POSITION. THE FIRST MAT SHOULD BE PLACED NEXT TO THE CLOSEST POINT OF EGRESS. THIS WILL ENSURE THAT THE VEHICLE WILL EXIT STRAIGHT FROM THE SITE ONTO THE PAVED SURFACE.
8. AFTER THE FIRST MAT IS PLACED DOWN IN THE PROPER LOCATION, MATS SHOULD BE ANCHORED TO PREVENT THE POTENTIAL MOVEMENT WHILE THE ADJOINING MATS ARE INSTALLED. ANCHORS SHOULD BE PLACED AT EVERY ANCHOR POINT (IF FEASIBLE) TO HELP MAINTAIN THE MAT IN ITS CURRENT POSITION.
9. AFTER THE FIRST MAT IS ANCHORED IN ITS PROPER PLACE, AN H BRACKET SHOULD BE PLACED AT THE END OF THE FIRST MAT BEFORE ANOTHER MAT IS PLACED ADJACENT TO THE FIRST MAT.
10. ONCE THE SECOND MAT IS PLACED ADJACENT TO THE FIRST MAT, MAKE SURE THE H BRACKET IS CORRECTLY SITUATED BETWEEN THE TWO MATS, AND SLIDE MATS TOGETHER.
11. NEXT THE CONNECTOR STRAPS SHOULD BE INSTALLED TO CONNECT THE TWO MATS TOGETHER.
12. UPON PLACEMENT OF EACH NEW MAT IN THE SYSTEM, THAT MAT SHOULD BE ANCHORED AT EVERY ANCHOR POINT TO HELP STABILIZE THE MAT AND ENSURE THE SYSTEM IS CONTINUOUS WITH NO GAPS IN BETWEEN THE MATS.
13. SUCCESSIVE MATS CAN THEN BE PLACED TO CREATE THE FODS TRACKOUT CONTROL SYSTEM REPEATING THE ABOVE STEPS.

USE AND MAINTENANCE
1. VEHICLES SHOULD TRAVEL DOWN THE LENGTH OF THE TRACKOUT CONTROL SYSTEM AND NOT CUT ACROSS THE MATS.
2. DRIVERS SHOULD TURN THE WHEEL OF THEIR VEHICLES SUCH THAT THE VEHICLE WILL MAKE A SHALLOW S-TURN ROUTE DOWN THE LENGTH OF THE FODS TRACKOUT CONTROL SYSTEM.
3. MATS SHOULD BE CLEANED ONCE THE VOIDS BETWEEN THE PYRAMIDS BECOME FULL OF SEDIMENT. TYPICALLY THIS WILL NEED TO BE PERFORMED WITHIN TWO WEEKS AFTER A STORM EVENT. BRUSHING IS THE PREFERRED METHOD OF CLEANING, EITHER MANUALLY OR MECHANICALLY.
4. THE USE OF ICE MELT, ROCK SALT, SNOW MELT, DE-ICER, ETC. SHOULD BE UTILIZED AS NECESSARY DURING THE WINTER MONTHS AND AFTER A SNOW EVENT TO PREVENT ICE BUILDUP.

REMOVAL
1. REMOVAL OF FODS TRACKOUT CONTROL SYSTEM IS REVERSE ORDER OF INSTALLATION.
2. STARTING WITH THE LAST MAT, THE MAT THAT IS PLACED AT THE INNERMOST POINT OF THE SITE OR THE MAT FURTHEST FROM THE EXIT OR PAVED SURFACE SHOULD BE REMOVED FIRST.
3. THE ANCHORS SHOULD BE REMOVED.
4. THE CONNECTOR STRAPS SHOULD BE UNBOLTED AT ALL LOCATIONS IN THE FODS TRACKOUT CONTROL SYSTEM.
5. STARTING WITH THE LAST MAT IN THE SYSTEM, EACH SUCCESSIVE MAT SHOULD THEN BE MOVED AND STACKED FOR LOADING BY FORKLIFT OR EXCAVATOR ONTO A TRUCK FOR REMOVAL FROM THE SITE.

B / C5 FODS (USE AS REQUIRED) NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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).

4) HIGH AND LADD STREETS SHALL BE SWEEPED DAILY DURING EXCAVATION PHASE OF THE BUILDING CONSTRUCTION.

COMMERCIAL DEVELOPMENT ONE CONGRESS STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	UPDATED FOR URBAN AREAS	12/19/22
1	DETAIL C	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

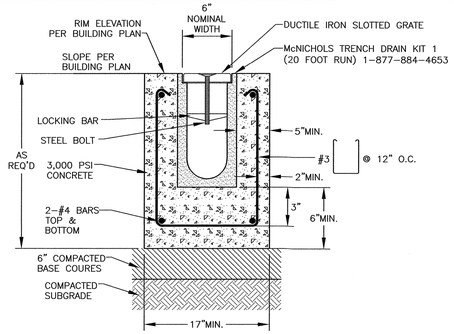
JOHN R CHAGNON No. 7951 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: AS SHOWN SEPTEMBER 2022

EROSION PROTECTION NOTES AND DETAILS **D1**

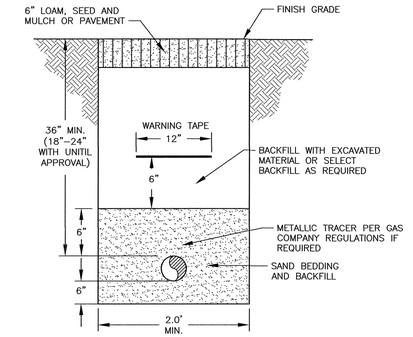
FB 309 PG 15 3406

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D / C6 TRENCH DRAIN DETAIL

EVAPORATIVE NTS

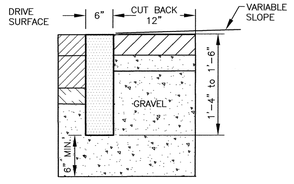


E / C4 GAS SERVICE TRENCH

NTS

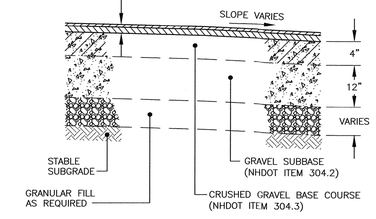
MIN. LENGTH OF CURB STONES 3FT.
MAX. LENGTH OF CURB STONES 10FT.
MAX. LENGTH OF STRAIGHT CURB STONES LAID ON CURVES SEE CHART

NOTE: ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATE LENGTH.



F / C3 FLUSHED GRANITE CURB

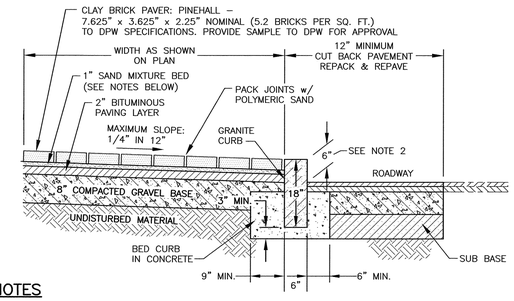
NTS



G / – TYPICAL PAVEMENT CROSS-SECTION

AS NEEDED NTS

CONSTRUCTION NOTE:
EXISTING GRANITE CURB DISTURBED BY CONSTRUCTION SHALL BE REUSED AND ANY MISSING CURB SHALL BE REPLACED WITH NEW CURB MATCHING EXISTING CURB SIZE. NO CURB LESS THAN 3' IN LENGTH WILL BE ALLOWED.



BRICK PAVEMENT NOTES

SCOPE OF WORK:

1) THE WORK SHALL CONSIST OF CONSTRUCTING/RECONSTRUCTING THE SUB-BASE AND CONSTRUCTING A NEW BRICK SIDEWALK AS DIRECTED IN THE FIELD BY THE ENGINEER.
2) REVEAL SHALL BE AS SHOWN ON PROPOSED GRADING PLAN. (COORDINATE WITH PORTSMOUTH DPW).

METHODS OF CONSTRUCTION:

A) ALL LABOR AND MATERIALS SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 608, AND CITY OF PORTSMOUTH SPECIFICATIONS FOR NEW BRICK SIDEWALK, SECTION 6.

B) ALL BRICKS SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD SPECIFICATIONS FOR BUILDING BRICKS: CLASS SX, TYPE 1, APPLICATION PX. THE BRICKS SHALL BE NO. 1, WIRE CUT TYPE FOR PAVING, WITH A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 POUNDS PER SQUARE INCH. THE BRICKS SHALL NOT BE CORED OR HAVE FROGS AND SHALL BE OF A STANDARD SIZE (2.25" X 3.625" X 7.625").

C) EXCAVATION FOR SIDEWALKS SHALL BE AT A DEPTH OF 10 INCHES BELOW FINISH GRADE. IN AREAS NOT BUTTING CURBING OR BUILDINGS, THE EXCAVATION SHALL BE 6 INCHES WIDER THAN THE FINISHED SIDEWALK WIDTH. AT ALL DRIVE CROSSINGS, THE DEPTH OF EXCAVATION SHALL BE INCREASED ACCORDINGLY. THE CONTRACTOR SHALL PROVIDE NEAT AND SQUARE CUTTING OF EXISTING ASPHALT ROAD SURFACE AS NEEDED. ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF-SITE AT THE CONTRACTOR'S OWN EXPENSE.

D) THE BASE MATERIAL SHALL CONSIST OF A MIXTURE OF STONES OR ROCK FRAGMENTS AND PARTICLES WITH 100% PASSING THE 3 INCH SIEVE, 95% TO 100% PASSING THE 2 INCH SIEVE, 55% TO 85% PASSING THE 1 INCH SIEVE, AND 27% TO 52% PASSING THE NO. 4 SIEVE. AT LEAST 50% OF THE MATERIALS RETAINED ON THE 1 INCH SIEVE SHALL HAVE A FRACTURED FACE. THE BASE MATERIAL SHALL BE THOROUGHLY COMPACTED TO THE DEPTH SPECIFIED OR DIRECTED. IN THE WAY OF ALL DRIVE CROSSINGS THE BASE WILL BE INCREASED TO A COMPACTED DEPTH OF 12 INCHES. GRAVEL REQUIREMENTS FOR RECONSTRUCTION WILL BE AS DIRECTED, BASED ON SITE CONDITIONS. THE WORK INCLUDES BACKING UP ANY AND ALL CURB BEING INSTALLED BY OTHERS ON BOTH SIDES.

E) THE CLAY BRICK PAVERS SHALL BE LAID IN A 1 INCH BED OF A SAND MIXTURE COMPRISED OF: 3 PARTS SAND MIXED WITH 1 PART PORTLAND CEMENT.

F) THE CONTRACTOR SHALL LAY THE BRICKS SO THAT APPROXIMATELY 5.2 BRICKS SHALL COVER ONE SQUARE FOOT.

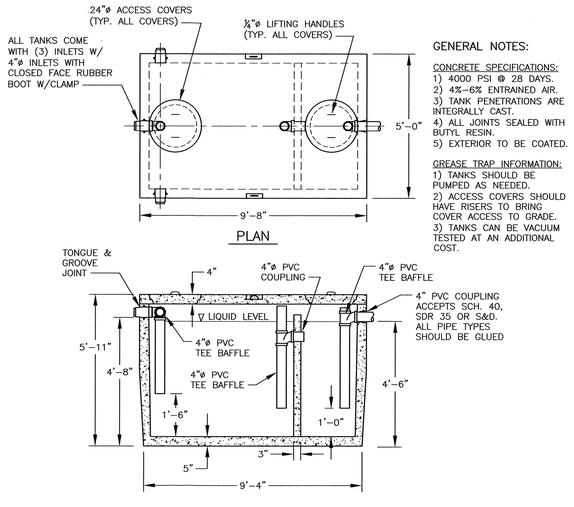
G) THE SIDEWALK SHALL PITCH TOWARDS THE STREET AS SHOWN ON THE GRADING PLAN.

H) IN AREAS WHERE THE FRONT OF THE BRICK SIDEWALK IS NOT ADJACENT TO GRANITE CURBING, THE CONTRACTOR SHALL INSTALL EDGING TO HOLD THE BRICKS IN PLACE. SUCH EDGING SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

I) THE CONTRACTOR SHALL SUBMIT A SAMPLE OF THE BRICKS FOR APPROVAL BY THE CITY BEFORE BRICKS ARE INSTALLED.

H / C3 BRICK SIDEWALK w/ VERTICAL GRANITE CURB

(STONE DUST BEDDING OVER BITUMINOUS PAVING) NTS



GENERAL NOTES:

CONCRETE SPECIFICATIONS:
1) 4000 PSI @ 28 DAYS.
2) 4%-6% ENTRAINED AIR.
3) TANK PENETRATIONS ARE INTEGRALLY CAST.
4) ALL JOINTS SEALED WITH BUTYL RESIN.
5) EXTERIOR TO BE COATED.

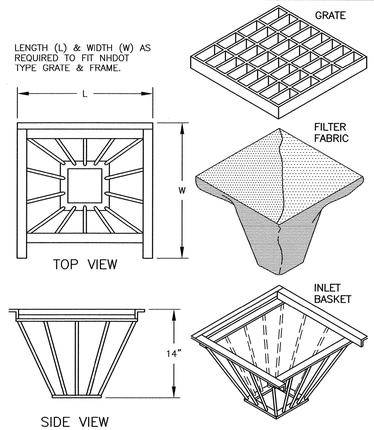
GREASE TRAP INFORMATION:
1) TANKS SHOULD BE PUMPED AS NEEDED.
2) ACCESS COVERS SHOULD HAVE RISERS TO BRING COVER ACCESS TO GRADE.
3) TANKS CAN BE VACUUM TESTED AT AN ADDITIONAL COST.

I / C4 SHEA CONCRETE

1000 GALLON 2 COMP. GREASE TRAP NTS

14,825 Lbs ITEM # M1000H

H20 LOAD RATED



1) INLET BASKETS SHALL BE INSTALLED IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION IS COMPLETE AND SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

2) FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND, SHALL EXTEND AT LEAST 6" PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.

3) THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE, OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
- -RAB STRENGTH: 45 LB. MIN. IN ANY PRINCIPAL DIRECTION (ASTM D1682)
- -MULLEN BURST STRENGTH: MIN. 60 psi (ASTM D774)

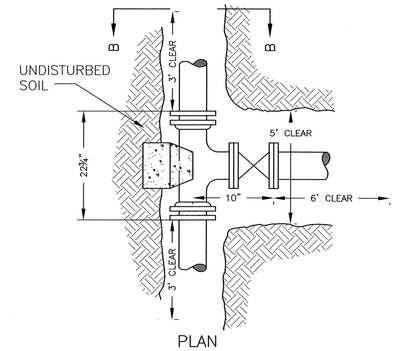
4) THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 gpm/s.f. (MULTIPLY THE PERMITTIVITY IN SEC.-1 FROM ASTM 54491-85 CONSTANT HEAD TEST USING THE CONVERSION FACTOR OF 74.)

5) THE 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.

6) SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

J / C5 CATCH BASIN INLET BASKET

NTS



NOTES:
1) ALL MATERIALS SHALL BE APPROVED BY THE PORTSMOUTH WATER DEPARTMENT PRIOR TO INSTALLATION AND USE.
2) ALL JOINTS SHALL BE MECHANICAL.
3) "CLEAR" DIMENSIONS SHOWN ATE REQUIRED FOR WORKSPACE. NO JOINTS ON PIPE BEING TAPPED WITHIN "CLEAR" AREA.
4) FORD TYPE STAINLESS STEEL TAPPING SADDLES OR APPROVED EQUAL ARE ALSO ACCEPTABLE.

K / C4 TAPPING SLEEVE AND GATE

INSTALL PER PORTSMOUTH REQUIREMENTS NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	9/6/22

REVISIONS



SCALE: AS SHOWN SEPTEMBER 2022

DETAILS D2

FB 309 PG 15

3406

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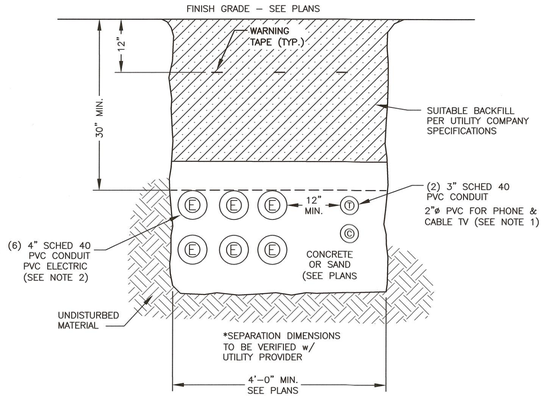
NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCHED. 40 FOR THE REMAINDER.

2) NORMAL CONDUIT SIZES FOR PSNH ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.

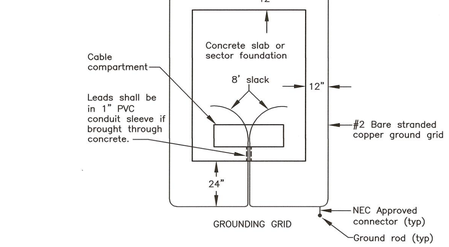
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)

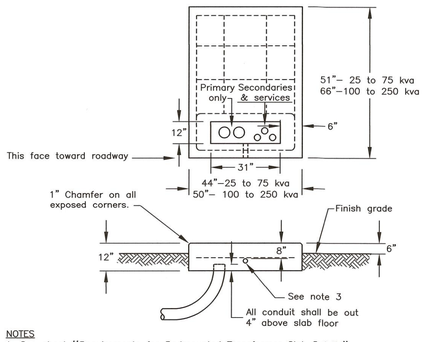
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT

5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANY'S PRIOR TO ANY CONSTRUCTION.



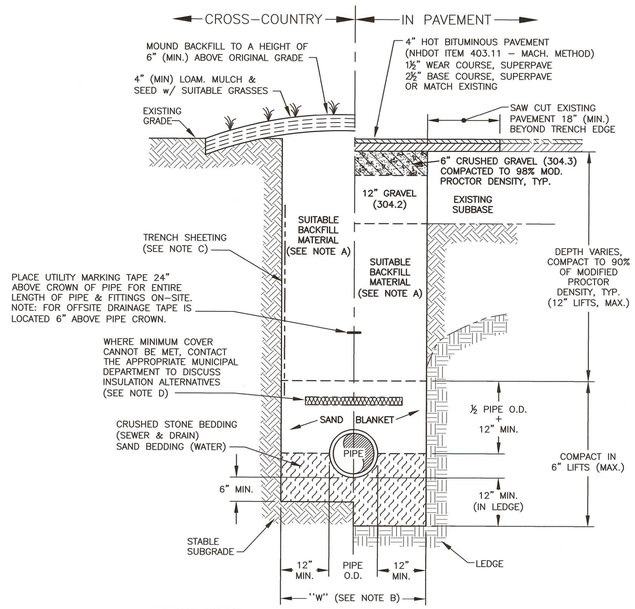
L C4 BURIED ELEC/COMM CABLE
NTS





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.

M – TRANSFORMER PAD IF NEEDED
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.

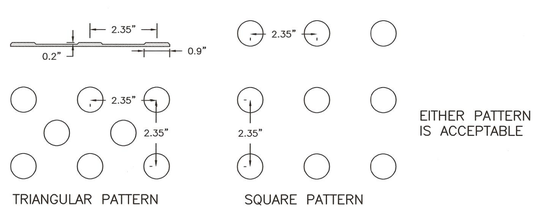
B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

C) TRENCH SHEETING:
THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFE EXCAVATION PRACTICES.

D) MINIMUM PIPE COVER FOR UTILITY MAINS (UNLESS GOVERNED BY OTHER CODES):
- 5' 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.

N C4 / N C5 TYPICAL PIPE TRENCH
NTS



EITHER PATTERN IS ACCEPTABLE

NOTE:
1. CURB RAMPS MUST HAVE A DETECTABLE WARNING FEATURE EXTENDING THE FULL WIDTH OF THE RAMP, A HEIGHT OF NOMINAL 0.2", THE DETECTABLE SURFACE MUST CONSIST OF RAISED TRUNCATED SPACING OF NOMINAL 2.35". THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST VISUALLY WITH THE SURROUNDING SURFACES (LIGHT–ON–DARK OR DARK–ON–LIGHT).
2. DETECTABLE WARNING SURFACE SHALL BE IRON PANEL TO FILL THE SPACE SHOWN ON THE SITE PLAN.

O C3 DETECTABLE WARNING SURFACE
NTS

OVERVIEW

The Bio Clean Downspout Filter is the industry's leading solution for treatment of roof runoff. This technology is used to treat commercial and industrial rooftops along with highrise buildings, parking structures, and residential buildings.

Available in 3 sizes, this filter can easily adapt to downspouts 2" to 12" in diameter. The filter comes standard with rubber boots that allow for easy installation to the downspout.

Proven since 2003, the Downspout Filter has been used on hundreds of installations throughout the United States. All internal components are constructed of stainless steel.

The sleek in-line design allows the filter to be used in tight spaces. Approved by the IAPMO, this filter can meet all your needs.



PERFORMANCE

93% REMOVAL OF TSS

87% REMOVAL OF HYDROCARBONS

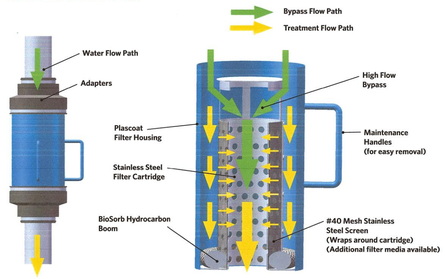
- EFFECTIVE AT REMOVING METALS, NUTRIENTS, AND BACTERIA (MEDIA TYPE)

ADVANTAGES

- 1-YEAR WARRANTY
- NO NETS OR GEOFABRICS
- SLEEK IN-LINE DESIGN
- HIGH TREATMENT FLOW RATE
- HIGH BYPASS FLOW RATE
- LOW COST

P C5 ROOF DRAIN FILTER OVERVIEW
NTS

OPERATION



APPROVALS

IAPMO Testing & Approval Listing

SPECIFICATIONS

MODEL #	INLET ID (dia., in.)	FILTER OD (dia., in.)	STORAGE CAP. (cu. ft.)	FILTERED FLOW (gpm)	BYPASS FLOW (gpm)
BC-DF4	4	6.625	0.09	249	566
BC-DF6	6	8.625	0.21	509	1006
BC-DF8	8	8.625	0.21	509	1006
BC-DF10	10	12.75	0.77	1145	2264
BC-DF12	12	12.75	0.77	1145	2264

Q C5 ROOF DRAIN FILTER OPERATION
NTS

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COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	DETAIL M	10/18/22
0	ISSUED FOR COMMENT	9/6/22
	REVISIONS	

JOHN R. CHAGNON NO. 7851 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

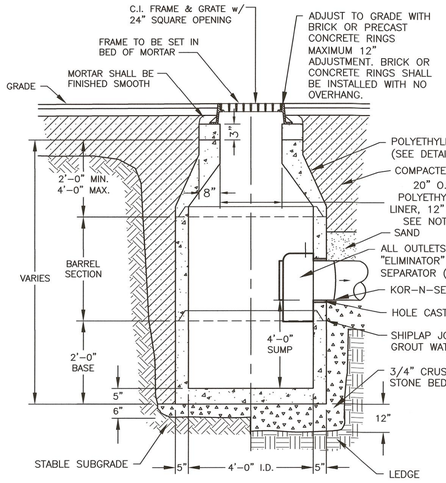
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DETAILS D3

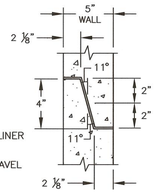
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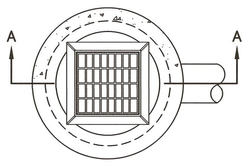
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SECTION A – A



DETAIL OF SHIPLAP JOINT

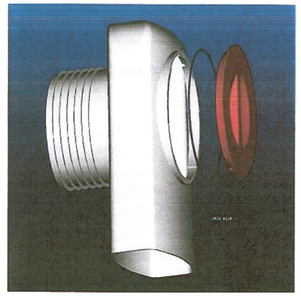


PLAN

NOTES:
1. CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS & SHALL BE PLACED IN THE CENTER THIRD OF WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
5. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
6. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
8. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
9. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
10. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.

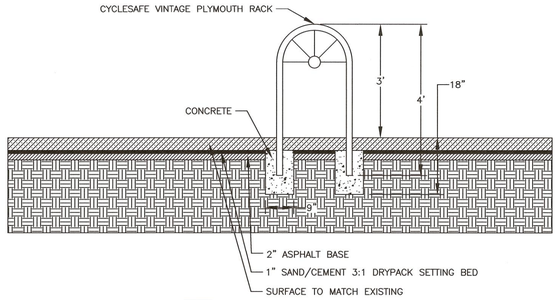
OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
11. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
12. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
13. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

R C5 CATCH BASIN DETAIL
NTS



NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP.

T C5 CATCH BASIN OIL TRAP
THE "ELIMINATOR" NTS



U C3 BIKE RACK
NTS

AMBIT ENGINEERING, INC.
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4) CATCH BASIN POLYETHYLENE LINER NOTES:

POLYETHYLENE LINER (ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.

PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (SUBSIDIARY TO ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET.

PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF THE GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).

USE ON DRAINAGE STRUCTURES 4' MIN. DIAMETER ONLY.

TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).

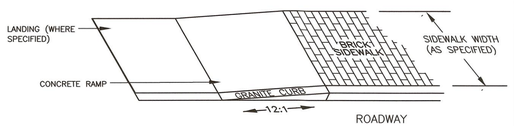
THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.

PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT.

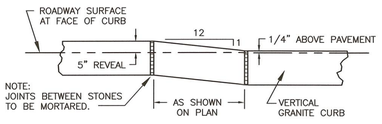
SEE NHDOT DR-04, "DI-DB, UNDERDRAIN FLUSHING BASIN AND POLYETHYLENE LINER DETAILS," FOR ADDITIONAL INFORMATION.

CATCHBASINS WITHIN CITY RIGHT OF WAY SHALL HAVE A POLYETHYLENE LINER.

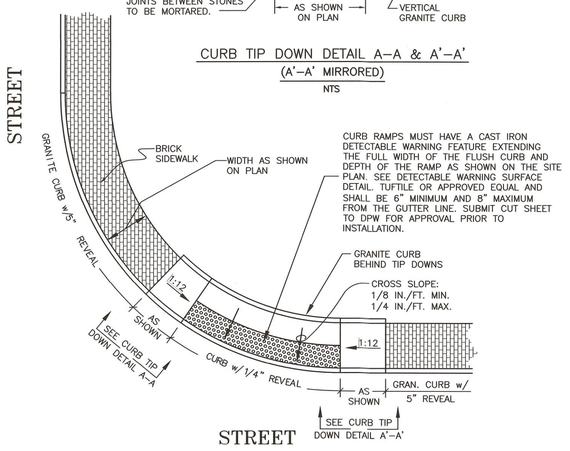
5) ALL WATER MAIN & CONNECTIONS SHALL BE INSTALLED PER CITY OF PORTSMOUTH CONSTRUCTION STANDARDS.



SIDEWALK TIP DOWN
(NON INTERSECTION) NTS

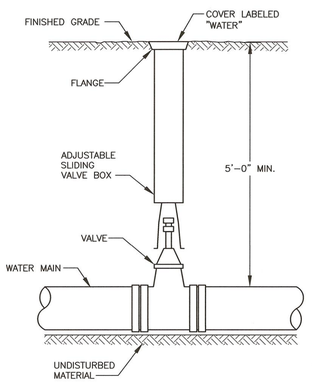


CURB TIP DOWN DETAIL A–A & A'–A'
(A'–A' MIRRORED)
NTS



SIDEWALK TIP DOWN AT INTERSECTION
NTS

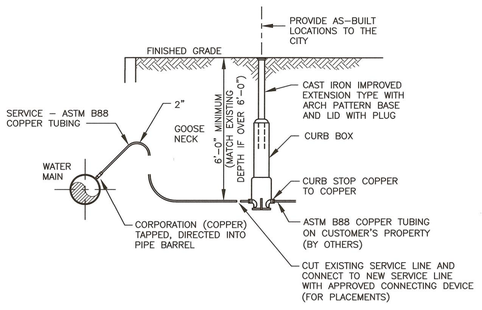
S C3 TYPICAL SIDEWALK TIP DOWNS
WITH FLUSH CURB RAMP IS ELIMINATED



VALVE AND BOX DETAIL
NTS

NOTES:
1. GATE VALVE TO BE LOCATED WITHIN ROADWAY PAVEMENT WHERE POSSIBLE.

2. PROPER SIZE VALVE BOX SHALL BE INSTALLED WHERE GATE VALVES ARE SHOWN ON PLANS.



TYPICAL WATER SERVICE CONNECTION

HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
6"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
8"	1'-2"	1'-2"	1'-2"	1'-2"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
10"	1'-4"	1'-4"	1'-4"	1'-4"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
12"	1'-8"	1'-8"	1'-8"	1'-8"	1'-3"	1'-3"	1'-0"	1'-0"	0'-9"	1'-0"

* – FOR 3" AND SMALLER PIPES

HORIZONTAL ANCHOR DIMENSIONS FOR AVERAGE SOIL CONDITIONS

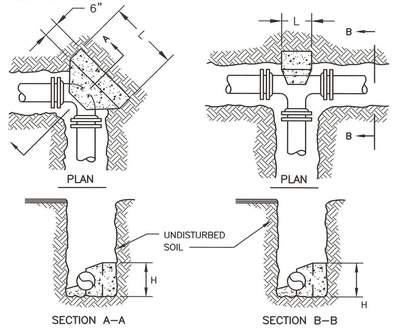
UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
6"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
8"	1'-4"	2'-8"	1'-4"	2'-8"	1'-4"	1'-6"	1'-0"	1'-0"	0'-9"	1'-0"
10"	1'-8"	3'-4"	1'-8"	3'-4"	1'-8"	2'-0"	1'-3"	1'-3"	1'-0"	1'-0"
12"	2'-0"	4'-0"	2'-0"	4'-0"	2'-0"	2'-2"	1'-6"	1'-6"	1'-3"	1'-3"

* – FOR 3" AND SMALLER PIPES

NOTES:
1) TABLES ARE BASED ON AN ALLOWABLE SOIL PRESSURE OF 3000 PSF ON UNDISTURBED EARTH BEHIND THE ANCHOR BLOCK. WHERE SOIL HAS BEEN DISTURBED BY ADJACENT EXCAVATIONS OR WHERE SOIL CANNOT WITHSTAND SUCH A PRESSURE, THE TABLE DOES NOT APPLY.

2) WHERE ENTIRE DEPTH OF PIPE IS BELOW THE TOP SURFACE OF SOUND ROCK, USE "HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK" TABLE.

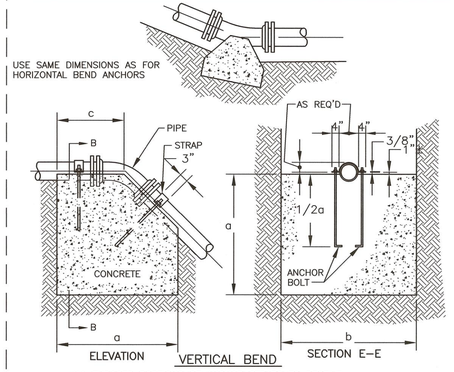


HORIZONTAL ANCHORING

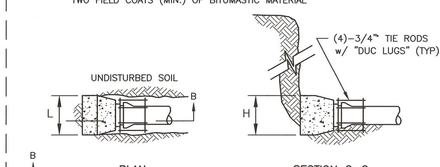
VERTICAL ANCHOR DIMENSIONS

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	45° BEND				22 1/2° BEND				11 1/4° BEND			
	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.
	a	b	c		a	b	c		a	b	c	
4"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
6"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
8"	3'-6"	3'-6"	2'-6"	3/4"	3'-0"	3'-0"	1'-9"	3/4"	2'-6"	2'-6"	1'-3"	3/4"
10"	4'-3"	4'-0"	3'-0"	3/4"	3'-6"	3'-3"	2'-0"	3/4"	2'-9"	2'-9"	1'-6"	3/4"
12"	4'-9"	4'-6"	3'-3"	3/4"	4'-0"	3'-9"	2'-6"	3/4"	3'-3"	3'-3"	1'-9"	3/4"



ALL EXPOSED PORTIONS OF ANCHOR STRAPS TO RECEIVE TWO FIELD COATS (MIN.) OF BITUMASTIC MATERIAL



RESTRAINED PLUG OR CAP

NOTE: SEE CHART "HORIZONTAL ANCHOR DIMENSIONS" TIE RODS TO BE PROVIDED IN LIEU OF THRUST BLOCK

VERTICAL ANCHORING

PRESSURE PIPE ANCHORING DETAILS
INSTALL PER PORTSMOUTH REQUIREMENTS NTS

V C4 WATER MAIN & SERVICE CONNECTION

COMMERCIAL DEVELOPMENT ONE CONGRESS STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	DETAIL V	12/20/22
1	DETAIL S	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

STATE OF NEW HAMPSHIRE – JOHN R. CHAGNON No. 9581 LICENSED PROFESSIONAL ENGINEER

SCALE: AS SHOWN SEPTEMBER 2022

DETAILS D4

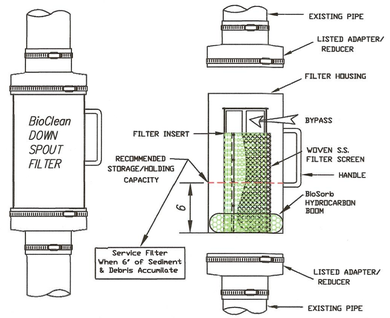
FB 309 PG 15

3406

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SERVICE MANUAL
(Cleaning Procedures)

Bio Clean DOWNSPOUT FILTER
Screen Type With Hydrocarbon Boom



DETAIL OF PARTS

TOOLS AND EQUIPMENT NEEDED:

1. Medium size flat scred driver
2. BioSorb hydrocarbon boom. 25-1/2" X 2" dia. (Call Bio Clean to order)
3. Trash container or bag
4. Wooden dowel approx. 3' x 1/2' dia.

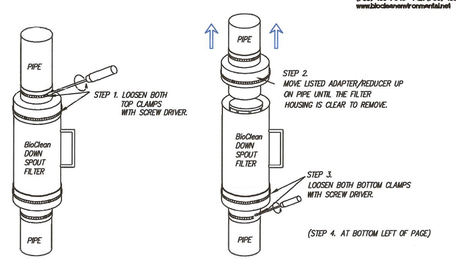
Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net

REMOVING FILTER

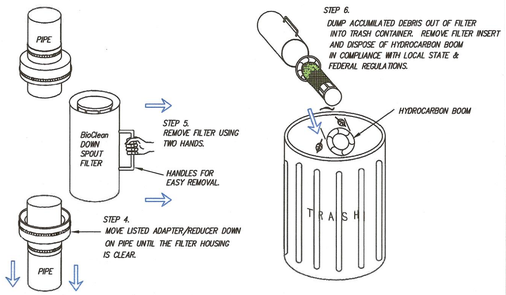
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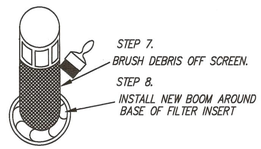
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CLEANING FILTER

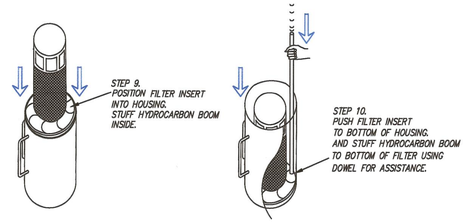


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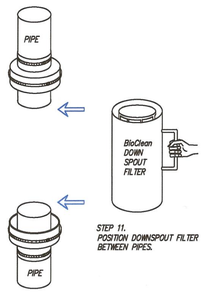
REPLACING FILTER INSERT

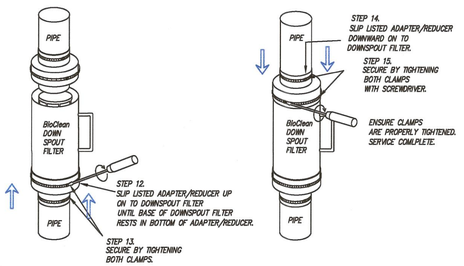


REPLACING FILTER

Bio Clean
A Forterra Company

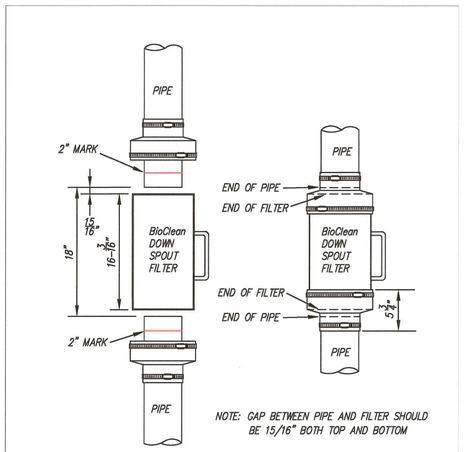
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APPROPRIATE INSTALLATION

FILTER CENTERED BETWEEN PIPES WITH EVEN GAPS ON TOP AND BOTTOM



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A Forterra Company

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(760) 433-7640 Fax (760) 433-3176
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DOWNSPOUT FILTER

MAINTENANCE:

THE FILTER IS DESIGNED TO ALLOW FOR THE USE OF MANUAL OR VACUUM REMOVAL OF CAPTURED MATERIALS IN THE FILTER STRUCTURE. FILTERS CAN BE CLEANED EASILY BY SIMPLY LOOSENING THE METAL CLAMPS AND REMOVING THE FILTER. THE HYDROCARBON ADSORBENT MEDIA THEN IS REMOVED AND THE TRASH AND DEBRIS CAN BE REMOVED FROM THE STRUCTURE. AT EACH CLEANING, NEW HYDROCARBON ADSORBENT MEDIA SHOULD BE REINSTALLED.

MAINTENANCE NOTES:

1. BIO CLEAN ENVIRONMENTAL SERVICES, INC. RECOMMENDS CLEANING AND DEBRIS REMOVAL MAINTENANCE A MINIMUM OF TWO TO FOUR TIMES PER YEAR, AND REPLACEMENT OF MEDIA BOOMS A MINIMUM OF TWICE A YEAR.
2. THE DOWNSPOUT FILTER CAN BE CLEANED BY LOOSING THE METAL CLAMPS AT BOTTOM AND TOP OF RUBBER BOOTS. REMOVE THE FILTER BY GRASPING THE HANDLES, SLIDE DOWN THE BOTTOM BOOT OVER THE OUTFLOW PIPE AND SLIDE UP THE TOP BOOT OVER INFLOW PIPE. PLACE THE FILTER ON THE GROUND. DISPOSE OF ANY TRASH AND SEDIMENTS COLLECTED IN FILTER.
3. ONCE THE FILTER IS FREE, REMOVE THE INTERIOR INSERT. REMOVE THE HYDROCARBON ADSORBENT MEDIA BY UNWRAPPING IT FROM THE INTERIOR INSERT AND REPLACING WITH A NEW MEDIA, WRAPPING IT THE SAME WAY.
4. PLACE THE INTERIOR INSERT BACK INTO THE FILTER.
5. PLACE THE FILTER BACK IN LINE WITH THE PIPE AND SLIDE BACK THE TOP AND BOTTOM BOOTS IN PLACE AND TIGHTEN THE METAL CLAMPS SECURELY.
6. EVALUATION OF THE HYDROCARBON MEDIA SHALL BE PERFORMED AT EACH CLEANING. IF THE MEDIA IS FILLED WITH HYDROCARBONS AND OILS IT SHOULD BE REPLACED.
7. TRANSPORT ALL DEBRIS, TRASH, ORGANICS AND SEDIMENTS TO APPROVED FACILITY FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REQUIREMENTS.
8. THE HYDROCARBON MEDIA WITH ABSORBED HYDROCARBONS IS CONSIDERED HAZARDOUS WASTE AND NEEDS TO BE HANDLED AND DISPOSED OF AS HAZARDOUS MATERIAL. PLEASE REFER TO STATE AND LOCAL REGULATIONS FOR THE PROPER DISPOSAL OF USED MOTOR OIL/FILTERS.
9. FOLLOWING MAINTENANCE AND/OR INSPECTION, THE MAINTENANCE OPERATOR SHALL PREPARE A MAINTENANCE/INSPECTION RECORD. THE RECORD SHALL INCLUDE ANY MAINTENANCE ACTIVITIES PERFORMED, AMOUNT AND DESCRIPTION OF DEBRIS COLLECTED, AND CONDITION OF FILTER.
10. THE OWNER SHALL RETAIN THE MAINTENANCE/INSPECTION RECORD FOR A MINIMUM OF FIVE YEARS FROM THE DATE OF MAINTENANCE. THESE RECORDS SHALL BE MADE AVAILABLE TO THE GOVERNING MUNICIPALITY FOR INSPECTION UPON REQUEST AT ANY TIME.
11. ANY TOXIC SUBSTANCE OR ITEM FOUND IN THE FILTER IS CONSIDERED AS HAZARDOUS MATERIAL AND CAN ONLY BE HANDLED BY A CERTIFIED HAZARDOUS WASTE TRAINED PERSON (MINIMUM 24-HOUR HAZWOPER).

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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).

COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ADDED MAINTENANCE	12/20/22
1	ISSUED FOR APPROVAL	10/18/22
0	ISSUED FOR COMMENT	9/6/22

REVISIONS

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: AS SHOWN AUGUST 2022

DETAILS

D5

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STANDARD MANHOLE NOTES:

1. GENERAL: SEWER MANHOLES, INCLUDING ALL COMPONENT PARTS, SHALL BE ASSEMBLED OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H20 LOADING) WITHOUT FAILURE, AND TO PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2. BARRELS AND CONE SECTIONS; SHALL BE PRECAST REINFORCED CONCRETE.

3. PRECAST CONCRETE; BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.

4. LEAKAGE TEST; SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS. INVERT AND SHELF TO BE PRIOR TO BACKFILL PLACED AFTER TESTING.

5. INVERTS AND SHELVES; MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1" ABOVE THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6. FRAMES AND COVERS; MANHOLE FRAMES AND COVERS SHALL BE CITY OF PORTSMOUTH STANDARD AND SHALL BE PICKED UP BY THE CONTRACTOR AT PORTSMOUTH DPW.

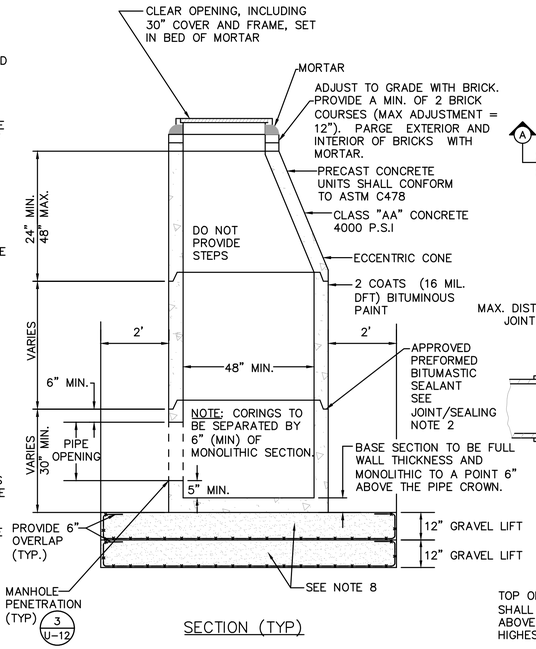
7. BEDDING; SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.
   - 100% PASSING 1 INCH SCREEN
   - 90–100% PASSING 3/4 INCH SCREEN
   - 20–55% PASSING 3/8 INCH SCREEN
   - 0–10% PASSING #4 SIEVE
   - 0–5% PASSING #8 SIEVE

8. WHERE THE MATERIAL BELOW MANHOLE STRUCTURE IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL DOUBLE LAYER OF GEOGRID (TENSAR TX160 OR EQUAL). PAY AS ITEM 1.8B (LFx2).

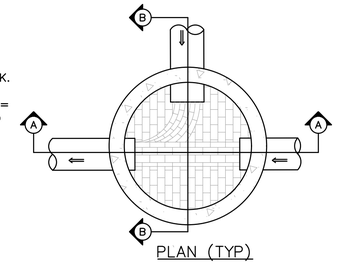
9. SHALLOW MANHOLE; IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS MAY BE USED.

10. FLEXIBLE JOINT; A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP AND CI PIPE – ALL SIZES – 48"
AC AND VC PIPE – UP THROUGH 12" DIA. – 18"
AC AND VC PIPE – LARGER THAN 12" DIA. – 36"
DI PIPE – NONE REQUIRED
PVC – UP THROUGH 15" DIA. – NONE REQUIRED
PVC – LARGER THAN 15" DIA. – 48"/60"
ABS (ASTM D2680) – ALL SIZES – SAME AS VC ABOVE.

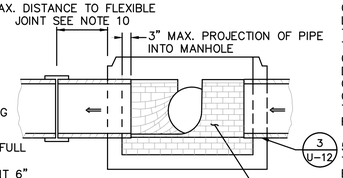
11. SPECIFICATIONS; ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.



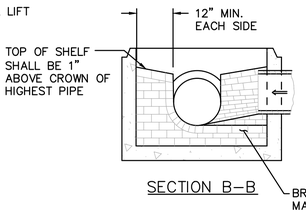
SECTION (TYP)



PLAN (TYP)



SECTION A–A



SECTION B–B

SEWER MANHOLE
NOT TO SCALE

GRAVITY SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE; BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.

2. BEDDING; SEE NOTE 7 OF STANDARD MANHOLE NOTES. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1–1/2 INCH AND/OR THE USE OF GEOGRID FABRIC (ITEM 1.8B) MAY BE REQUIRED.

3. SAND BLANKET; CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90–100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR CAST–IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.

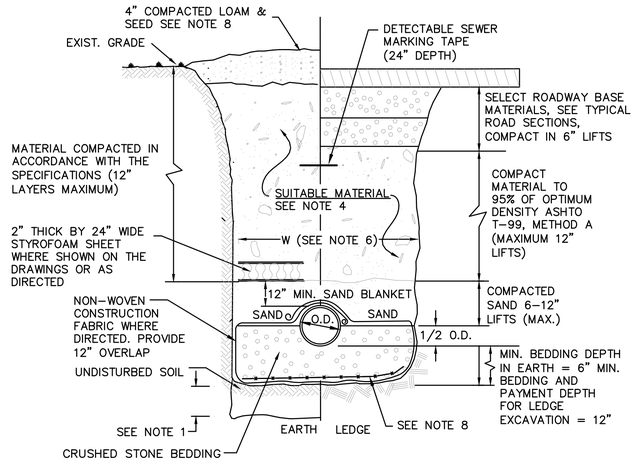
4. SUITABLE MATERIAL; IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR SOFT CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. 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 AND PROVIDED THAT EASY ACCESS TO THE SEWER, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.

6. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)

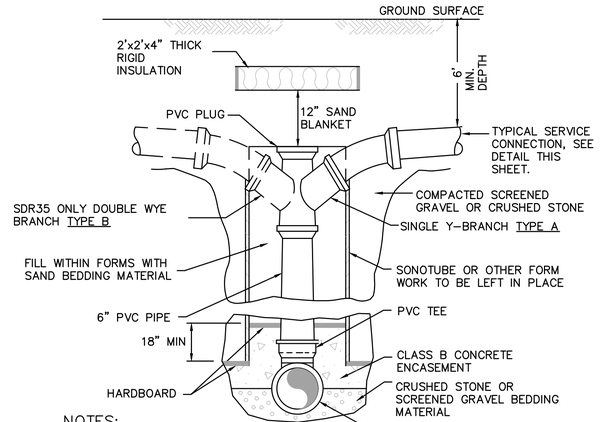
7. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

8. WHERE TRENCH BOTTOM IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL SINGLE LAYER OF GEOGRID (TX160 OR EQUAL) ACROSS THE ENTIRE WIDTH OF TRENCH BOTTOM. PAY AS ITEM 1.8A (L.F.).



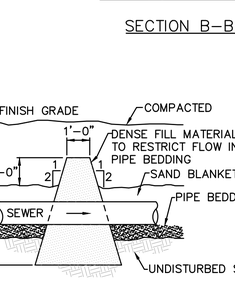
TRENCH SECTION (TYP)

TRENCH – GRAVITY SEWER
NOT TO SCALE



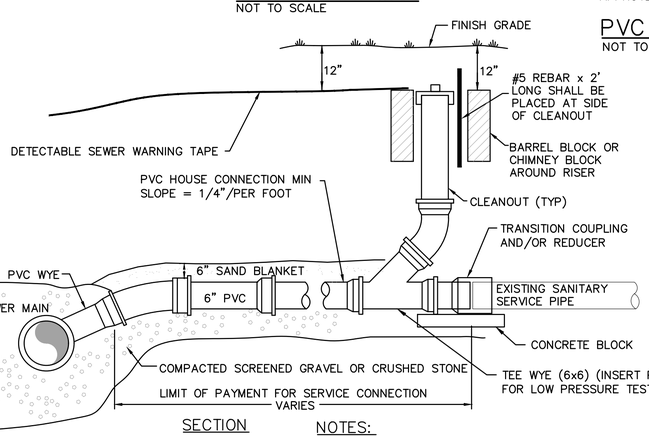
NOTES:
DOUBLE WYE BRANCH ONLY TO BE USED WHERE APPROVED BY ENGINEER

PVC SEWER SERVICE CHIMNEY WITH WYE
NOT TO SCALE



SIZE GUIDE:
1–8" OR 10" DROP: 4'–0" DIA. M.H.
2–8" OR 10" DROP: 5'–0" DIA. M.H.
1–12" DROP: 5'–0" DIA. M.H.
1–15" DROP: 5'–0" DIA. M.H.

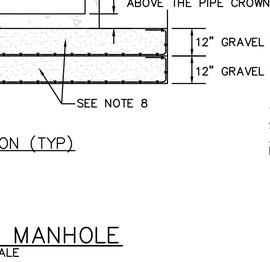
DROP MANHOLE
NOT TO SCALE



SECTION

SERVICE CONNECTION
NOT TO SCALE

NOTES:
1. MAINTAIN 18" SEPARATION BETWEEN NEW SEWER SERVICE AND NEW OR EXISTING WATER MAIN (WATER SHALL BE OVER SEWER).



PLAN

PROFILE

NOTES:
1. TRENCH DRAINS TO BE AT LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED TO CONTROL BACK WATER IN STONE BEDDING, SUBSIDIARY.

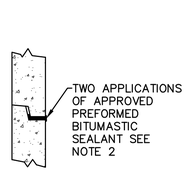
TRENCH DAM
NOT TO SCALE

JOINTING AND SEALING NOTES

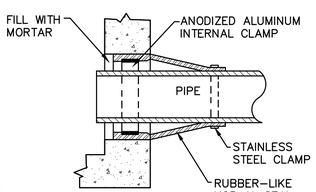
1. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND UPON AN ELASTOMERIC SEALANT FOR WATERTIGHTNESS.

2. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS: RAM–NEK E Z KENT SEAL NO.2

3. ALL GASKETS, SEALANTS, MORTAR, ETC., SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.



PRECAST CONC. BARREL
SEALANT – BITUMASTIC



KOR–N–SEAL
JOINT SLEEVE
(OR EQUAL)

MANHOLE PENETRATIONS
NOT TO SCALE

SERVICE CONNECTION NOTES:

1. SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS.

2. SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

3. CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.

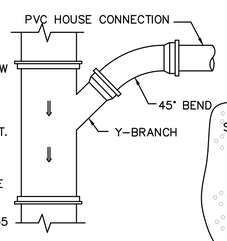
4. REBAR SHALL BE PLACED AT SIDE OF CLEANOUT.

5. CLEANOUT SHALL BE USED TO PLUG AND TEST ALL NEW LATERALS WITH MINIMAL INTERRUPTION TO OPERATION OF HOMEOWNER SANITARY SYSTEM.

6. CLEANOUT RISER PIPE AND FITTINGS SHALL BE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.

7. IN LOCATIONS WHERE THERE IS LESS THAN 18" OF SEPARATION BETWEEN THE WATER MAIN AND SEWER SERVICE PIPE, A MAXIMUM OF SDR 26 PVC PIPE SHALL BE INSTALLED.

8. IN CASES WHERE TRANSITIONS FROM SDR 26 TO SDR 35 ARE REQUIRED (I.E. AT TEES), A COUPLING/FITTING SPECIFICALLY MANUFACTURED FOR SAID TRANSITION SHALL BE USED. NO OTHER COUPLING SYSTEM (I.E. FLEXIBLE FERNCO) WILL BE ACCEPTED.



PLAN

ISSUE FOR	By	APP'D
APPROVAL Date 6/29/22	DJR	
CONSTRUCTION Date	By	
RECORD DWG Date	By	
REVISIONS		NO.

Drawn/Chk RMG
Designed DJR
Checked PDM
Approved –
Date 6/29/22
Book No. 2705
Project No. 2705
Dwg. ID 2705_details
Scale AS SHOWN

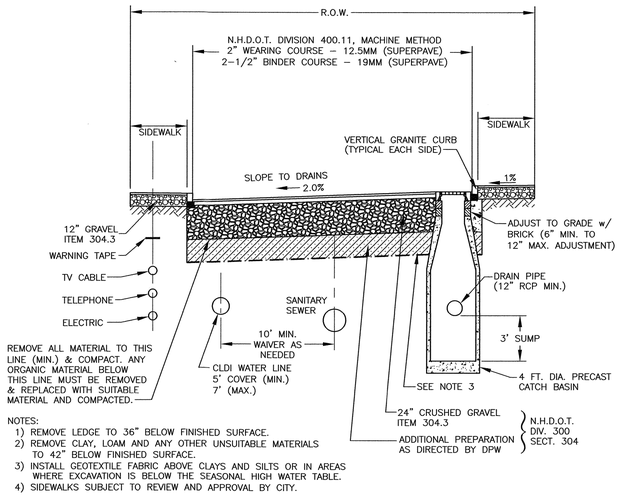
UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603–436–8192 Fax. 603–431–4733

© COPYRIGHT AT UNDERWOOD ENGINEERS, INC. ALL RIGHTS RESERVED

STANDARD SEWER DETAILS
ISLINGTON STREET CORRIDOR IMPROVEMENTS PHASE 2
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D–1
SHEET 50 OF 56

H:\Real Numbers\Portsmouth\2705 Islington Street Phase 2\Drawings\2705_details.dwg, D1, 6/29/2022 1:13:53 PM, mng



W C4 W P1 HIGH STREET ROADWAY CROSS SECTION

NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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).

COMMERCIAL DEVELOPMENT
ONE CONGRESS STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	12/20/22

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
NO. 7651
LICENSED PROFESSIONAL ENGINEER

SCALE: AS SHOWN AUGUST 2022

DETAILS D7

FB 309 PG 15

3406

I:\OBS\JN 3400\3400\3406\2021 Survey and Site Plan\Plans & Specs\Dwg\3406 Details 2022.dwg, 2022-12-23 9:41:12 AM, Adobe PDF

P0595-015
December 19, 2022

Ms. Beverly Zendt, Planning Director
City of Portsmouth Planning Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Site Review Permit & Lot Line Revision Applications**
Proposed Advanced Manufacturing Facility

Dear Beverly:

On behalf of Aviation Avenue Group, LLC, we are pleased to submit the following information to support a request to the Planning Board for a recommendation for approval to the Pease Development Authority (PDA) for Site Plan Review and Subdivision for a proposed Advanced Manufacturing Facility on a previously developed site located at 80 Rochester Avenue:

- One (1) copy of the PDA Application for Site Review, dated December 19, 2022;
- One (1) copy of the PDA Application for Subdivision, dated December 19, 2022;
- One (1) copy of the Owner Authorization, dated October 25, 2022;
- One (1) full size & one (1) half size copy of the Site Plan Set, dated December 19, 2022;
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- One (1) copy of the Truck Turning Exhibits, dated December 19, 2022;
- One (1) copy of the Drainage Analysis, dated December 19, 2022;
- One (1) copy of the Operations and Maintenance Plan, dated December 19, 2022;
- One (1) copy of the Traffic Impact Assessment, dated October 7, 2022;
- One (1) copy of the Pease abutters list/labels;
- One (1) copy of the Eversource Will Serve Letter, dated December 6, 2022;
- One (1) copy of the Unitil Will Serve Letter, dated December 1, 2022;
- One (1) copy of the proposed light poles and fixtures cut sheets
- One (1) application fee calculation form for the Site Review & Lot Line Revision;
- One (1) Site Review Application Fee check in the amount of $9,220.00;
- One (1) Lot Line Revision Application Fee check in the amount of $250.00

The proposed project is located at 80 Rochester Avenue which is identified as Map 308 Lot 1 on the City of Portsmouth Tax Maps. The proposed project is for the construction of a ±209,750 SF advanced manufacturing building including ±18,145 SF of office space, two (2) parking areas, two (2) loading dock areas, minor realignment of a portion of Rochester Avenue, and associated site improvements consisting of underground utilities, landscaping, lighting, and a stormwater management system.

There is approximately 196,665 SF of existing impervious area that is currently untreated before entering the municipal drainage system. The proposed stormwater management system has been designed to provide treatment for the existing impervious surface that are currently untreated and

for ±161,130 SF of additional impervious that results from the proposed project as required by the PDA Site Plan Regulations.

On October 20, 2022, the PDA Board granted conceptual approval for the proposed project. The project was granted a variance from the Zoning Board of Adjustment for the front yard setback requirements at their meeting on November 15, 2022.

We respectfully request to be placed on the Technical Advisory Committee (TAC) meeting agenda for the January 3, 2023, meeting. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com.

Sincerely,
TIGHE & BOND, INC.





Patrick M. Crimmins, PE
Vice President

Neil A. Hansen, PE
Project Manager

Copy: Aviation Avenue Group, LLC (via email)
Pease Development Authority

J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Report_Evaluation\Applications\City of Portsmouth\TAC\20221219_TAC\TAC Cover Letter.docx

AUTHORIZATION
100 New Hampshire Avenue
Map 308, Lot 1

The undersigned owner of the above referenced property hereby authorizes representatives of Bosen & Associates, PLLC, and Tighe & Bond to represent the company's interests before the Portsmouth land use boards and to submit any and all applications and materials related thereto on its behalf.

Aviation Avenue Group, LLC

Date: October 25, 2022

By: _____
Name: JOHN STEBBLER
Title: MANAGING MEMBER

Pease Development Authority
55 International Drive, Portsmouth, NH 03801, (603) 433-6088

Subdivision Application

For PDA Use Only			
Date Submitted:_____	Municipal Review:_____	Fee:_____	
Application Complete:_____	Date Forwarded:_____	Paid:_____	Check #:_____

Applicant Information

Applicant: **Aviation Avenue Group, LLC**	Agent: **Tighe & Bond**
Address: **210 Commerce Way, Suite 300, Portsmouth, NH**	Address: **177 Corporate Drive Portsmouth, NH**
Business Phone: **603-430-4000**	Business Phone: **603-433-8818**
Mobile Phone:	Mobile Phone:
Fax: **603-430-8940**	Fax:

Site Information

Address / Location of Original Lot: **80 Rochester Ave (100 New Hampshire Ave)**

Portsmouth Tax Map: **308** **Lot #:** **1** **Zone:** **Pease Industrial (PI)**

Proposed Activity (check one) **Subdivision** **X** **Lot Line Adjustment** _____

Existing Lot

Total # of Existing Lot(s) **1**

Existing Lot Area **±10.9**

Created Lot

Total # of Proposed Lot(s) **1**

Area of Proposed Lot(s) **±11.4**

All above information shall be shown on a site plan submitted with this application. Provide 3 Full size hard copies and 1 PDF copy of all application materials as well as 1 half size set of drawings to PDA. Applicant shall supply additional copies as may be required by applicable municipality. Refer to Chapter 500 of PDA Land Use Controls for additional information

Checklist: Application fee (as required) **(X)** Abbutters List **(X)** Drawings **(X)**

Copies of approvals for any Required State/Federal permits (See Ch 500 of PDA LUC) ( )

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 Subdivision and acknowledge I will comply with all regulations and any conditions established by the Review Committee(s) and the PDA Board of Directors in the development and construction of this

Neil Hansen — Signature of Applicant

12/19/22 — Date

Neil A. Hansen — Printed Name

N:\Engineer\Subdivision Application.xlsx

TAX MAP 308, LOT 9
PEASE DEV AUTH.
PEASE, NH 03801

AVIATION AVENUE

TAX MAP 307, LOT 2
PEASE DEV AUTH.
PEASE, NH 03801

AVIATION AVENUE

TAX MAP 308, LOT 0

TAX MAP 308, LOT 4
PEASE DEVELOP. AUTH.
CORPORATE DRIVE
PORTSMOUTH, NH 03801

LEE STREET

TAX MAP 308, LOT 5
PEASE DEVELOPMENT AUTH.
CORPORATE DRIVE
PORTSMOUTH, NH 03801

TH=58.8'

AVIATION STREET

TAX MAP 307, LOT 3
PEASE DEV AUTH.
PEASE, NH 03801

TAX MAP 308, LOT 0

TAX MAP 308,
LOT 6

ROCHESTER AVENUE

ROCHESTER AVENUE

PROPOSED MONUMENT
(TYP)

PROPOSED MONUMENT
(TYP)

±1199.724'
±S31° 33' 17.07"E

±N58° 24' 13.86"E
±15.034'

±N31° 07' 09.17"W
±1199.752'

±S58° 26' 01.83"W
±24.154'

PROPOSED RELOCATED
LOT LINE

APPROX LOCATION OF
EXISTING LOT LINE
TO BE RELOCATED

PORTSMOUTH GIS DOES NOT SHOW THIS AS A PARCEL
LEASE LOT 308-1
PER REF. PLAN 17

PROPOSED LEASE AREA
±11.4 ACRES
±496,584 SF

NEWFIELDS STREET

STRATHAM STREET

PORTSMOUTH GIS
DOES NOT SHOW THIS
AS A PARCEL
LEASE LOT 308-2
PER REF. PLAN 17

±S58° 24' 13.86"W
±309.986'

±N58° 26' 01.83"E
±330.846'

ZONE 3 GMZ
AREA

TAX MAP 307, LOT 1
CINTHESYS REAL ESTATE
68 NEW HAMPSHIRE AVE.
PORTSMOUTH, NH 03801

TAX MAP 308, LOT 1
PEASE DEVELOPMENT AUTH.
80 ROCHESTER AVENUE
PORTSMOUTH, NH 03801

±2642.080'
±S70° 12' 41.00"E

APPROX LOCATION OF
EXISTING LOT LINE
(TYP)

ZONE 3 GMZ
BOUNDARY

TAX MAP 311, LOT 1
US DEPARTMENT OF STATE
NATIONAL PASSPORT CENTER
31 ROCHESTER AVENUE
PORTSMOUTH, NH 03801

PROPOSED MONUMENT
(TYP)

PROPOSED MONUMENT
(TYP)

±1199.507'
±S31° 33' 17.07"E

±1024.230'
±S31° 00' 21.00"E

NEW HAMPSHIRE AVENUE

NEW HAMPSHIRE AVENUE

ZONE 3 GMZ
BOUNDARY

TBM 7239B
MAG NAIL SET UP 8"
IN POLE PSNH 453/19
ELEV.=52.87'

±1010.340'
±S60° 40' 52.00"E

TAX MAP 312, LOT 2

TAX MAP 306, LOT 4
SEACOAST NEWSPAPERS, INC.
111 NEW HAMPSHIRE AVE.
PORTSMOUTH, NH 03801

TAX MAP 306, LOT 4
SEACOAST NEWSPAPERS, INC.
111 NEW HAMPSHIRE AVE.
PORTSMOUTH, NH 03801

TBM 7239A
MAG NAIL SET UP 8"
IN POLE PSNH 453/10
ELEV.=61.06'

TAX MAP 306, LOTS 0003-***
(MULTIPLE PARCELS,
NAMES, AND ADDRESSES)
PORTSMOUTH, NH 03801

SUBDIVISION LINES SHOWN HEREIN ARE FOR PERMITTING PURPOSES ONLY. FINAL SUBDIVISION PLAN SHALL BE PREPARED BY THE PROJECT SURVEYOR AND RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS PRIOR TO ISSUING BUILDING PERMITS.

SITE DATA:
LOCATION: TAX MAP 308, LOT 1
80 ROCHESTER AVENUE
PORTSMOUTH, NEW HAMPSHIRE

ZONING DISTRICT: INDUSTRIAL
ALLOWED USE: INDUSTRIAL / WAREHOUSE

DIMENSIONAL REQUIREMENTS:	REQUIRED
MINIMUM LOT AREA:	10 ACRES
MINIMUM STREET FRONTAGE:	200 FT
MINIMUM SETBACKS:	
• FRONT:	70 FT
• SIDE:	50 FT
• REAR:	50 FT
MAXIMUM BUILDING HEIGHT:	PER FAA
MINIMUM OPEN SPACE:	25%

Tighe&Bond

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
12/19/22

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

SUBDIVISION PLAN

SCALE: AS SHOWN

1 OF 1

Last Save Date: December 19, 2022 9:06 AM By: CML
Plot Date: December 19, 2022 9:07 AM By: Craig M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Subdivision

P0595-015
December 19, 2022

Ms. Beverly Zendt, Planning Director
City of Portsmouth Planning Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

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We respectfully request to be placed on the Technical Advisory Committee (TAC) meeting agenda for the January 3, 2023, meeting. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com.

Sincerely,
TIGHE & BOND, INC.





Patrick M. Crimmins, PE
Vice President

Neil A. Hansen, PE
Project Manager

Copy: Aviation Avenue Group, LLC (via email)
Pease Development Authority

J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Report_Evaluation\Applications\City of Portsmouth\TAC\20221219_TAC\TAC Cover Letter.docx

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: **Aviation Avenue Group, LLC**	Agent: **Tighe & Bond**
Address: **210 Commerce Way, Suite 300, Portsmouth, NH**	Address: **177 Corporate Drive Portsmouth, NH**
Business Phone: **603-430-4000**	Business Phone: **603-433-8818**
Mobile Phone:	Mobile Phone:
Fax: **603-430-8940**	Fax:

Site Information

Portsmouth Tax Map: **308**	Lot #: **1**	Zone: **Pease Industrial (PI)**
Site Address / Location : **80 Rochester Ave (100 New Hampshire Ave)**		
Site Address / Location :		Area of On-site Wetlands:

Activity Information

Change of Use: Yes [X] No [ ] Existing Use: **Vacant**

Proposed Use: **Manufacturing**

Description of Project: **The proposed project is for the construction of a ±209,750 SF advanced manufacturing building including ±18,145 SF of office space, two (2) parking areas, two (2) loading dock areas, minor realignment of a portion of Rochester Avenue, and associated site improvements consisting of underground utilities, landscaping, lighting, and a stormwater management system.**

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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.

Signature of Applicant — Date: 12/19/22

Neil A. Hansen

Printed Name

N:\Engineer\ ApplicationforSiteReview.xlsx

AUTHORIZATION
100 New Hampshire Avenue
Map 308, Lot 1

The undersigned owner of the above referenced property hereby authorizes representatives of Bosen & Associates, PLLC, and Tighe & Bond to represent the company's interests before the Portsmouth land use boards and to submit any and all applications and materials related thereto on its behalf.

Aviation Avenue Group, LLC

Date: October 25, 2022

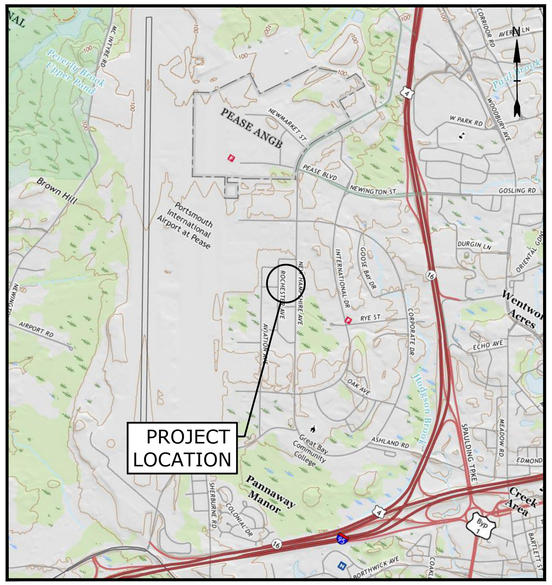
By: _____
Name: JOHN STEBBLER
Title: MANAGING MEMBER

PROPOSED ADVANCED MANUFACTURING FACILITY

100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NEW HAMPSHIRE
PERMIT DRAWINGS

DECEMBER 19, 2022

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	12/19/2022
1 OF 8	EXISTING CONDITIONS PLAN	09/21/2022
2 OF 8	EXISTING CONDITIONS PLAN	09/21/2022
7 OF 8	EXISTING CONDITIONS PLAN	09/21/2022
8 OF 8	EXISTING CONDITIONS PLAN	09/21/2022
C-101	OVERALL EXISTING CONDITIONS / DEMOLITION PLAN	12/19/2022
C-101.1	EXISTING CONDITIONS / DEMOLITION PLAN	12/19/2022
C-101.2	EXISTING CONDITIONS / DEMOLITION PLAN	12/19/2022
C-102	OVERALL SITE PLAN	12/19/2022
C-102.1	SITE PLAN	12/19/2022
C-102.2	SITE PLAN	12/19/2022
C-103	OVERALL GRADING, DRAINAGE & EROSION CONTROL PLAN	12/19/2022
C-103.1	GRADING, DRAINAGE & EROSION CONTROL PLAN	12/19/2022
C-103.2	GRADING, DRAINAGE & EROSION CONTROL PLAN	12/19/2022
C-104	UTILITY PLAN	12/19/2022
C-105	OVERALL LANDSCAPE PLAN	12/19/2022
C-105.1	LANDSCAPE PLAN	12/19/2022
C-105.2	LANDSCAPE PLAN	12/19/2022
C-501	EROSION CONTROL NOTES & DETAILS SHEET	12/19/2022
C-502	DETAILS SHEET	12/19/2022
C-503	DETAILS SHEET	12/19/2022
C-504	DETAILS SHEET	12/19/2022
C-505	DETAILS SHEET	12/19/2022
C-506	DETAILS SHEET	12/19/2022
A1	PROPOSED EXTERIOR ELEVATIONS	12/12/2022
1 OF 1	PHOTOMETRICS ALT 2	12/16/2022



LOCATION MAP
SCALE: 1" = 2,000'

CONSTRUCTION NOTES:
1. THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.
3. TIGHE & BOND. ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.

PREPARED BY:
Tighe&Bond
177 Corporate Drive
Portsmouth New Hampshire, 03801
603.433.8818

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
12/19/22

NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
12/19/22

LESSOR:
Pease Development Authority
55 International Drive
Portsmouth, NH 03801
603.433.6088

APPLICANT:
Aviation Avenue Group, LLC
210 Commerce Way
Suite 300
603.427.5500

SURVEY CONSULTANT:
DOUCET SURVEY INC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

811 DigSafe MA-ME-NH-RI-VT

COMPLETE SET 26 SHEETS

Last Save Date: December 19, 2022 8:15 AM By: CML
Plot Date: Monday, December 19, 2022 8:15 AM By: Cindy M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_CS.dwg Layout Tab: CS

NOTES:

1. REFERENCE: PEASE HANGAR 227 AREA
(ENCOMPASSING PARTS OF NEW HAMPSHIRE AVE, AVIATION AVE, STRATHAM ST, ROCHESTER AVE, NEWFIELD ST, LEE STREET, & FLIGHTLINE ROAD IN PORTSMOUTH, NH)
D.S.I. PROJECT NO. 7239

2. OWNER OF RECORD: PEASE DEVELOPMENT AUTHORITY (ALL BUT ONE PARCEL)
55 INTERNATIONAL DRIVE
PORTSMOUTH NH 03801

NEW ENGLAND TELEGRAPH & TELEPHONE (MAP 308 LOT 6 ONLY)
NKA FAIRPOINT COMMUNICATIONS
770 ELM STREET
MANCHESTER, NH 03101

3. FIELD SURVEY PERFORMED BY DOUCET SURVEY LLC STAFF DURING JANUARY & FEBRUARY 2022 USING A TRIMBLE S7 TOTAL STATION AND A TRIMBLE R10 SURVEY GRADE GPS WITH A TRIMBLE TSC3 DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

4. HORIZONTAL DATUM BASED ON NAD83(2011) NEW HAMPSHIRE STATE PLANE COORDINATE ZONE (2800) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK INCLUDING OBSERVATIONS ON PRIMARY AIRPORT CONTROL STATION PSM C AND PSM D.

5. VERTICAL DATUM IS BASED PRIMARY AIRPORT CONTROL STATION PSM C (NAVD88 ELEVATION = 78.70 AS PUBLISHED BY NATIONAL GEODETIC SURVEY).

6. JURISDICTIONAL WETLANDS DELINEATED BY TIGHE & BOND DURING DECEMBER 2021 IN ACCORDING TO THE:
   - US ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1 (JANUARY, 1987).
   - REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION (2012).
   - NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTHEAST (REGION 1). U.S. FISH AND WILDLIFE SERVICE (2013).
   - CODE OF ADMINISTRATIVE RULES. WETLANDS BOARD, STATE OF NEW HAMPSHIRE (CURRENT).
   - FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.0, 2016 AND (FOR DISTURBED SITES) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEHSTC (MAY 2017).

7. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 2' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.

8. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVED PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON-SITE.

9. 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. SEVERAL STRUCTURES SHOWN HEREON WERE INACCESSIBLE FOR INVERT MEASUREMENTS DUE TO WINTER CONDITIONS.

10. DUE TO THE COMPLEXITY OF RESEARCHING ROAD RECORDS AS A RESULT OF INCOMPLETE, UNORGANIZED, INCONCLUSIVE, OBLITERATED, OR LOST DOCUMENTS, THERE IS AN INHERENT UNCERTAINTY INVOLVED WHEN ATTEMPTING TO DETERMINE THE LOCATION AND WIDTH OF A ROADWAY RIGHT OF WAY. THE EXTENT OF (THE ROAD(S)) AS DEPICTED HEREON IS/ARE BASED ON RESEARCH CONDUCTED AT THE PEASE DEVELOPMENT AUTHORITY (PDA), NHDOT, PORTSMOUTH ENGINEERING DEPARTMENT, AND ROCKINGHAM COUNTY REGISTRY OF DEEDS. AN OFFICIAL AT PDA ADVISED DOUCET SURVEY THAT THEY HAVE PREVIOUSLY SEARCHED AND BELIEVE THAT THERE WERE NEVER ANY LAYOUT PLANS DEVELOPED FOR THE RIGHT-OF-WAYS AT PEASE. ROAD LAYOUTS FOR THE STREETS SHOWN HEREON WERE ALSO NOT FOUND AT NHDOT PROJECT VIEWER OR AT THE PORTSMOUTH CITY ENGINEERING OFFICES.

11. 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.

12. AERIAL TOPOGRAPHY WAS CONDUCTED BY EASTERN TOPOGRAPHICS FROM IMAGES TAKEN DURING DECEMBER 2021 WITH A PHOTO SCALE OF 40 FEET. AERIAL MAPPING CONTOURS AND OBJECTS SHOWN WITHIN OBSCURED AREAS ARE APPROXIMATE AND SHOULD BE VERIFIED BEFORE USE FOR DESIGN & CONSTRUCTION PURPOSES.

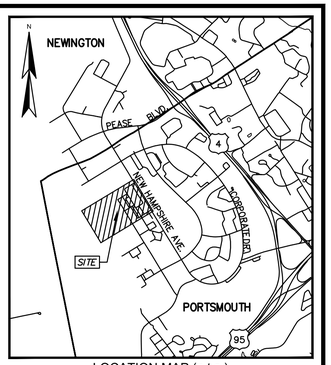
13. THIS FIELD SURVEY WAS PERFORMED IN WINTER CONDITIONS WITH SNOW AND ICE COVER ON THE GROUND. A SITE CHECK IS RECOMMENDED IN THE SPRING TO ENSURE THE COMPLETENESS/ACCURACY OF THE INFORMATION SHOWN HEREON.

14. THIS PLAN WAS PREPARED FROM RECORD RESEARCH, OTHER MAPS, LIMITED FIELD MEASUREMENTS AND OTHER SOURCES. IT IS NOT TO BE CONSTRUED AS A PROPERTY / BOUNDARY SURVEY FOR THE COMPLETE SET OF TAX MAP AND LOTS SHOWN HEREON, AND IS SUBJECT TO SUCH FACTS AS SAID SURVEYS MAY DISCLOSE. THIS PLAN DOES, HOWEVER, ILLSTRATE THE BOUNDARIES OF THE FOLLOWING TAX MAP AND LOT NUMBERS PER THE REFERENCE PLANS INDICATED BELOW AND RECORD MONUMENTS RECOVERED BY THIS SURVEY:
   A. MAP 307 LOT 1 (PER REF. PLAN 3)
   B. MAP 307 LOT 2 (PER REF. PLAN 7)
   C. MAP 306 LOT 4 (PER REF. PLAN 12)

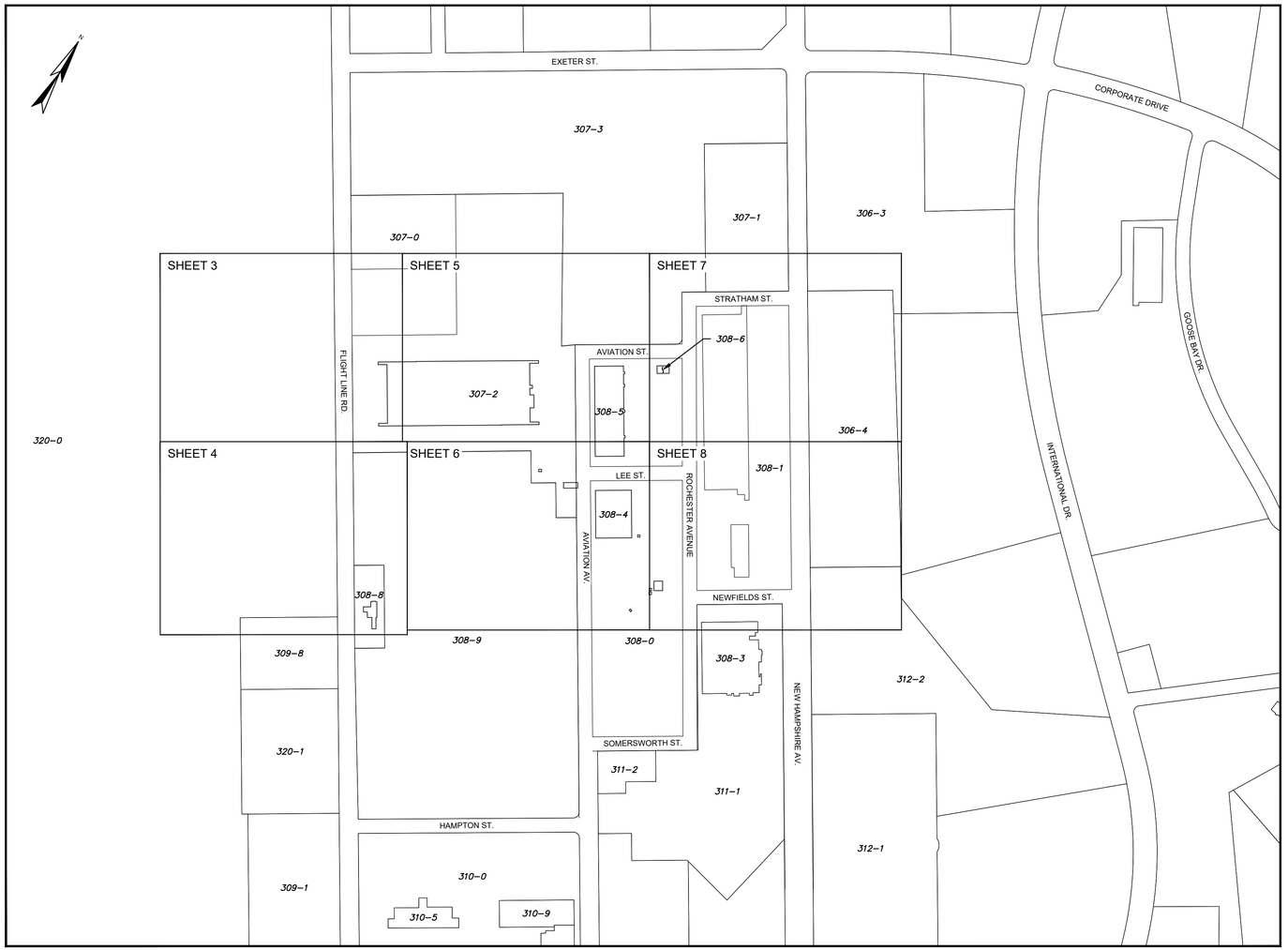
15. THE LOCATIONS OF THE VARIOUS RESTRICTED ZONES CALLED FOR IN REFERENCE PLANS 8, 9, 10, 12, AND 14 ARE SHOWN HEREON BASED ON COORDINATE VALUES PROVIDED IN THOSE PLANS AND/OR FEATURES SHOWN IN THOSE PLANS (E.G. MONITORING WELLS) THAT WERE LOCATED DURING THIS SURVEY.

REFERENCE PLANS:

1. "SUBLEASE BOUNDARY PLAN FOR PEASE DEVELOPMENT AUTHORITY – BUILDINGS 115 AND 116 – 31 ROCHESTER AVENUE – PEASE INTERNATIONAL TRADEPORT – PORTSMOUTH, N.H.: DATED NOV. 6, 1995 AND LAST REVISED (REV-2) ON 03/03/97 BY RICHARD P. MILLETTE AND ASSOCIATES.
2. "SUBDIVISION PLAN FOR 5, 7, 19, AND 21 HAMPTON STREET – PORTSMOUTH, NH – LAND OF PEASE DEVELOPMENT AUTHORITY LEASED TO EXECUTIVE AIRDOCK, LLC (A PORTION OF TAX MAP 310, LOT 0) HAMPTON ST. & AVIATION AVE. PORTSMOUTH, NEW HAMPSHIRE" DATED JULY 1, 2021 AND REVISED (REV-1) NOV 30, 2021 BY DOUCET SURVEY LLC
3. "ALTA/NSPS LAND TITLE SURVEY FOR CINTHESYS REAL ESTATE MANAGEMENT LLC (LESSEE) C/O THE KANE COMPANY AND PEASE DEVELOPMENT AUTHORITY (LESSOR) OF TAX MAP 307, LOT 1 – 68 NEW HAMPSHIRE AVE. PORTSMOUTH, NEW HAMPSHIRE" DATED DECEMBER 21, 2021 BY DOUCET SURVEY LLC.
4. "APPENDIX VI MUNICIPAL SERVICES AGREEMENT BETWEEN CITY OF PORTSMOUTH – TOWN OF NEWINGTON– AND PEASE DEVELOPMENT AUTHORITY EFFECTIVE AS OF JULY 1, 1998".
5. "SUBDIVISION PLAN 68 NEW HAMPSHIRE AVENUE"FOR LONDAVIA, INC. DATED 29-SEPT-1998 BY KIMBALL CHASE. R.C.R.D. PLAN 26777.
6. "SUBDIVISON PLAN – AIR CARGO FACILITY 139 FLIGHTLINE ROAD" DATED 20-FEB-1998 AND REVISED (REV-1) 26-OCT-98 BY KIMBALL CHASE. R.C.R.D. PLAN 26778.
7. "SUBDIVISON PLAN FOR LAND TO BE LEASED TO PAN-AM 14 AVIATION AVE. PEASE INTERNATIONAL TRADEPORT PORTSMOUTH, NH" LAST REVISED (REV-3) ON AUG. 26, 1999 BY EMANUEL ENGINEERING, INC. R.C.R.D. PLAN 27540.
8. "EXCEPTED SUBPARCEL ZONE 3 PEASE AIR FORCE BASE PORTSMOUTH AND NEWINGTON, NEW HAMPSHIRE PREPARED FOR MWH AMERICAS MALVERN, PA" DATED OCTOBER 22, 2002 AND LAST REVISED (REV-3) 10/22-03 BY TFM. R.C.R.D. PLAN 31494.
9. "PLAN OF GROUNDWATER MANAGEMENT ZONE – ZONE 3 – PEASE AIR FORCE BASE PORTSMOUTH AND NEWINGTON, NEW HAMPSHIRE PREPARED FOR MWH AMERICAS MALVERN, PA" DATED JUNE 4, 2002 AND LAST REVISED (REV-2) 6/27/02 BY TFM. R.C.R.D. PLAN 31503.
10. "PLAN OF USE RESTRICTION ZONE SITE 32 PEASE AIR FORCE BASE PORTSMOUTH, NEW HAMPSHIRE PREPARED FOR MWH AMERICAS MALVERN, PA" DATED JULY 11, 2002 AND REVISED (REV-1) 7/18/02 BY TFM. R.C.R.D. PLAN 31506.
11. "PLAN OF USE RESTRICTION ZONE SITE 81 PEASE AIR FORCE BASE PORTSMOUTH, NEW HAMPSHIRE PREPARED FOR MWH AMERICAS MALVERN, PA" DATED JUNE 10, 2005 BY TFM. R.C.R.D. PLAN 33301.
12. "PLAN OF USE RESTRICTION ZONE SITE 72 – BASE MOTOR POOL – PEASE AIR FORCE BASE PORTSMOUTH, NEW HAMPSHIRE PREPARED FOR MWH AMERICAS MALVERN, PA" DATED JUNE 10, 2005 BY TFM. R.C.R.D. PLAN 33302.
13. "SUBDIVISION PLAN DEPICTING PORTSMOUTH TAX MAP 306 LOT 3" DATED AUGUST 1, 2005 AND LAST REVISED (REV-2) SAME DATE AUGUST 1, 2005 BY ALTUS ENGINEERING. R.C.R.D. PLAN 33592.
14. "USE RESTRICTION ZONE – ZONE 3 – PEASE AIR FORCE BASE PORTSMOUTH AND NEWINGTON, NEW HAMPSHIRE PREPARED FOR MWH AMERICAS MALVERN, PA" DATED JUNE 10, 2005 AND REVISED (REV-1) JUNE 17, 2005 BY TFM. R.C.R.D. PLAN 33593.
15. "SUBDIVISION PLAN FOR 75 NEW HAMPSHIRE LLC – 75 NEW HAMPSHIRE AVENUE – 50 INTERNATIONAL DRIVE & 80 INTERNATIONAL DRIVE (TAX MAP 306, LOTS 1, 2, 4 & 5) PEASE INTERNATIONAL TRADEPORT ROCKINGHAM COUNTY PORTSMOUTH, NEW HAMPSHIRE" DATED AUG 14, 2007 AND LAST REVISED (REV-4) 10/15/07 BY DOUCET SURVEY INC. R.C.R.D. PLAN 35260.
16. "PLAN FOR NEW HAMPSHIRE AIR NATIONAL GUARD PEASE BLVD, AIRLINE AVE & NEW HAMSHIRE AVE PEASE INTERNATIONAL TRADEPORT, NEWINGTON ROCKINGHAM COUNTY, NH" DATED 7-DEC-2009 AND LAST REVISED 1/21/11 BY EASTERLY SURVEYING, INC.
17. "PROPOSED 4 STORY OFFICE BUILDING 100 NEW HAMPSHIRE AVENUE PORTSMOUTH, NH" DATED NOVEMBER 16, 2018 AND LAST REVISED 12/04/18 BY HOYLE, TANNER & ASSOCIATES.



LOCATION MAP (n.t.s.)



KEY MAP

300 0 300 600
SCALE: 1 INCH = 300 FT.

LEGEND

- LOT LINE
- APPROXIMATE LOT LINE
- APPROXIMATE ABUTTERS LOT LINE
- EXISTING EASEMENT LINE
- APPROXIMATE RIGHT-OF-WAY LINE
- CHAIN LINK FENCE
- FENCE
- FENCE OBSCURED
- OHW OVERHEAD WIRE
- SS SEWER LINE
- SD DRAIN LINE
- G GAS LINE
- W WATER LINE
- 100 MAJOR CONTOUR LINE
- 98 MINOR CONTOUR LINE
- 100 LIDAR MAJOR CONTOUR LINE
- 98 LIDAR MINOR CONTOUR LINE
- TREE LINE
- SHRUB LINE
- EDGE OF WETLAND
- EDGE OF WETLAND (PER CLIENT)
- EDGE OF WATER
- WATERCOURSE
- WETLAND AREA
- CONCRETE
- MEDIUM LONE TREE
- SMALL LONE TREE
- UTILITY COVER
- UTILITY COVER
- FIRE HYDRANT
- WATER GATE VALVE
- GAS GATE VALVE
- VENT PIPE
- ELECTRIC BOX
- TELEPHONE BOX
- DRAIN
- CATCH BASIN
- DRAIN MANHOLE
- F.E.S FLARED END SECTION
- MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- SEWER MANHOLE
- CLEANOUT
- FLAG POLE
- MONITORING WELL LOCATION
- ACCESSIBLE PARKING SPACE
- RIP RAP
- RETAINING WALL
- DRIVEWAY
- DRIVEWAY OBSCURED
- ASPHALT TAXIWAY
- CONCRETE TAXIWAY
- CURB BOTTOM
- CURB BACK
- PIPELINES
- UTILITY POLE
- UTILITY POLE & GUY WIRE
- UTILITY POLE W/LIGHT
- UTILITY POLE OBSCURED
- LIGHT POLE
- SIGN
- SIGN (TWO POSTS)
- BOUND FOUND
- IRON PIPE/ROD FOUND
- POST
- POST
- BOLLARD
- LOCATED OBJECT
- ×100.0 SPOT GRADE
- TYP. TYPICAL
- BND. FND. BOUND FOUND
- I.P.F. IRON PIPE FOUND
- CONC. CONCRETE
- GRAN. GRANITE
- HDWL HEADWALL
- SGC SLOPED GRANITE CURB
- "NP" NO PARKING SIGN
- "NT" NO TRESPASSING SIGN
- "NTT" NO THRU TRAFFIC SIGN
- ACP ASBESTOS CEMENT PIPE
- CIP CAST IRON PIPE
- CMP CORRUGATED METAL PIPE
- RCP REINFORCED CONCRETE PIPE
- HDPE HIGH DENSITY POLYETHYLENE PIPE
- PVC POLYVINYL CHLORIDE PIPE
- UNK UNKNOWN
- VCP VITREOUS CLAY PIPE
- TOP TOP OF PIPE
- NM NOT MEASURED

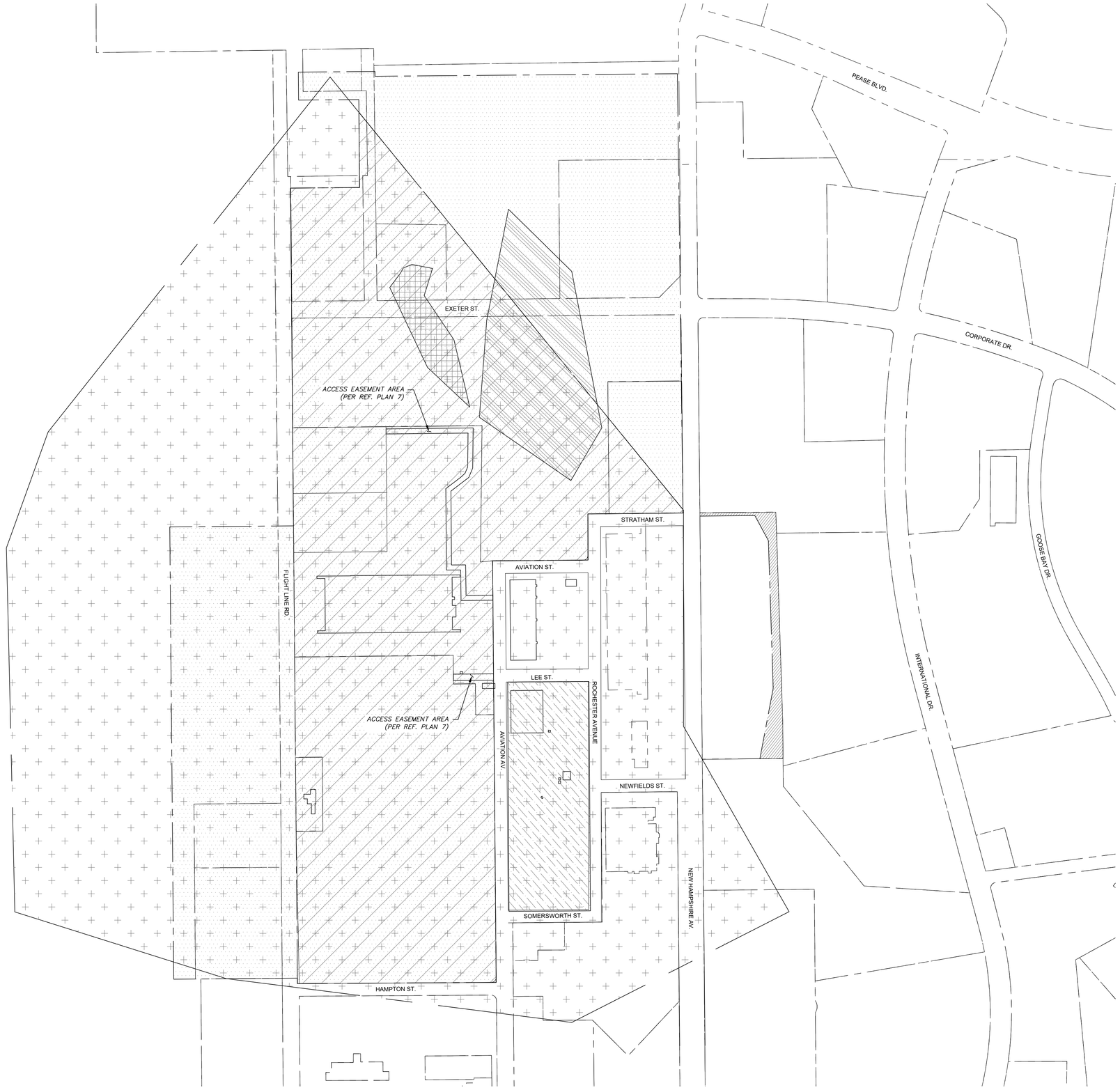
EXISTING CONDITIONS PLAN
FOR
TIGHE & BOND
OF
PEASE HANGAR 227 AREA
PORTIONS OF AVIATION AVENUE, FLIGHTLINE ROAD, LEE STREET, NEWFIELDS STREET, NEW HAMPSHIRE AVENUE ROCHESTER AVENUE AND STRATHAM STREET
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	09/21/22	UPDATED DMH 1925 OUTLET SIZE	W.D.C.

DRAWN BY:	W.D.C.	DATE:	FEBRUARY 2022
CHECKED BY:	M.J.C.	DRAWING NO.	7239A
JOB NO.	7239	SHEET	1 OF 8

DOUCET SURVEY LLC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

FILE NAME: C:\Users\whitney.lapp\dot\Local\Temp\AcPublish_7176\7239A (REV 1) 2022-09-21.dwg LAYOUT NAME: ID24D PLOTTED: Wednesday, September 21, 2022 - 11:20am



LEGEND

- EXCEPTED SUBPARCEL ZONE 3 (PER REF. PLAN 8)
- GROUNDWATER MANAGEMENT ZONE 3 (PER REF. PLAN 9)
- USE RESTRICTION ZONE SITE 32 (PER REF. PLAN 10)
- USE RESTRICTION ZONE SITE 81 (PER REF. PLAN 11)
- USE RESTRICTION ZONE SITE 72 (PER REF. PLAN 12)
- LIMIT OF DRAINAGE LICENSE RESERVED BY OWNER (PER REF. PLAN 13)
- USE RESTRICTION ZONE SITE 3 (PER REF. PLAN 14)

250 0 250 500

SCALE: 1 INCH = 250 FT.

EXISTING CONDITIONS PLAN

FOR

TIGHE & BOND

OF

PEASE HANGAR 227 AREA

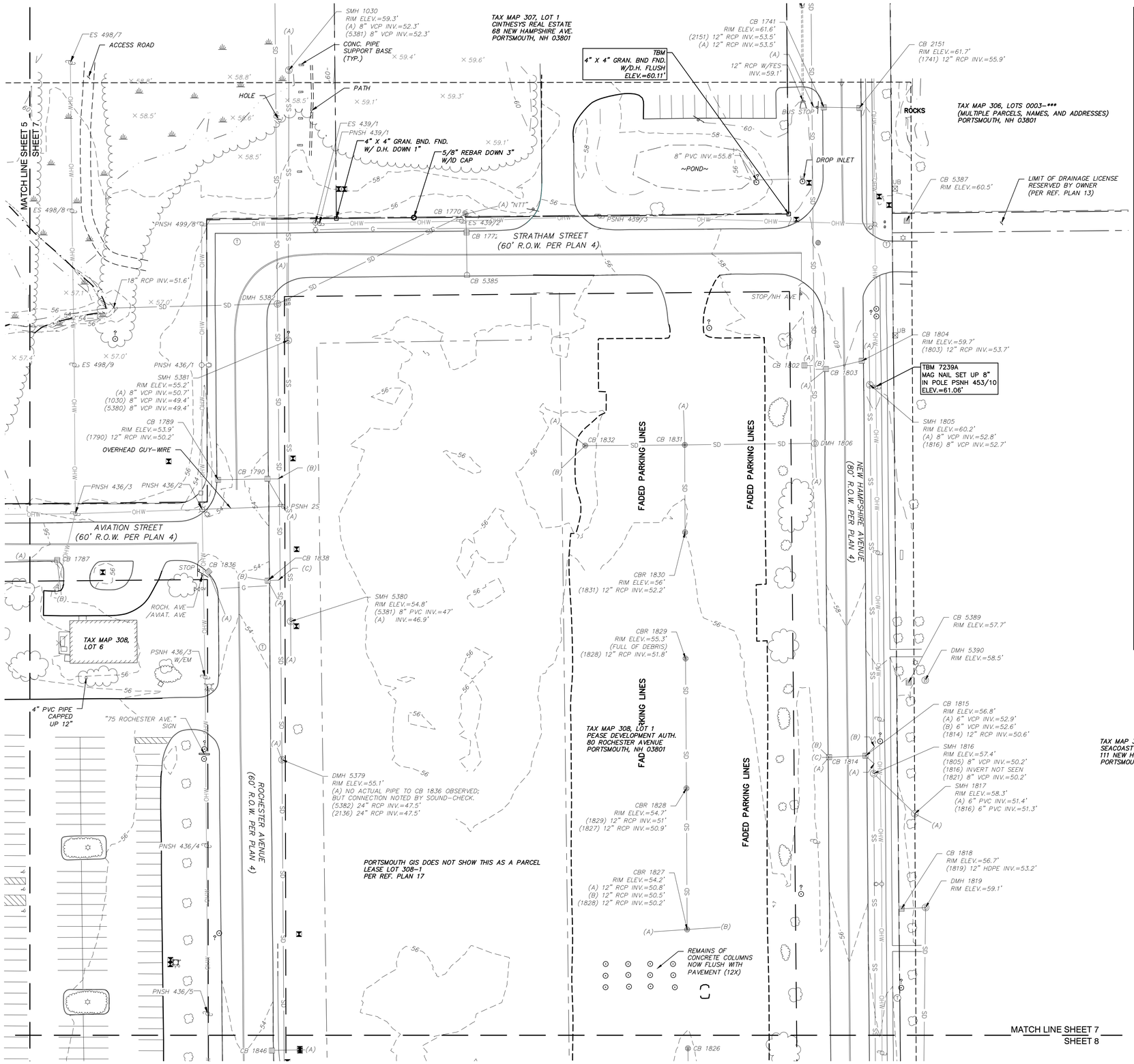
PORTIONS OF AVIATION AVENUE,
FLIGHTLINE ROAD, LEE STREET,
NEWFIELDS STREET,
NEW HAMPSHIRE AVENUE
ROCHESTER AVENUE
AND STRATHAM STREET
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	09/21/22	UPDATED DMH 1925 OUTLET SIZE	W.D.C.

DRAWN BY:	W.D.C.	DATE:	FEBRUARY 2022
CHECKED BY:	M.J.C.	DRAWING NO.	7239A
JOB NO.	7239	SHEET	2 OF 8

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2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
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FILE NAME: C:\Users\whitney.kyle\Documents\Revit Local Files\Tighe_7172V2_2024_(RK1_1)_2022-09-21.rvt LAYOUT NAME: TOPO PLAN (2) PLOTTED: Wednesday, September 21, 2022 - 11:02:10am



DRAINAGE STRUCTURES	
CB 1770	CB 1831
RIM ELEV.=52.3'	RIM ELEV.=56.5'
(1772) 12" RCP INV.=50.4'	(1806) 12" RCP INV.=51.7'
(A) 4" HDPE INV.=50.2'	(1830) 12" RCP INV.=51.5'
(5382) 15" RCP INV.=49.9'	(A) 12" RCP INV.=51.5'
SUMP ELEV.=50.2'	(1832) 10" VCP INV.=51.5'
CB 1772	CB 1832
RIM ELEV.=54.1'	RIM ELEV.=55'
(5385) 12" RCP INV.=50.5'	(A) 6" PVC INV.=53.1'
(1770) 12" RCP INV.=50.3'	(B) 6" PVC INV.=53'
DEBRIS=50.7'	(1831) 10" VCP INV.=52.5'
CB 1787	CB 1836
RIM ELEV.=55.7'	RIM ELEV.=53.6'
(A) 6" VCP INV.=51.1'	(A) 12" RCP INV.=50.4'
NOTE: "A" DOES NOT CON. TO CB 1719	DEBRIS=50.4'
(B) 12" RCP INV.=51.0'	
	CB 1838
CB 1790	RIM ELEV.=53.9'
RIM ELEV.=53.8'	(A) 6" VCP INV.=49.5'
(A) 6" UNK INV.=49.6'	(B) 18" RCP INV.=49.5'
(1789) 12" RCP INV.=49.6'	(C) 18" RCP INV.=49.4'
(B) 12" RCP INV.=49.6'	DEBRIS=49.3'
TO REFUSAL=49.5'	
	CB 1846
CB 1802	RIM ELEV.=53.8'
RIM ELEV.=56.4'	(A) 12" RCP INV.=49.5'
(A) 12" RCP INV.=52.5'	BROKEN BOTTOM=49.6'
CB 1803	DMH 5382
RIM ELEV.=59.6'	RIM ELEV.=55.4'
(A) 6" VCP INV.=55.3'	(1770) 15" RCP INV.=49.1'
(1804) 12" RCP INV.=51.1'	(WETLAND INLET) 18" RCP INV.=49.0'
(B) 12" RCP INV.=50.6'	(5383) 24" RCP INV.=48.7'
	(5379) 24" RCP INV.=48.7'
DMH 1806	DEBRIS=48.6'
RIM ELEV.=58.5'	
(1831) 12" RCP INV.=50.6'	CB 5385
(2152) 36" RCP INV.=49.0'	RIM ELEV.=54.3'
(A) 36" RCP INV.=48.8'	(1772) 12" RCP INV.=50.6'
GIS SHOWS ONE STRUCTURE	DEBRIS=50.7'
BETWEEN DMH 1806 & DMH 1925	
(VERY CLOSE TO 1925) BUT IT	
WAS NOT FOUND BELOW SNOWBANKS.	
CB 1814	
RIM ELEV.=56.8'	
(A) 6" VCP INV.=52'	
(B) 6" VCP INV.=51.9'	
(1815) 12" RCP INV.=49.3'	
(C) 12" RCP INV.=49.1'	

DOUCET SURVEY
NHSPC (NAD83 / 2011)

40 0 40 80
SCALE: 1 INCH = 40 FT.

EXISTING CONDITIONS PLAN
FOR
TIGHE & BOND
OF
PEASE HANGAR 227 AREA
PORTIONS OF AVIATION AVENUE,
FLIGHTLINE ROAD, LEE STREET,
NEWFIELDS STREET,
NEW HAMPSHIRE AVENUE
ROCHESTER AVENUE
AND STRATHAM STREET
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	09/21/22	UPDATED DMH 1925 OUTLET SIZE	W.D.C.

DRAWN BY:	W.D.C.	DATE:	FEBRUARY 2022
CHECKED BY:	M.J.C.	DRAWING NO.	7239A
JOB NO.	7239	SHEET	7 OF 8

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FILE NAME: C:\Users\whitney\AppData\Local\Temp\AcPublish_31772\7239A (REV 1) 2022-09-21.dwg LAYOUT NAME: TOPO PLAN (7) PLOTTED: Wednesday, September 21, 2022 - 11:21am

MATCH LINE SHEET 7
SHEET 8

MATCH LINE SHEET 6
SHEET 8

LEE STREET
(60' R.O.W. PER PLAN)

LEE/ROCH. AVE.

ROCHESTER AVENUE
(60' R.O.W. PER PLAN 4)

NEWFIELDS STREET
(60' R.O.W. PER PLAN 4)

NEW HAMPSHIRE AVENUE
(80' R.O.W. PER PLAN 4)

NEWFIELDS
/N.H. AVEAVE

FADED PARKING LINES

UNABLE TO LOCATE AND MEASURE CB DUE TO SNOW PILE

OVERHEAD GUY-WIRE

PORTSMOUTH GIS DOES NOT SHOW THIS AS A PARCEL LEASE LOT 308-1 PER REF. PLAN 17

PORTSMOUTH GIS DOES NOT SHOW THIS AS A PARCEL LEASE LOT 308-2 PER REF. PLAN 17

SMH 2135
RIM ELEV.=54.8'
(NO VISIBLE INV, FULL OF WATER & DEBRIS)
WATER ELEV.=48.5'
SUMP ELEV.=44.9'

DMH 2136

CB 1846

CB 1826

CB 1825

CB 1912

CB 1824
RIM ELEV.=54.8'
(A) 6" VCP INV.=50'
(B) 6" VCP INV.=49.8'
(1824) 12" RCP INV.=48.9'

SMH 1821
RIM ELEV.=55.0'
(1816) 8" VCP INV.=47.2'
(1854) 8" VCP INV.=47.2'

DMH 1823
RIM ELEV.=55.9'
(1822) 12" HDPE INV.=52.1'
(A) 15" HDPE INV.=52.0'
(1819) 18" HDPE INV.=52.0'

CB 1822
RIM ELEV.=55.1'
(NO VISIBLE INV. FULL OF WATER)
WATER ELEV.=52.1'
SUMP ELEV.=48.9'

CB 2137

CB 2147
RIM ELEV.=53.1'
(A) 12" RCP INV.=49'

SMH 2146
RIM ELEV.=52.2'

DMH 2145
RIM ELEV.=52.5'

SMH 2148
RIM ELEV.=53.7'
(A) 6" VCP INV.=45.8'
(B) 8" VCP INV.=43.6'

CBR 1913
RIM ELEV.=53.3'
(1912) 12" RCP INV.=48.5'
(A) 12" RCP INV.=48.4'
(B) 15" RCP INV.=48.4'

CB 1855

MW 6007
MW 572
MW 631

CB 1853
RIM ELEV.=52.6'
(A) 6" VCP INV.=47.8'
(B) 6" VCP INV.=47.8'
(1855) 12" RCP INV.=47'
SUMP ELEV.=47'

SMH 1854
RIM ELEV.=53.1'
(1821) 8" VCP INV.=44.1'
(1877) 8" VCP INV.=43.9'

SMH 2143
RIM ELEV.=52.0'
(A) 6" PVC INV.=43.0'
(B) 8" VCP INV.=43.0'
(2146) 8" VCP INV.=42.9'
(6054) 8" VCP INV.=42.9'

CB 1902
RIM ELEV.=50.9'
(A) 6" VCP INV.=47.2'
(2144) 12" RCP INV.=46.6'

CB 2144

CB 1895
RIM ELEV.=52.0'
(A) 12" RCP INV.=46.9'
(B) 12" RCP INV.=46.8'

CB 1893
RIM ELEV.=52.9'
(A) 6" VCP INV.=47.8'
(B) 12" RCP INV.=47.7'
NOTE: "B" DOES NOT AIM TOWARD CB 1895
SUMP ELEV.=47.7'

CB 1896
RIM ELEV.=50.2'
(A) 12" RCP INV.=47.1'

CB 1898
RIM ELEV.=51.7'
(1897) 12" RCP INV.=46.7'

CB 1897
RIM ELEV.=51.7'
(1898)12" RCP INV.=46.3'
(A) 12" RCP INV.=46.5'

15" RCP INV.=46.3'

SMH 6054
RIM ELEV.=51.5'
(A) 8" VCP INV.=47.3'
(1877) 10" VCP INV.=42'
(2143) 10" VCP INV.=41.9'

8" RCP INV.=47.3'

CB 2142

DMH 1925

SMH 1877
RIM ELEV.=52.1'
(1854) 8" VCP INV.=41.7'
(6054) 10" VCP INV.=41.1'
(A) 10" VCP INV.=41.0'

60" RCP INV.=41.5'

CB 1879

CB 1878
RIM ELEV.=51.1'
(A) 6" VCP INV.=46.6'
(1879) 12" RCP INV.=45.8'

CBR 1887
RIM ELEV.=48.4'
SUMP ELEV.=44.1'
(UNABLE TO OPEN, FROZEN)

6" X 6" CONC. BND. FND. W/DISK (W/DIT) UP 1"

5/8" REBAR FLUSH
W/ID CAP KNIGHT HILL INC

TBM 7239B
MAG NAIL SET UP 8"
IN POLE PSNH 453/19
ELEV.=52.87'

LIMIT OF DRAINAGE LICENSE RESERVED BY OWNER (PER REF. PLAN 13)

PSNH 436/6
PSNH 437/1
PSNH 436/6S
PSNH 436/7
PSNH 436/7A
PSNH 436/7B
PSNH 436/8
PSNH 436/9
PSNH 436/9A
PSNH 436/10
W/EM & UBOX
PSNH 436/11
W/PANEL
ES 436/11
PSNH 436/A
PSNH 438/1
PSNH 438/2
PSNH 438/3
PSNH 438/3A
PSNH 438/3S
OVERHEAD GUY-WIRE

TAX MAP 308, LOT 0

TAX MAP 306, LOT 4
SEACOAST NEWSPAPERS, INC.
111 NEW HAMPSHIRE AVE.
PORTSMOUTH, NH 03801

TAX MAP 311, LOT 1
US DEPARTMENT OF STATE
NATIONAL PASSPORT CENTER
31 ROCHESTER AVENUE
PORTSMOUTH, NH 03801

TAX MAP 312, LOT 2

DRAINAGE STRUCTURES	
CB 1824	DMH 1925
RIM ELEV.=54.7'	RIM ELEV.=52.2'
(A) 6" VCP INV.=50.2'	(A) 12" RCP RECESSED UNABLE TO MEAS.
(B) 6" VCP INV.=49.1'	(B) 36" RCP INV.=43.7'
(1820) 12" RCP INV.=48'	(C) 36" RCP INV.=43.5'
(C) 12" RCP INV.=48'	(OUTFALL) 60" RCP INV.=41.7'
CB 1825	DMH 2136
RIM ELEV.=53.6'	RIM ELEV.=54.2'
(1826) 12" RCP INV.=50.1'	(5379) 24" RCP INV.=47.0'
(1912) 12" RCP INV.=49.9'	(A) 42" RCP INV.=46.9'
	(1947) 42" RCP INV.=46.7'
CB 1826	
RIM ELEV.=53.9'	CB 2137
(1825) 12" RCP INV.=50.4'	RIM ELEV.=52.7'
SUMP ELEV.=50.4'	(A) 8" VCP INV.=48.6'
	(B) 12" RCP INV.=48.1'
CB 1846	(C) 8" VCP INV.=48.1'
RIM ELEV.=53.8'	(D) 12" RCP INV.=48.1'
(A) 12" RCP INV.=49.5'	
BROKEN BOTTOM=49.6'	CB 2142
	RIM ELEV.=52.2'
CB 1855	(A) 12" RCP INV.=48.3'
RIM ELEV.=52.7'	
(A) 12" HDPE INV.=46.6'	CB 2144
(1853) 12" HDPE INV.=46.5'	RIM ELEV.=50.8'
BOTTOM OF CHANNEL=46.6'	(A) 6" VCP INV.=46.3'
	(1902) 12" RCP INV.=46.3'
CB 1879	(B) 12" RCP INV.=46.1'
RIM ELEV.=51.2'	
(A) 6" VCP INV.=46.3'	
(B) 6" VCP INV.=46.3'	
(1878) 12" RCP INV.=44.3'	
(C) 12" RCP INV.=43.9'	
SUMP ELEV.=44.3'	
CB 1912	
RIM ELEV.=53.5'	
(1825) 12" RCP INV.=49.3'	
(1913) 12" RCP INV.=49.2'	

DOUCET SURVEY
NHSPC (NAD83 / 2011)

40 0 40 80
SCALE: 1 INCH = 40 FT.

EXISTING CONDITIONS PLAN
FOR
TIGHE & BOND
OF
PEASE HANGAR 227 AREA
PORTIONS OF AVIATION AVENUE,
FLIGHTLINE ROAD, LEE STREET,
NEWFIELDS STREET,
NEW HAMPSHIRE AVENUE
ROCHESTER AVENUE
AND STRATHAM STREET
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	09/21/22	UPDATED DMH 1925 OUTLET SIZE	W.D.C.

DRAWN BY:	W.D.C.	DATE:	FEBRUARY 2022
CHECKED BY:	M.J.C.	DRAWING NO.	7239A
JOB NO.	7239	SHEET	8 OF 8

DOUCET SURVEY LLC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

FILE NAME: C:\Users\whitney.blaisdell\Local\Temp\AcPublish_21\7239A (REV 1) 2022-09-21.dwg LAYOUT NAME: TOPO PLAN (9) PLOTTED: Wednesday, September 21, 2022 - 11:21am

EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY BY DOUCET SURVEY LLC DURING JANUARY & FEBRUARY 2022.
2. JURISDICTIONAL WETLANDS DELINEATED BY TIGHE & BOND, DURING DECEMBER 2021.

REFERENCE PLANS:

1. "EXISTING CONDITIONS PLAN FOR TIGHE & BOND OF PEASE HANGAR 227 AREA, PORTIONS OF AVIATION AVENUE, FLIGHTLINE ROAD, LEE STREET, NEWFIELDS STREET, NEW HAMPSHIRE AVENUE, ROCHESTER AVENUE, AND STRATHEM STREET" PREPARED BY DOUCET SURVEY LLC, LAST REVISED 09/21/2022.

DEMOLITION NOTES:

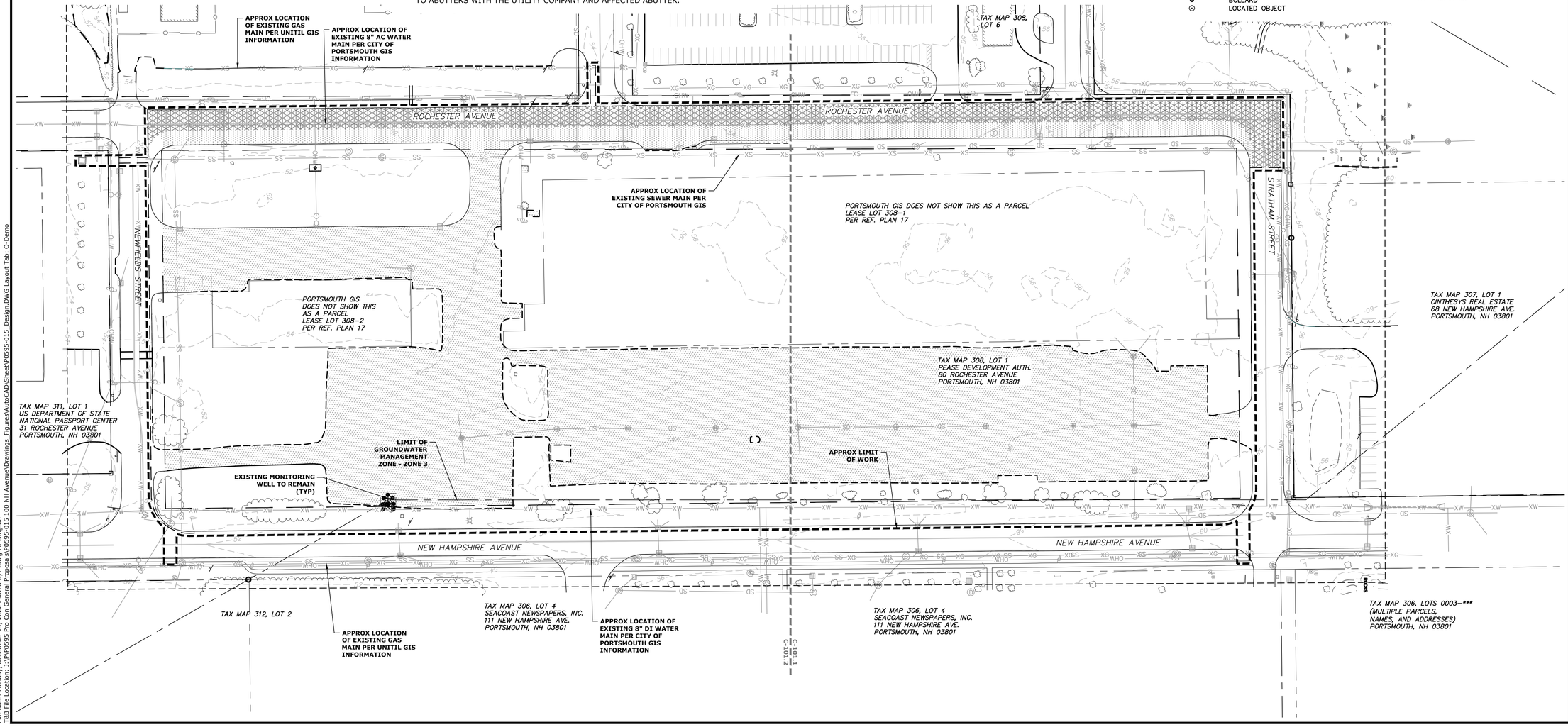
1. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
2. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
3. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
4. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
5. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
6. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
8. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS. MATERIAL DEMOLITION AND DISPOSAL SHALL BE DONE IN CONFORMANCE WITH THE PEASE WASTE MANAGEMENT PLAN REQUIREMENTS.
10. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY OF PORTSMOUTH STANDARD. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK.
11. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
12. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
13. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, SIGNS, BOLLARDS, TREES AND LANDSCAPING.
14. COORDINATE ALL WORK WITHIN THE PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH AND PEASE DEVELOPMENT AUTHORITY.
15. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
16. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
17. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT 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 THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
18. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO EXISTING BUSINESSES AND HOMES THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS AND HOME SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
19. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
20. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
21. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
22. BEFORE ANY DEWATERING IS PERFORMED A TEMPORARY DISCHARGE PERMIT FROM THE NHDES IS REQUIRED.
23. THE SITE IS IN A GROUNDWATER MANAGEMENT ZONE (GMZ). THE APPLICANT SHALL COORDINATE WITH PDA, NHDES AND THE AIR FORCE TO DETERMINE IF ANY SPECIAL MEASURES ARE REQUIRED DURING CONSTRUCTION TO ENSURE THE SAFETY OF WORKERS AND PROPER HANDLING OF MATERIALS. NO EXISTING SOILS OR MATERIALS MAY BE REMOVED AND DISPOSED OF OFFSITE UNLESS TESTING AND PROTOCOLS ESTABLISHED ARE FOLLOWED. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROVED AREA OF SPECIAL NOTICE PROVISIONS ISSUED BY THE AIR FORCE.
24. THE CONTRACTOR SHALL ACQUIRE A PDA DIG PERMIT BEFORE ANY DISTURBANCE CAN TAKE PLACE. ALLOW 7 CALENDAR DAYS FOR PROCESSING.
25. ALL MONITORING WELLS WITHIN THE LIMIT OF WORK SHALL BE PROTECTED DURING CONSTRUCTION. IF ANY MONITORING WELL NEEDS TO BE REMOVED OR ADJUSTED THIS WORK SHALL BE COORDINATED WITH PDA AND THE AIR FORCE.

DEMOLITION LEGEND

- APPROXIMATE LIMIT OF WORK
- APPROXIMATE LIMIT OF SAWCUT
- APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED
- APPROXIMATE LIMIT OF PAVEMENT TO BE MILL AND OVERLAID

LEGEND

- LOT LINE
- APPROXIMATE LOT LINE
- APPROXIMATE ABUTTERS LOT LINE
- EXISTING EASEMENT LINE
- APPROXIMATE RIGHT-OF-WAY LINE
- CHAIN LINK FENCE
- FENCE
- FENCE OBSCURED
- OHW — OVERHEAD WIRE
- SS — SEWER LINE
- D — DRAIN LINE
- G — GAS LINE
- W — WATER LINE
- 100 — MAJOR CONTOUR LINE
- 100 — MINOR CONTOUR LINE
- 100 — LIDAR MAJOR CONTOUR LINE
- 98 — LIDAR MINOR CONTOUR LINE
- TREE LINE
- SHRUB LINE
- EDGE OF WETLAND
- EDGE OF WETLAND (PER CLIENT)
- EDGE OF WATER
- WATERCOURSE
- WETLAND AREA
- CONCRETE
- RIP RAP
- RETAINING WALL
- DRIVEWAY
- DRIVEWAY OBSCURED
- ASPHALT TAXIWAY
- CONCRETE TAXIWAY
- CURB BOTTOM
- CURB BACK
- PIPELINES
- UTILITY POLE
- UTILITY POLE & GUY WIRE
- UTILITY POLE W/LIGHT
- UTILITY POLE OBSCURED
- LIGHT POLE
- SIGN
- SIGN (TWO POSTS)
- BOUND FOUND
- IRON PIPE/ROD FOUND
- POST
- POST
- BOLLARD
- LOCATED OBJECT
- MEDIUM LONE TREE
- SMALL LONE TREE
- UTILITY COVER
- UTILITY COVER
- FIRE HYDRANT
- WATER GATE VALVE
- GAS GATE VALVE
- VENT PIPE
- ELECTRIC BOX
- TELEPHONE BOX
- DRAIN
- CATCH BASIN
- DRAIN MANHOLE
- F.E.S — FLARED END SECTION
- (M) — MANHOLE
- (E) — ELECTRIC MANHOLE
- (T) — TELEPHONE MANHOLE
- (S) — SEWER MANHOLE
- CLEANOUT
- FLAG POLE
- MONITORING WELL LOCATION
- ACCESSIBLE PARKING SPACE
- ×100.0 — SPOT GRADE
- TYP. — TYPICAL
- BND. FND. — BOUND FOUND
- I.P.F. — IRON PIPE FOUND
- CONC. — CONCRETE
- GRAN. — GRANITE
- HDWL — HEADWALL
- SGC — SLOPED GRANITE CURB
- "NP" — NO PARKING SIGN
- "NT" — NO TRESPASSING SIGN
- "NTT" — NO THRU TRAFFIC SIGN
- ACP — ASBESTOS CEMENT PIPE
- CIP — CAST IRON PIPE
- CMP — CORRUGATED METAL PIPE
- RCP — REINFORCED CONCRETE PIPE
- HDPE — HIGH DENSITY POLYETHYLENE PIPE
- PVC — POLYVINYL CHLORIDE PIPE
- UNK — UNKNOWN
- VCP — VITREOUS CLAY PIPE
- TOP — TOP OF PIPE
- NM — NOT MEASURED



Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
12/19/22

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

OVERALL EXISTING CONDITIONS / DEMOLITION PLAN

SCALE: AS SHOWN

C-101

Last Save Date: December 19, 2022 8:56 AM By: CML
Plot Date: Monday, December 19, 2022 8:57 AM By: Christine M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: O-Demo

Tighe&Bond

N

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
12/19/22

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

EXISTING CONDITIONS / DEMOLITION PLAN

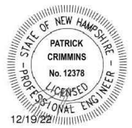
SCALE: AS SHOWN

C-101.1

Last Save Date: December 19, 2022 8:56 AM By: CML
Plot Date: December 19, 2022 8:57 AM By: Craig M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Demo-1

Tighe&Bond







SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

EXISTING CONDITIONS / DEMOLITION PLAN

SCALE: AS SHOWN

C-101.2

Last Save Date: December 19, 2022 8:56 AM By: CML
Plot Date: December 19, 2022 8:56 AM By: Chris M. Langdon
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings_Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Demo-2

SITE NOTES:

1. STRIPE PARKING AREAS AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES SHALL BE THERMOPLASTIC MATERIAL. THERMOPLASTIC MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO AASHTO M249. (ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE TRAFFIC PAINT. CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING YELLOW TRAFFIC PAINT. ALL TRAFFIC PAINT SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F").
2. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
3. SEE DETAILS FOR PARKING STALL MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE.
5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
6. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
7. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
9. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF PORTSMOUTH AND PEASE DEVELOPMENT AUTHORITY.
10. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
11. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
12. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
13. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
14. COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
15. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
16. THE SITE ENGINEER SHALL OBSERVE THE CONSTRUCTION AND SHALL SUBMIT TO THE PDA A LETTER STATING THAT THE PROJECT WAS COMPLETED IN ACCORDANCE WITH THE PLANS.
17. CONSTRUCTION CANNOT BEGIN UNTIL A DETERMINATION OF NO OBJECTION IS ISSUED BY FAA. TO OBTAIN THE FAA DETERMINATION, THE CONTRACTOR/DEVELOPER MUST SUBMIT TO FAA A NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION FORM 7460-1, AVAILABLE AT "https://www.faa.gov/documentLibrary/media/Form/FAA_Form_7460-1_042023.pdf".
18. PROPERTY MANAGER WILL BE RESPONSIBLE FOR TIMELY SNOW REMOVAL FROM ALL PUBLIC WALKS, DRIVES, AND AIRSIDE PAVEMENT AREAS ON-SITE. SNOW SHALL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF, WHEN NECESSARY, WHEN SNOW STORAGE AREAS HAVE REACHED CAPACITY.
19. RETAINING WALL SHALL BE DESIGNED AND STAMPED BY A NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER AND SHALL BE SUBMITTED TO PEASE DEVELOPMENT AUTHORITY FOR REVIEW.

SITE DATA:
LOCATION: TAX MAP 308, LOT 1
80 ROCHESTER AVENUE
PORTSMOUTH, NEW HAMPSHIRE

ZONING DISTRICT: INDUSTRIAL
ALLOWED USE: INDUSTRIAL / WAREHOUSE

DIMENSIONAL REQUIREMENTS:	REQUIRED	PROPOSED
MINIMUM LOT AREA:	10 ACRES	±11.4 ACRES
MINIMUM STREET FRONTAGE:	200 FT	±1,200 FT
MINIMUM SETBACKS:		
• FRONT:	70 FT	±51 FT(1)
• SIDE:	50 FT	±202 FT
• REAR:	50 FT	±50 FT(2)
MAXIMUM BUILDING HEIGHT:	PER FAA	36 FT
MINIMUM OPEN SPACE:	25%	±35%

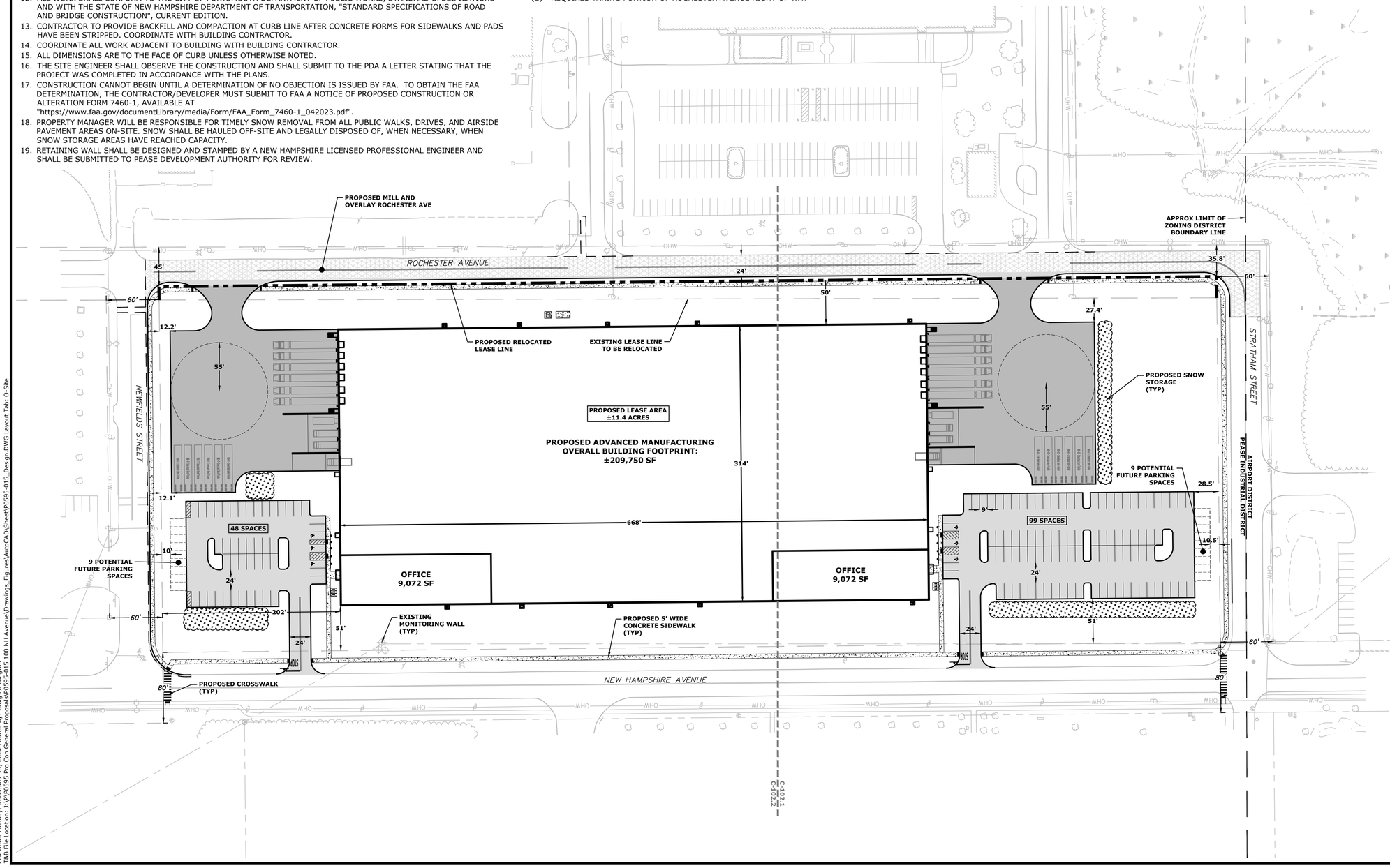
(1) - ON NOVEMBER 15, 2022 THE CITY OF PORTSMOUTH ZONING BOARD OF ADJUSTMENT VOTED TO RECOMMEND APPROVAL TO THE PDA BOARD FOR A VARIANCE FROM PART 304.03(C) TO ALLOW A 51 FOOT FRONT YARD WHERE 70 FEET IS REQUIRED.
(2) - REQUIRES TAKING PORTION OF ROCHESTER AVENUE RIGHT OF WAY

PARKING REQUIREMENTS:	REQUIRED	PROPOSED
PARKING STALL LAYOUT:		
• STANDARD 90°	WIDTH: 8.5' MIN AREA: 160 SF MIN	9' X 18' (162 SF)
DRIVE AISLE WIDTH:		
• 90° (2-WAY TRAFFIC)	24 FT	24 FT (MIN)
PARKING SPACE REQUIREMENTS:		
INDUSTRIAL:		
2 / 3 EMPLOYEES (LARGEST SHIFT) +1 / COMPANY-OWNED-VEHICLE = 161 EMPLOYEES x 2/3 EMPLOYEES) + 2 COMPANY-OWNED-VEHICLE =	110 SPACES	
OFFICE:		
1 / 2 EMPLOYEES = 73 EMPLOYEES x (1 / 2 EMPLOYEES) =	37 SPACES	
TOTAL REQUIRED PARKING:	147 SPACES	147 SPACES(1)

(1) - SIX (6) ADA SPACES PROVIDED

LEGEND

- PROPOSED LEASE LINE
- PROPOSED CONCRETE
- PROPOSED STANDARD DUTY PAVEMENT SECTION
- PROPOSED HEAVY DUTY PAVEMENT SECTION
- PROPOSED MILL AND OVERLAY
- PROPOSED SNOW STORAGE AREA
- APPROXIMATE LIMIT OF SAWCUT
- PROPOSED LIGHT POLE BASE
- EXISTING PROPOSED SIGN
- PROPOSED BOLLARD



Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 12/19/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 12/19/22

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
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DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

C-101
C-102

Last Save Date: December 19, 2022 8:56 AM By: CML
Plot Date: Monday, December 19, 2022 8:57 AM By: Philip M. Langdon
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Tighe&Bond

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STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
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STATE OF NEW HAMPSHIRE
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SCALE IN FEET
0 40' 80'
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SITE PLAN

SCALE: AS SHOWN

C-102.1

APPROX LIMIT OF ZONING DISTRICT BOUNDARY LINE
AIRPORT DISTRICT
PEASE INDUSTRIAL DISTRICT
BEGIN VGC MEET/MATCH EXISTING
END VGC MEET/MATCH EXISTING
PROPOSED CONCRETE TIP DOWN RAMP WITH DETECTABLE WARNING PANEL
PROPOSED CROSSWALK (COORD W/ PDA & DPW)
PROPOSED 5' WIDE CONCRETE SIDEWALK
9 POTENTIAL FUTURE PARKING SPACES
PROPOSED MILL AND OVERLAY
EXISTING LEASE LINE TO BE RELOCATED
PROPOSED DOUBLE YELLOW LANE LINE (TYP)
PROPOSED SNOW STORAGE (TYP)
PROPOSED HEAVY DUTY PAVEMENT SECTION
PROPOSED TRAILER STORAGE AREA
PROPOSED STANDARD DUTY PAVEMENT SECTION
PROPOSED RELOCATED LEASE LINE
END VGC BEGIN SGC WITH CURB TRANSITION
PROPOSED CONCRETE TIP DOWN RAMP WITH DETECTABLE WARNING PANEL
PROPOSED WALL (COORD W/ BLDG DWGS)
6 PROPOSED LOADING DOCKS
END SGC MEET @ BLDG
PROPOSED TRASH COMPACTER (COORD W/ BLDG DWGS)
PROPOSED AT GRADE LOADING BAY
2 PROPOSED BOX TRUCK LOADING DOCKS
PROPOSED R7-1 "NO PARKING" SIGN
PROPOSED BIKE RACK (TYP OF 3)
PROPOSED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS
PROPOSED R1-1 "STOP" SIGN, BAR & LEGEND
OFFICE 9,072 SF
PROPOSED LEASE AREA ±11.4 ACRES
PROPOSED ADVANCED MANUFACTURING OVERALL BUILDING FOOTPRINT: ±209,750 SF
C-102.1
C-102.2

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PROPOSED LEASE AREA
±11.4 ACRES

PROPOSED ADVANCED MANUFACTURING
OVERALL BUILDING FOOTPRINT:
±209,750 SF

C-102.1
C-102.2

EXISTING LEASE LINE TO BE RELOCATED

PROPOSED RELOCATED LEASE LINE

PROPOSED GENERATOR PAD (COORD W/ BLDG DWGS)

PROPOSED TRANSFORMER PAD (COORD W/ EVERSOURCE)

PROPOSED MILL AND OVERLAY

PROPOSED EGRESS (TYP)

PROPOSED 5' WIDE CONCRETE SIDEWALK

257'

57'

OFFICE
9,072 SF

171'

PROPOSED AT GRADE LOADING BAY

2 PROPOSED BOX TRUCK LOADING DOCKS

PROPOSED TRASH COMPACTER (COORD W/ BLDG DWGS)

END SGC MEET @ BLDG

PROPOSED R7-8 "RESERVED" & R7-8A "VAN ACCESSIBLE" SIGNS

PROPOSED R7-8 "RESERVED" SIGN

END SGC MEET @ BLDG

PROPOSED DOUBLE YELLOW LANE LINE (TYP)

6 PROPOSED LOADING DOCKS

PROPOSED WALL (COORD W/ BLDG DWGS)

PROPOSED BIKE RACK (TYP OF 3)

PROPOSED R7-1 "NO PARKING" SIGN

BEGIN VGC MEET/MATCH EXISTING

PROPOSED CONCRETE TIP DOWN RAMP WITH DETECTABLE WARNING PANEL

END VGC MEET/MATCH EXISTING

PROPOSED R1-1 "STOP" SIGN, BAR & LEGEND

PROPOSED STANDARD DUTY PAVEMENT SECTION

23 SPACES

18 SPACES

PROPOSED CONCRETE TIP DOWN RAMP WITH DETECTABLE WARNING PANEL AND FLUSH VGC

PROPOSED WALL (COORD W/ BLDG DWGS)

55'

PROPOSED SNOW STORAGE (TYP)

9 POTENTIAL FUTURE PARKING SPACES

PROPOSED HEAVY DUTY PAVEMENT SECTION

PROPOSED TRAILER STORAGE AREA

PROPOSED CONCRETE TIP DOWN RAMP WITH DETECTABLE WARNING PANEL

PROPOSED CROSSWALK (COORD W/ PDA & DPW)

END VGC BEGIN SGC WITH CURB TRANSITION

END VGC BEGIN SGC WITH CURB TRANSITION

Tighe&Bond

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
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12/19/22

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

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SITE PLAN

SCALE: AS SHOWN

C-102.2

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GRADING AND DRAINAGE & EROSION CONTROL NOTES:

1. COMPACTION REQUIREMENTS:
   - BELOW PAVED OR CONCRETE AREAS 95%
   - TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL 95%
   - BELOW LOAM AND SEED AREAS 90%
   - * ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.
2. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL), UNLESS OTHERWISE SPECIFIED.
3. SEE UTILITY PLAN FOR ALL SITE UTILITY INFORMATION.
4. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
5. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
6. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
7. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
9. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
10. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.
11. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS, AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
12. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
13. SEE EXISTING CONDITIONS PLAN AND REFERENCE PLAN #1 FOR BENCH MARK INFORMATION.
14. SEE SHEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

LEGEND

- PD PD — PROPOSED DRAIN LINE
- 100 — EXISTING MAJOR CONTOUR LINE
- 98 — EXISTING MINOR CONTOUR LINE
- 56 — PROPOSED CONTOUR LINE
- PROPOSED CATCH BASIN
- PROPOSED YARD DRAIN
- PROPOSED DRAIN MANHOLE
- ±44.45 — APPROX EXISTING SPOT GRADE
- 44.45 — PROPOSED SPOT GRADE

PROPOSED LEASE AREA
±11.4 ACRES

PROPOSED ADVANCED MANUFACTURING
OVERALL BUILDING FOOTPRINT:
±209,750 SF
FF=58.00

314'

668'

OFFICE
9,072 SF

OFFICE
9,072 SF

PROPOSED UNDERGROUND DETENTION BASIN-01
17-ROWS OF 60" HDPE
PIPE INV = 45.00
STONE INV = 44.50
(SEE DETAIL)

APPROX LOCATION OF EXISTING DRAIN PER CITY OF PORTSMOUTH GIS INFORMATION

PROPOSED JELLYFISH STORMWATER TREATMENT UNIT
INV IN=44.95
INV OUT=44.45
(SEE DETAIL)

TH=58.8'

15" RCP INV.=46.3'

18" RCP INV.=51.6'

56"-9" PVC INV.=55.8'

12" RCP W/FES INV.=59.1'

12" RCP W/FES INV.=59.5'

60" RCP INV.=41.5'

C-103

C-103

Tighe&Bond

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE
12/19/22

NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE
12/19/22

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

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OVERALL GRADING, DRAINAGE & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

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GRADING, DRAINAGE & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.1

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CBR 5383
RIM ELEV.=59.2'
(A) 24" RCP INV.=50.4'
(5382) 24" RCP INV.=49.9'

DMH 2152
RIM ELEV.=62.4'
(A) 12" RCP INV.=53.9'
(B) 24" RCP INV.=53.5'
(C) 36" RCP INV.=52.9'
(1806) 36" RCP INV.=52.8'

12" RCP W/FES INV.=59.5'

CB 1741
RIM ELEV.=61.6'
(2151) 12" RCP INV.=53.5'
(A) 12" RCP INV.=53.5'

12" RCP W/FES INV.=59.1'

CB 2151
RIM ELEV.=61.7'
(1741) 12" RCP INV.=55.9'

CB 1770
RIM ELEV.=52.3'
(1772) 12" RCP INV.=50.4'
(A) 4" HDPE INV.=50.2'
(5382) 15" RCP INV.=49.9'
SUMP ELEV.=50.2'

CB 1772
RIM ELEV.=54.1'
(5385) 12" RCP INV.=50.5'
(1770) 12" RCP INV.=50.3'
DEBRIS=50.7'

8" PVC INV.=55.8'

CB 5385
RIM ELEV.=54.3'
(1772) 12" RCP INV.=50.6'
DEBRIS=50.7'

LIMIT OF DRAINAGE LICENSE RESERVED BY OWNER (PER REF. PLAN 13)

CB 5387
RIM ELEV.=60.5'

DMH 5382
RIM ELEV.=55.4'
(1770) 15" RCP INV.=49.1'
(WETLAND INLET) 18" RCP INV.=49.0'
(5383) 24" RCP INV.=48.7'
(5379) 24" RCP INV.=48.7'
DEBRIS=48.6'

18" RCP INV.=51.6'

12" CMP INV.=56.5'

12" CMP INV.=56.6'

CB 1790
RIM ELEV.=53.8'
(A) 6" UNK INV.=49.6'
(1789) 12" RCP INV.=49.6'
(B) 12" RCP INV.=49.6'
TO REFUSAL=49.5'

CB 1789
RIM ELEV.=53.9'
(1790) 12" RCP INV.=50.2'

CB 1685
RIM ELEV.=56.9'
(A) 6" VCP INV.=52.3'
(B) 12" RCP INV.=52.0'
(NO CON. OBSERVED TO CB 1720)

CB 1803
RIM ELEV.=59.6'
(A) 6" VCP INV.=55.3'
(1804) 12" RCP INV.=51.1'
(B) 12" RCP INV.=50.6'

CB 1804
RIM ELEV.=59.7'
(1803) 12" RCP INV.=53.7'

PROPOSED INLET PROTECTION BARRIER (TYP)

PDMH-03 (4' DIA)
RIM=55.15
INV IN=48.60 W
INV IN=48.60 S
INV OUT=48.50 NE

6 LF 12" HDPE
@ S=0.008

PCB-04
RIM=53.65
INV OUT=48.65 E

PCB-06
RIM=53.85
INV OUT=48.65 SE

2 LF 12" HDPE
@ S=0.050

17 LF 18" HDPE
@ S=0.006

PDMH-04 (4' DIA)
RIM=53.65
INV IN=48.55 NW
INV IN=48.00 SW
INV IN=48.55 SE
INV OUT=47.90 NE

REPLACE CATCH BASIN FRAME & GRATE WITH DRAIN MANHOLE FRAME & COVER SET RIM TO ELEV=54.35

CONNECT NEW 12" HDPE INTO EXISTING STRUCTURE @ ELEV=50.20

18 LF 12" HDPE
@ S=0.017

109 LF 12" HDPE
@ S=0.005

4 LF 12" HDPE
@ S=0.012

CONNECT NEW 12" HDPE INTO EXISTING STRUCTURE @ ELEV=49.70

12 LF 12" HDPE
@ S=0.008

PCB-14 (4' DIA)
RIM=53.95
INV IN=49.90 SW
INV OUT=49.80 NE

PCB-01
RIM=52.45
INV OUT=48.65 E

PCB-02
RIM=52.45
INV OUT=48.50 S

PDMH-02 (4' DIA)
RIM=53.00
INV IN=48.05 N
INV IN=48.05 W
INV OUT=47.95 E

2 LF 12" HDPE
@ S=0.050

PDMH-05
RIM=53.65
INV IN=47.80 SW
INV OUT=47.70 SE

PCB-05
RIM=53.65
INV OUT=48.65 N

PCB-07
RIM=53.65
INV OUT=48.65 NW

PROPOSED STABILIZED CONSTRUCTION EXIT (TYP)

REPLACE CATCH BASIN FRAME & GRATE WITH DRAIN MANHOLE FRAME & COVER SET RIM TO ELEV=53.80

53.75

PCB-15
RIM=53.50
INV OUT=49.60 NE

52.80

10 LF 12" HDPE
@ S=0.010

PCB-03
RIM=52.45
INV OUT=48.20 S

47 LF 12" HDPE
@ S=0.005

25 LF 12" HDPE
@ S=0.006

162 LF 18" HDPE
@ S=0.005

CB 1814
RIM ELEV.=56.8'
(A) 6" VCP INV.=52'
(B) 6" VCP INV.=51.9'
(1815) 12" RCP INV.=49.3'
(C) 12" RCP INV.=49.1'

CB 5389
RIM ELEV.=57.7'

DMH 5390
RIM ELEV.=58.5'

CB 1815
RIM ELEV.=56.8'
(A) 6" VCP INV.=52.9'
(B) 6" VCP INV.=52.6'
(1814) 12" RCP INV.=50.6'

±57.48

CORE INTO EXISTING STRUCTURE TO ACCEPT NEW 12" HDPE @ ELEV=49.50

13 LF 12" HDPE
@ S=0.008

PDMH-01 (4' DIA)
RIM=56.30
INV IN=48.40 W
INV IN=48.40 N
INV OUT=48.30 E

54.90

57.70

212 LF 18" HDPE
@ S=0.005

48 LF 12" HDPE
@ S=0.005

FF: 58.00

TOC: 57.85
BOC: 57.35

FF: 58.00
BOTTOM OF LOADING DOCK: 54.00

FF: 58.00
BOTTOM OF LOADING DOCK: 55.50

FF: 58.00
PDMH-06 (4' DIA)
RIM=56.15
INV IN=46.95 NW
INV IN=46.95 W
INV OUT=46.85 SE

7 LF 6" HDPE
@ S=0.043

120 LF 24" HDPE
@ S=0.005

RESET RIM TO ELEV=55.30

PYD-01
RIM=57.20
INV OUT=52.20 NE

OFFICE
9,072 SF

PROPOSED ROOF LEADER
18 LF 18" PVC @ S=0.028
INV @ BLDG=53.00
(COORD W/ BLDG DWGS)

PDMH-07 (5' DIA)
RIM=56.20
INV IN=46.30 NW
INV IN=52.50 SW
INV OUT=46.30 SE

6 LF 6" HDPE
@ S=0.033

±56.18

PYD-02
RIM=57.20
INV OUT=52.20 NE

PROPOSED SILT SOCK (TYP)

PROPOSED LEASE AREA
±11.4 ACRES

PROPOSED ADVANCED MANUFACTURING
OVERALL BUILDING FOOTPRINT:
±209,750 SF

DMH 1806
RIM ELEV.=58.5'
(1831) 12" RCP INV.=50.6'
(2152) 36" RCP INV.=49.0'
(A) 36" RCP INV.=48.8'
GIS SHOWS ONE STRUCTURE BETWEEN DMH 1805 & DMH 1925 (VERY CLOSE TO 1925) BUT IT WAS NOT FOUND BELOW SNOWBANKS.

CB 1818
RIM ELEV.=56.7'
(1819) 12" HDPE INV.=53.2'

DMH 1819
RIM ELEV.=59.1'

C-103.1
C-103.2

DMH 5378
CB 1720
CB 1719
CB 1787
CB 1838
RIM ELEV.=53.9'
(A) 6" VCP INV.=49.5'
(B) 18" RCP INV.=49.5'
(C) 18" RCP INV.=49.4'
DEBRIS=49.3'
CB 2132
DMH 2131
DMH 1715
CB 1697
CB 1694
DMH 5379
RIM ELEV.=55.1'
(A) NO ACTUAL PIPE TO CB 1836 OBSERVED; BUT CONNECTION NOTED BY SOUND-CHECK.
(5382) 24" RCP INV.=47.5'
(2136) 24" RCP INV.=47.5'
CB 1929
DMH 1697
CB 1698

PROPOSED LEASE AREA
±11.4 ACRES

PROPOSED ADVANCED MANUFACTURING
OVERALL BUILDING FOOTPRINT:
±209,750 SF

C-103.1
C-103.2

PCB-16
RIM=53.90
INV OUT=50.10 NE

11 LF 12" HDPE
@ S=0.009

REPLACE CATCH BASIN FRAME
& GRATE WITH DRAIN MANHOLE
FRAME & COVER SET RIM TO
ELEV=55.15

CONNECT NEW 12" HDPE
INTO EXISTING STRUCTURE
@ ELEV=50.00

±53.56

RESET RIM TO
ELEV=55.30

CONNECT NEW 12" HDPE TO
EXISTING RCP @ ELEV=48.35
(CONTRACTOR TO CONFIRM
CONNECTION ELEVATION
PRIOR TO CONSTRUCTION)

PCB-17
RIM=52.85
INV IN=48.30 SW
INV OUT=48.20 NE

10 LF 12" HDPE
@ S=0.010

CONNECT NEW 12" HDPE
INTO EXISTING STRUCTURE
@ ELEV=48.10

9 LF 12" HDPE
@ S=0.006

REPLACE CATCH BASIN FRAME
& GRATE WITH DRAIN MANHOLE
FRAME & COVER SET RIM TO
ELEV=54.30

INV OUT=46.30 SE

6 LF 6" HDPE
@ S=0.033

PYD-02
RIM=57.20
INV OUT=52.20 NE

217 LF 36" HDPE
@ S=0.0025

6 LF 6" HDPE
@ S=0.033

PYD-03
RIM=57.20
INV OUT=52.20 NE

PROPOSED ROOF LEADER
17 LF 18" PVC @ S=0.029
INV @ BLDG=53.00
(COORD W/ BLDG DWGS)

PDMH-08 (6' DIA)
RIM=56.20
INV IN=45.75 NW
INV IN=52.50 SW
INV OUT=45.75 SE

6 LF 6" HDPE
@ S=0.033

PYD-04
RIM=57.20
INV OUT=52.20 NE

216 LF 42" HDPE
@ S=0.0021

6 LF 6" HDPE
@ S=0.033

PYD-05
RIM=57.20
INV OUT=52.20 NE

PDMH-09 (7' DIA)
RIM=56.20
INV IN=45.30 NW
INV IN=52.50 SW
INV OUT=45.30 SE

PROPOSED ROOF LEADER
17 LF 18" PVC @ S=0.029
INV @ BLDG=53.00
(COORD W/ BLDG DWGS)

OFFICE
9,072 SF

147 LF 48" HDPE
@ S=0.0014

PDMH-10 (7' DIA)
RIM=52.90
INV IN=47.75 E
INV IN=45.10 NW
INV OUT=45.00 SW

PROPOSED UNDERGROUND
DETENTION BASIN-01
17-ROWS OF 60" HDPE
PIPE INV = 45.00
STONE INV = 44.50
(SEE DETAIL)

FF: 58.00
BOTTOM OF LOADING
DOCK: 55.50

FF: 58.00
BOTTOM OF LOADING
DOCK: 54.00

FF: 58.00

TOC: 57.85
BOC: 57.35

FF: 58.00

57.70

54.90

53.50

52.65

15 LF 48" HDPE

56 LF 18" HDPE
@ S=0.005

PROPOSED JELLYFISH
STORMWATER
TREATMENT UNIT
INV IN=44.95
INV OUT=44.45
(SEE DETAIL)

6 LF 12" HDPE
@ S=0.017

PCB-12
RIM=53.50
INV OUT=48.50 NW

10 LF 60" HDPE

PCB-11
RIM=53.50
INV OUT=48.50 NW

4 LF 24" HDPE
@ S=0.013

4 LF 24" HDPE
@ S=0.012

4 LF 48" HDPE
@ S=0.050

PDMH-13
RIM=53.95
INV IN=45.45 W
INV OUT=45.35 N

POS-01 (SEE DETAIL)
RIM=54.35
INV IN=45.00 SW
INV OUT=45.65 E
INV OUT=45.00 N

CORE INTO EXISTING
STRUCTURE TO ACCEPT
NEW 48" HDPE @ ELEV=43.70

RESET RIM TO
ELEV=51.55

PDMH-11 (4' DIA)
RIM=52.10
INV IN=45.75 NW
INV IN=45.75 SW
INV OUT=45.65 NE

PCB-09
RIM=52.10
INV OUT=45.85 SE

50 LF 12" HDPE
@ S=0.005

13 LF 12" HDPE
@ S=0.008

13 LF 12" HDPE
@ S=0.008

13 LF 12" HDPE
@ S=0.008

49 LF 12" HDPE
@ S=0.005

PCB-10
RIM=52.10
INV OUT=45.50 SE

PDMH-12 (4' DIA)
RIM=52.10
INV IN=45.40 NW
INV IN=45.40 SW
INV OUT=45.30 NE

PCB-08
RIM=52.10
INV OUT=46.10 SE

PDMH-18 (4' DIA)
RIM=52.05
INV IN=46.00 NW
INV IN=46.10 W
INV OUT=46.00 NE

6 LF 12" HDPE
@ S=0.017

RESET CURB
INLET FRAME
AND GRATE

PCB-18
RIM=51.10
INV OUT=46.50 E

REPLACE CATCH BASIN FRAME
& GRATE WITH DRAIN MANHOLE
FRAME & COVER SET RIM TO
ELEV=50.85

81 LF 12" HDPE
@ S=0.005

PROPOSED INLET
PROTECTION BARRIER
(TYP)

PROPOSED
SILT SOCK
(TYP)

RESET RIM TO
ELEV=54.50

PROPOSED STABILIZED
CONSTRUCTION EXIT

PROPOSED INLET
PROTECTION
BARRIER
(TYP)

PROPOSED
SILT SOCK
(TYP)

30 LF 12" HDPE
@ S=0.005

PCB-13
RIM=52.90
INV OUT=47.90 W

PROPOSED STABILIZED
CONSTRUCTION EXIT

PDMH-14 (4' DIA)
RIM=54.10
INV IN=44.40 S
INV OUT=44.30 E

6 LF 24" HDPE
@ S=0.008

PDMH-16 (8' DIA)
RIM=53.90
INV IN=44.65 S
INV IN=44.25 W
INV OUT=44.15 NE

20 LF 48" HDPE
@ S=0.005

CONNECT EXISTING 36" RCP TO
NEW MANHOLE @ ELEV=±44.05
(VERIFY EXISTING INVERT
ELEVATION IN FIELD)

PDMH-17 (8' DIA)
RIM=52.10
INV IN=44.05 NW
INV IN=44.05 SW
INV OUT=43.95 SE

37 LF 48" HDPE
@ S=0.007

14 LF 48" HDPE
@ S=0.050

DMH 1925
RIM ELEV.=52.2'
(A) 12" RCP RECESSED, UNABLE TO MEAS.
(B) 36" RCP INV.=43.7'
(C) 36" RCP INV.=43.5'
(OUTFALL) 60" RCP INV.=41.7'

CB 1824
RIM ELEV.=54.7'
(A) 6" VCP INV.=50.2'
(B) 6" VCP INV.=49.1'
(1820) 12" RCP INV.=48'
(C) 12" RCP INV.=48'

CB 1820
RIM ELEV.=54.8'
(A) 6" VCP INV.=50'
(B) 6" VCP INV.=49.8'
(1824) 12" RCP INV.=48.9'

DMH 1823
RIM ELEV.=55.9'
(1822) 12" HDPE INV.=52.1'
(A) 15" HDPE INV.=52.0'
(1819) 18" HDPE INV.=52.0'

CB 1822
RIM ELEV.=55.1'
(NO VISIBLE INV. FULL OF WATER)
WATER ELEV.=52.1'
SUMP ELEV.=48.9'

CB 1855
RIM ELEV.=52.7'
(A) 12" HDPE INV.=46.6'
(1853) 12" HDPE INV.=46.5'
BOTTOM OF CHANNEL=46.6'

CB 1853
RIM ELEV.=52.6'
(A) 6" VCP INV.=47.8'
(B) 6" VCP INV.=47.8'
(1855) 12" RCP INV.=47'
SUMP ELEV.=47'

CB 1929
DMH 1697

CB 1598

CB 1931

DMH 1947
RIM ELEV.=56.7'
(1945) RECESSED
(1951) 28" ACP INV.=48.8'
(1697) 28" ACP INV.=48.6'
(2136) 42" RCP INV.=48.4'

CB 1932

CB 1846
RIM ELEV.=53.8'
(A) 12" RCP INV.=49.5'
BROKEN BOTTOM=49.6'

CB 1966

CB 1964

CB 1945

CB 1965
RIM ELEV.=55.3'
(1964) 12" RCP INV.=50.8'
(A) 12" RCP INV.=50.7'

CB 2138
RIM ELEV.=54.8'
(A) 12" RCP INV.=51.4'

DMH 2136
RIM ELEV.=54.2'
(5379) 24" RCP INV.=47.0'
(A) 42" RCP INV.=46.9'
(1947) 42" RCP INV.=46.7'

CB 2137
RIM ELEV.=52.7'
(A) 8" VCP INV.=48.6'
(B) 12" RCP INV.=48.1'
(C) 8" VCP INV.=48.1'
(D) 12" RCP INV.=48.1'

DMH 1951

CB 1952

CB 1953

CONC. INLET

DMH 2145
RIM ELEV.=52.5'

CB 2144
RIM ELEV.=50.8'
(A) 6" VCP INV.=46.3'
(1902) 12" RCP INV.=46.3'
(B) 12" RCP INV.=46.1'

CB 1902
RIM ELEV.=50.9'
(A) 6" VCP INV.=47.2'
(2144) 12" RCP INV.=46.6'

CB 1972
RIM ELEV.=54.4'
(1971) 12" RCP INV.=49.6'
DIRT=49.6'

CB 1971
RIM ELEV.=54.3'
(1972) 12" RCP INV.=49.3'
(1970) 12" RCP INV.=48.9'

DMH 1970
RIM ELEV.=54.4'
(A) 12" RCP INV.=49.2'
(1971) 12" RCP INV.=48.9'
(B) 15" RCP TOP BELL=49.9'
DIRT=48.9'

15" RCP INV.=46.3'

CB 1897
RIM ELEV.=51.7'
(1898)12" RCP INV.=46.3'
(A) 12" RCP INV.=46.5'

CB 1898
RIM ELEV.=51.7'
(1897) 12" RCP INV.=46.7'

CB 1896
RIM ELEV.=50.2'
(A) 12" RCP INV.=47.1'

CB 1895
RIM ELEV.=52.0'
(A) 12" RCP INV.=46.9'
(B) 12" RCP INV.=46.8'

CB 1893
RIM ELEV.=52.9'
(A) 6" VCP INV.=47.8'
(B) 12" RCP INV.=47.7'
NOTE: "B" DOES NOT
AIM TOWARD CB 1895
SUMP ELEV.=47.7'

CB 1879

60" RCP INV.=41.5'

Tighe&Bond

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
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Proposed Advanced Manufacturing Facility

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GRADING, DRAINAGE & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.2

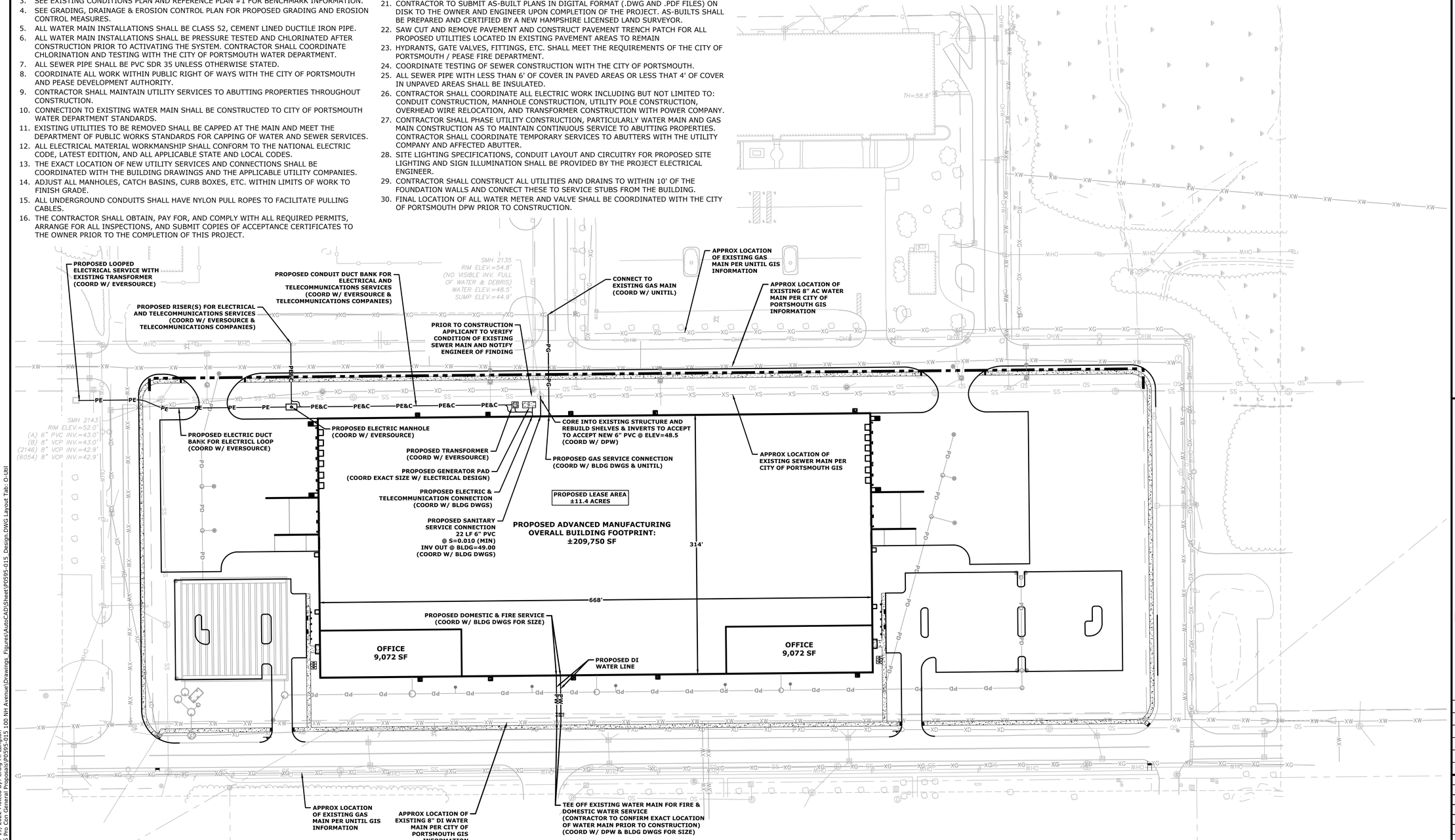
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UTILITY NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
2. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL / NORTHERN UTILITIES
   - WATER - CITY OF PORTSMOUTH
   - SEWER - CITY OF PORTSMOUTH
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - FAIRPOINT COMMUNICATIONS
3. SEE EXISTING CONDITIONS PLAN AND REFERENCE PLAN #1 FOR BENCHMARK INFORMATION.
4. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
5. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
6. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF PORTSMOUTH WATER DEPARTMENT.
7. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
8. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH AND PEASE DEVELOPMENT AUTHORITY.
9. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
10. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.
11. 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.
12. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
13. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
14. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
15. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
16. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
17. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
18. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
19. 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.
20. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
21. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
22. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
23. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH / PEASE FIRE DEPARTMENT.
24. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
25. ALL SEWER PIPE WITH LESS THAN 6' OF COVER IN PAVED AREAS OR LESS THAT 4' OF COVER IN UNPAVED AREAS SHALL BE INSULATED.
26. 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.
27. 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 THE UTILITY COMPANY AND AFFECTED ABUTTER.
28. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
29. CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
30. FINAL LOCATION OF ALL WATER METER AND VALVE SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH DPW PRIOR TO CONSTRUCTION.

LEGEND

- PS — PROPOSED SEWER LINE
- PG — PROPOSED GAS LINE
- PC — PROPOSED COMMUNICATIONS LINE
- PE — PROPOSED ELECTRIC LINE
- PE&C — PROPOSED ELECTRIC & COMMUNICATIONS LINE
- PW — PROPOSED WATER LINE
- PROPOSED WATER GATE VALVE
- PROPOSED ELECTRIC MANHOLE
- PROPOSED SEWER MANHOLE



Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
12/19/22

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

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UTILITY PLAN

SCALE: AS SHOWN

C-104

Last Save Date: December 19, 2022 8:56 AM By: CML
Revit Export Version: Revit 2021 Build: 20200423_1515(x64)
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LANDSCAPE NOTES:

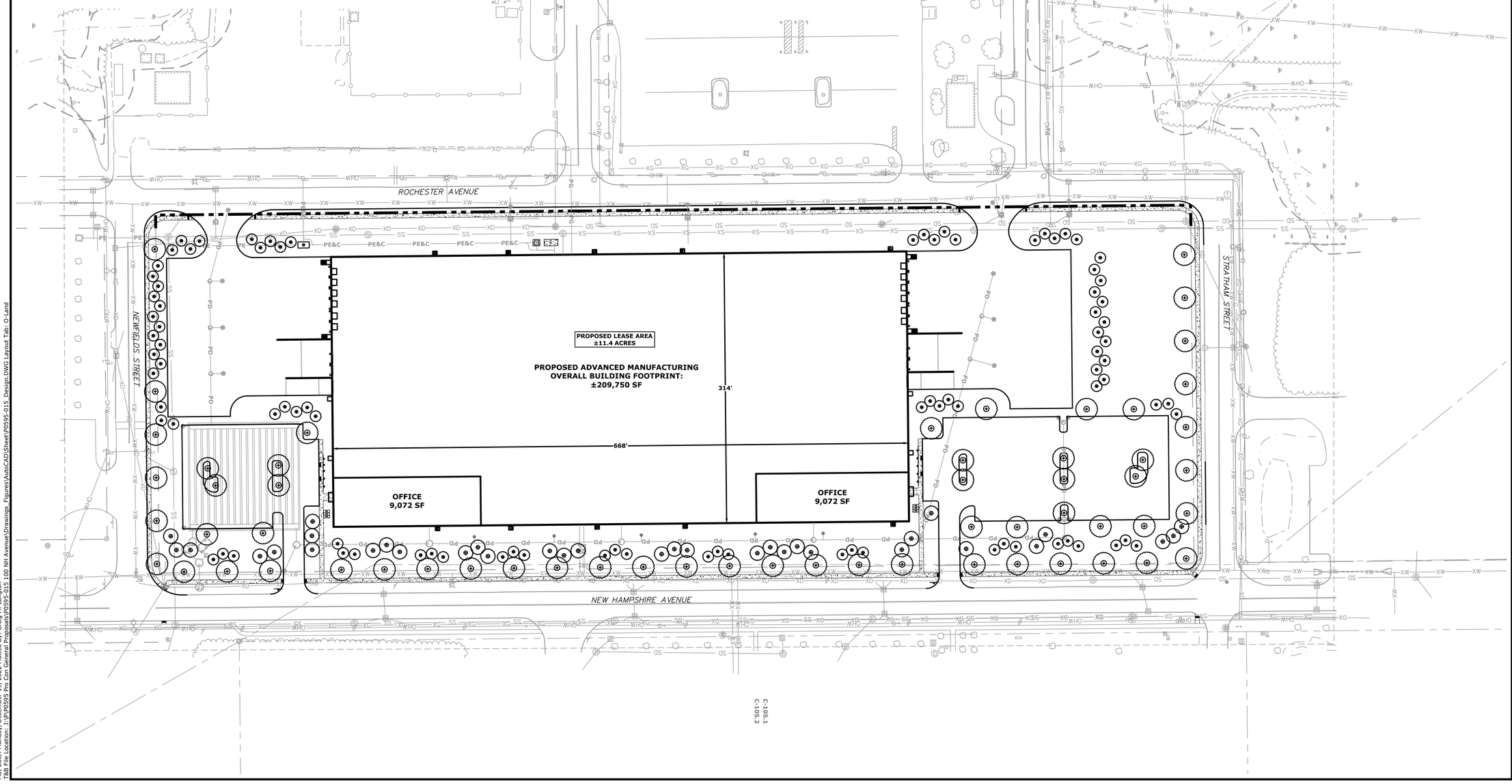
1. THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. NO SUBSTITUTIONS WILL BE PERMITTED UNLESS APPROVED BY OWNER. ALL PLANTS SHALL BE NURSERY GROWN.
2. ALL PLANTS SHALL BE NURSERY GROWN AND PLANTS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS, INCLUDING BUT NOT LIMITED TO SIZE, HEALTH, SHAPE, ETC., AND SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO ARRIVAL ON-SITE AND AFTER PLANTING.
3. PLANT STOCK SHALL BE GROWN WITHIN THE HARDINESS ZONES 4 THRU 7 ESTABLISHED BY THE PLANT HARDINESS ZONE MAP, MISCELLANEOUS PUBLICATIONS NO. 814, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT AGRICULTURE, LATEST REVISION.
4. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
5. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST OR ON THE PLAN IS FOR THE CONTRACTOR'S CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LABEL AND THE NUMBER OF SYMBOLS SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
6. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
7. THE CONTRACTOR SHALL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES SHALL IMMEDIATELY BE REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, SHALL RECEIVE 6" OF LOAM AND SEED. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
9. THREE INCHES (3") OF BARK MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE BARK MULCH IS TO BE USED IN A CURBED ISLAND THE BARK MULCH SHALL MEET THE TOP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 6" INCHES OF LOAM AND SEED.
10. LANDSCAPING SHALL BE LOCATED WITHIN 150 FT OF EXTERIOR HOSE ATTACHMENT OR SHALL BE PROVIDED WITH AN IRRIGATION SYSTEM.
11. SEE PLANTING DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
12. TREE STAKES SHALL REMAIN IN PLACE FOR NO LESS THAN 6 MONTHS AND NO MORE THAN 1 YEAR.
13. PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 1ST. NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT.
14. TREES SHALL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 'TREES, SHRUBS AND OTHER WOOD PLANT MAINTENANCE STANDARD PRACTICES.
15. 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. LANDSCAPE CONTRACTOR SHALL COORDINATE WATERING SCHEDULE WITH OWNER DURING THE ONE (1) YEAR GUARANTEE PERIOD.
16. EXISTING TREES AND SHRUBS SHOWN ON THE PLAN ARE TO REMAIN UNDISTURBED. ALL EXISTING TREES AND SHRUBS SHOWN TO REMAIN ARE TO BE PROTECTED WITH A 4-FOOT SNOW FENCE PLACED AT THE DRIP LINE OF THE BRANCHES OR AT 8 FEET MINIMUM FROM THE TREE TRUNK. ANY EXISTING TREE OR SHRUB SHOWN TO REMAIN, WHICH IS REMOVED DURING CONSTRUCTION, SHALL BE REPLACED BY A TREE OF COMPARABLE SIZE AND SPECIES TREE OR SHRUB.
17. THE CONTRACTOR SHALL GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE OF SUBSTANTIAL COMPLETION. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT, SHOW LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE YEAR PERIOD SHALL BE REPLACED BY THE CONTRACTOR.
18. UPON EXPIRATION OF THE CONTRACTOR'S ONE YEAR GUARANTEE PERIOD, THE OWNER SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE INCLUDING WATERING DURING PERIODS OF DROUGHT
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.
20. PRE-PURCHASE PLANT MATERIAL AND ARRANGE FOR DELIVERY TO MEET PROJECT SCHEDULE AS REQUIRED IT MAY BE NECESSARY TO PRE-DIG CERTAIN SPECIES WELL IN ADVANCE OF ACTUAL PLANTING DATES.

PLANT SCHEDULE				
CODE	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
TREES				
AF	ACER FREEMANII	AUTUM BLAZE MAPLE	2-1/2" - 3"	CALIPER
GD	GYMNOCLADUS DIOICUS 'ESPROSSO'	KENTUCKY COFFEE	2-1/2" - 3"	CALIPER
LT	LIRIODENDRON TULIPIFERA	TULIP TREE	2-1/2" - 3"	CALIPER
QR	QUERCUS RUBRA	RED OAK	2-1/2" - 3"	CALIPER
MS	MALUS 'SUTYZAM'	SUGAR TYME CRABAPPLE	2" - 2-1/2"	CALIPER
MP	MALUS 'PRAIRIE FIRE'	PRAIRIE FIRE CRABAPPLE	2" - 2-1/2"	CALIPER
CK	CORNUS KOUSA	KOUSA DOGWOOD	2" - 2-1/2"	CALIPER
PG	PICEA GLAUCA	WHITE SPRUCE	7' - 8' HT	
PN	CASUARINA EQUISETIFOLIA	AUSTRALIAN PINE	7' - 8' HT	

LEGEND

PROPOSED DECIDUOUS TREE (W/ BARK MULCH)

PROPOSED DECICUOUS TREE (W/O BARK MULCH)



SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

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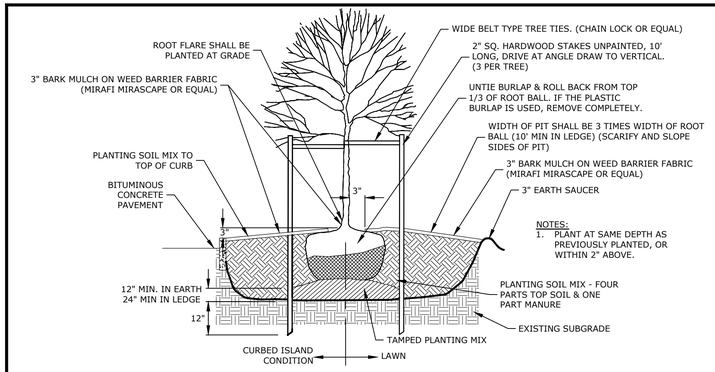
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OVERALL LANDSCAPE PLAN

SCALE: AS SHOWN

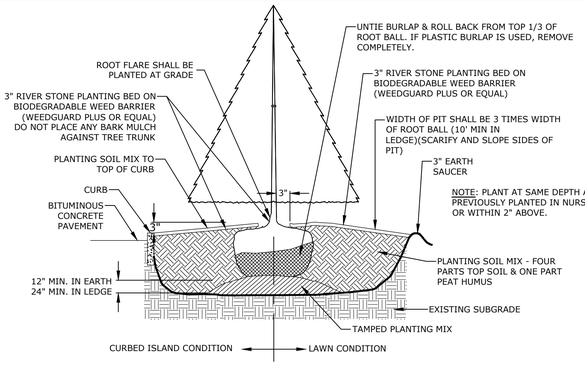
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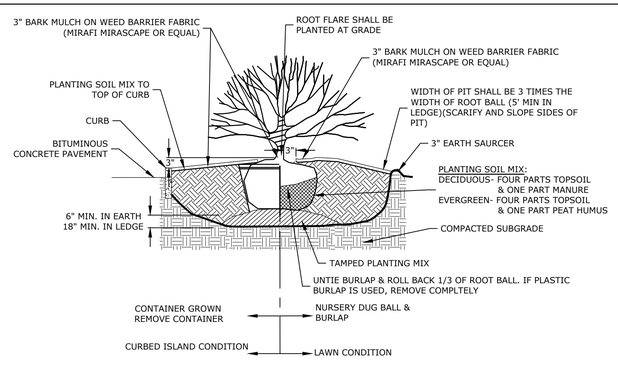
DECIDUOUS TREE PLANTING

NO SCALE



EVERGREEN TREE PLANTING

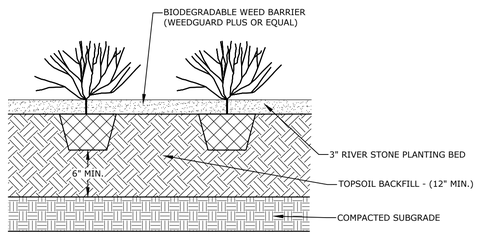
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NOTES:
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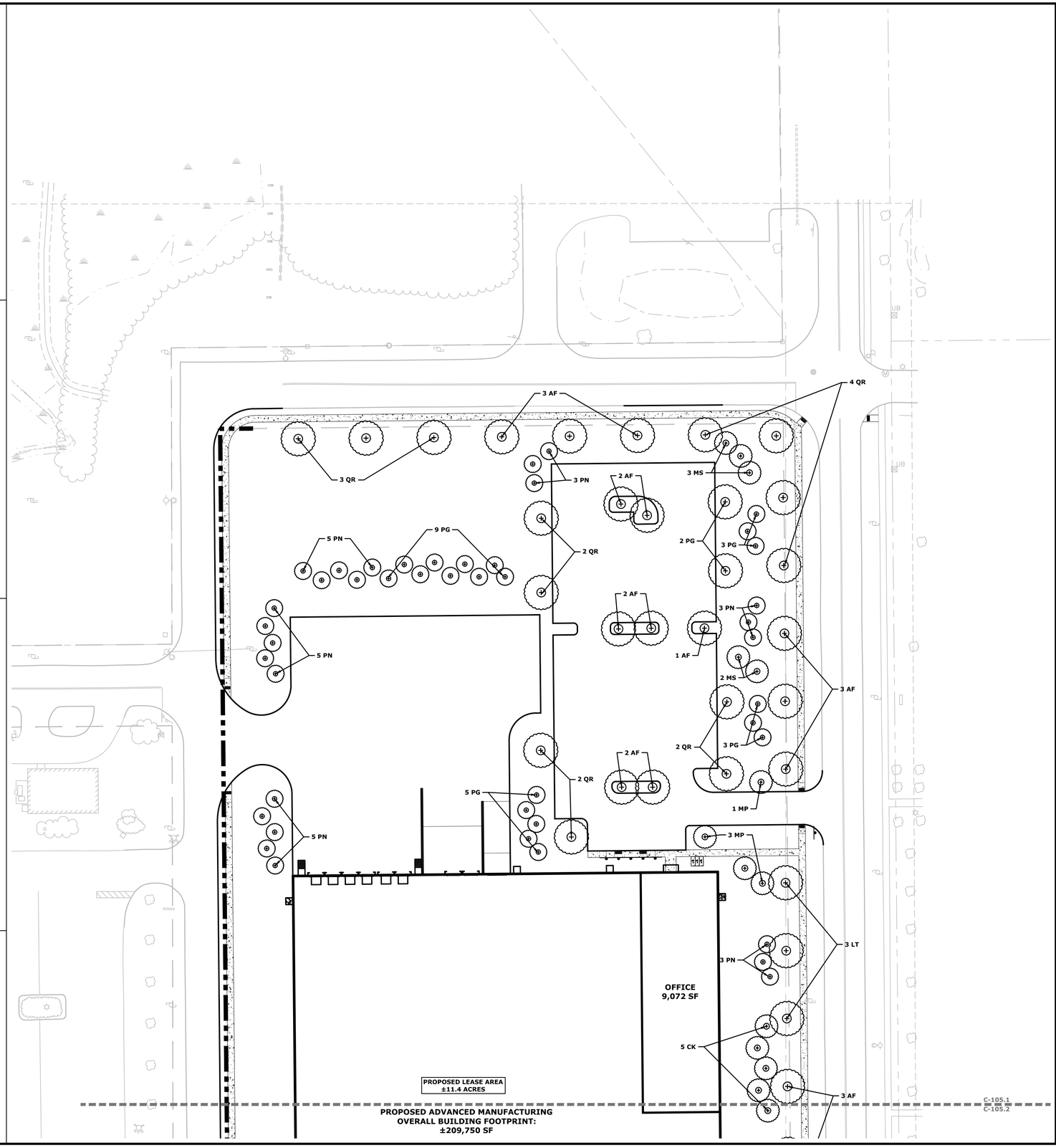
SHRUB PLANTING

NO SCALE



PERENNIAL PLANTING

NO SCALE



Tighe&Bond

N

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
12/19/22

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

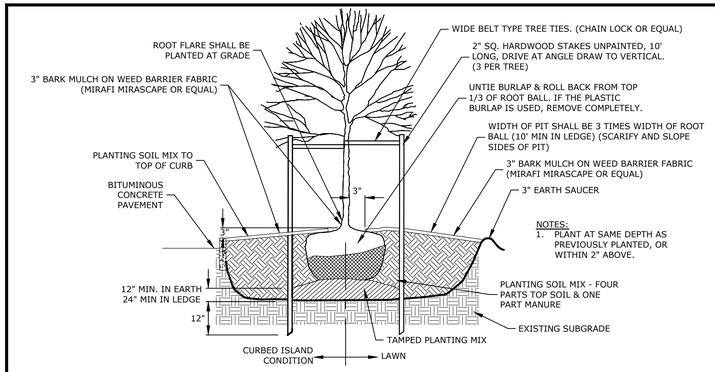
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DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

LANDSCAPE PLAN

SCALE: AS SHOWN

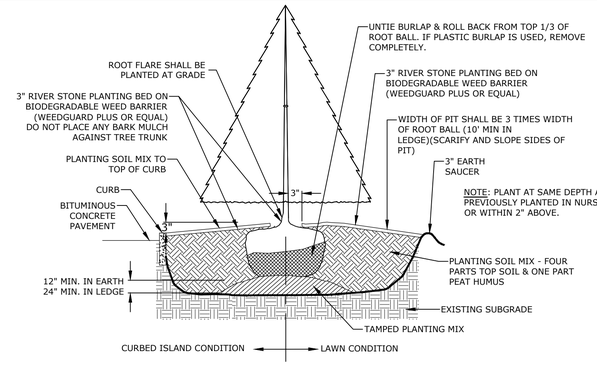
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Last Save Date: December 19, 2022 8:56 AM By: CML
Plot Date: December 19, 2022 8:57 AM By: Christian M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Land-1



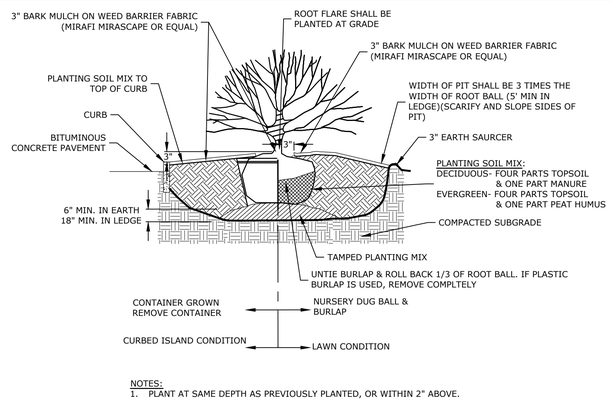
DECIDUOUS TREE PLANTING

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EVERGREEN TREE PLANTING

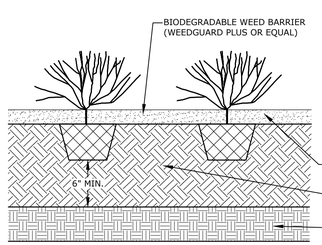
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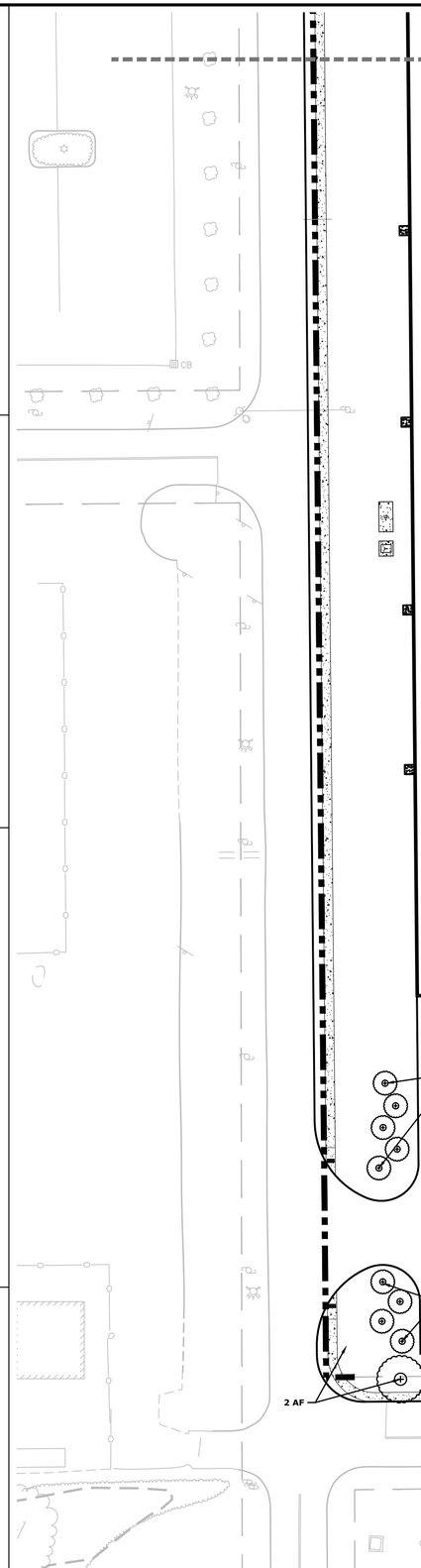
SHRUB PLANTING

NO SCALE



PERENNIAL PLANTING

NO SCALE



Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 12/19/22

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER – 12/19/22

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

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A	12/19/2022	TAC Submission

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DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

LANDSCAPE PLAN

SCALE: AS SHOWN

C-105.2

Last Save Date: December 19, 2022 8:56 AM By: CML
Plot Date: December 19, 2022 8:57 AM By: Craig M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Land-2

GENERAL PROJECT INFORMATION

PROJECT LESSOR:	PEASE DEVELOPMENT AUTHORITY 55 INTERNATIONAL DRIVE PORTSMOUTH, NH 03801
PROJECT APPLICANT:	AVIATION AVENUE GROUP, LLC 210 COMMERCE WAY, SUITE 300
PROJECT NAME:	PROPOSED ADVANCED MANUFACTURING FACILITY
PROJECT ADDRESS:	80 ROCHESTER AVE (100 NEW HAMPSHIRE AVE) PORTSMOUTH, NH 03801
PROJECT MAP / LOT:	MAP 308 / LOT 1
PROJECT LATITUDE:	43°04'49.9"N
PROJECT LONGITUDE:	70°48'33.6"W

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE CONSTRUCTION OR A NEW INDUSTRIAL WAREHOUSE ON A PREVIOUSLY DEVELOPED LOT THE WORK IS ANTICIPATED TO START IN SUMMER OF 2023, AND BE COMPLETED BY WINTER OF 2025.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 11.4 ACRES.

SOIL CHARACTERISTICS

BASED ON THE NRCS WEB SOIL SURVEY FOR ROCKINGHAM COUNTY - NEW HAMPSHIRE. THE SOILS ON SITE CONSIST OF URBAN LAND AS THE SITE HAS BEEN PREVIOUSLY DEVELOPED AND THE HYDROLOGIC SOIL GROUP RATING(S) IS ASSUMED TO BE "C".

NAME OF RECEIVING WATERS

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA OVERLAND FLOW TO A CLOSED DRAINAGE SYSTEM AND ULTIMATELY FLOWS TO NEWFIELDS DITCH.
(STATE WATERBODY ID: NHRIV600031001-10).

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CUT AND CLEAR TREES.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   - NEW CONSTRUCTION
   - CONTROL OF DUST
   - CONSTRUCTION OF ACCESS DRIVES
   - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR AND DISPOSE OF DEBRIS.
5. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
9. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
10. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
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.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
   E. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION, ITEM 304.2 HAVE BEEN INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. 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;
   B. 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;
   C. 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;
3. 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:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. 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 AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
6. 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 SILT FENCES, 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.

DUST CONTROL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

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.

OFF SITE VEHICLE TRACKING:

1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:

1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. PERMANENT MEASURES AND PLANTINGS:
   A. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
   B. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
   C. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
   D. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
   E. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
   F. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
   G. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
   H. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE	MINIMUM GERMINATION (%)	MINIMUM PURITY (%)
TALL FESCUE (*FESTUCA ARUNDINACEA)*	72 LBS/ACRE	85%	96%
SALTY ALKALI GRASS (*PUCCINELLIA TENUIFLORA)*	36 LBS/ACRE	85%	96%
RELIANT HARD FESCUE / CREEPING RED FESCUE	12 LBS/ACRE	85%	96%

   IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.
3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. 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:

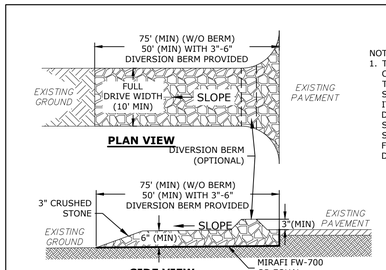
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:

1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL REGULATED MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE, ON AN IMPERVIOUS SURFACE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
      g. 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.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      b. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      c. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
         - ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
         - PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
         - SECURE FUEL STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
         - INSPECT FUEL STORAGE AREAS WEEKLY;
         - 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;
         - COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
         - 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.
         - 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.
         - FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT SHALL COMPLY WITH THE REGULATIONS OF THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES 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.
         HTTPS://WWW.DES.NH.GOV/ORGANIZATION/COMMISSIONER/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF
      b. FERTILIZERS:
         - FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
         - ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
         - STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
         - PAINTS;
         - ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
         - EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
         - EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

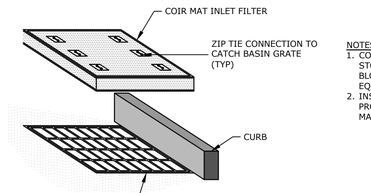
EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

1. THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES CONSTRUCTION GENERAL PERMIT (CGP), FILING OF AN NOTICE OF INTENT (NOI), AND THE PREPARATION OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
2. THE SWPPP SHALL BE PREPARED BY A QUALIFIED ENGINEER. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.
3. THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
   A. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY A QUALIFIED PERSON AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
   B. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
   C. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
   D. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.



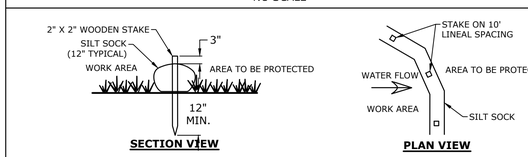
NOTES:
1. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABILIZED CONSTRUCTION EXIT
NO SCALE



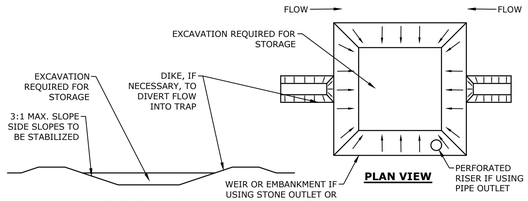
NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION BARRIER
NO SCALE

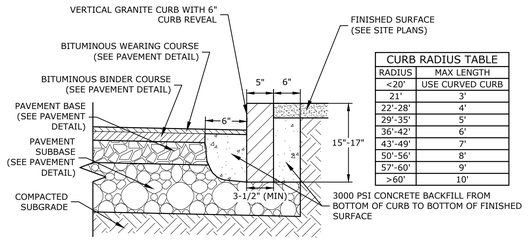


NOTES:
1. SILT SOCK SHALL BE SILT SOXX BY FILTREXX OR APPROVED EQUAL.
2. SILT SOCK SHALL BE FILLED WITH FILTERMEDIA BY FILTREXX OR APPROVED EQUAL.
3. WHERE TWO SILT SOCKS ARE JOINED, A MINIMUM OF 2 FEET OF OVERLAP SHALL BE MAINTAINED.
4. SILT SOCKS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

SILT SOCK
NO SCALE



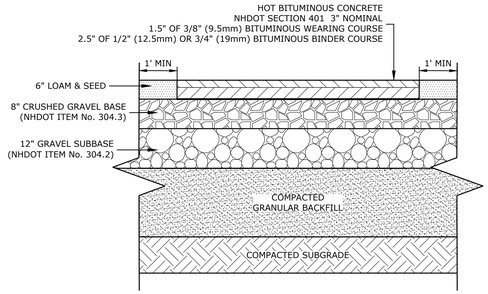
NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING AREA TO A SINGLE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. TRAP OUTLET



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

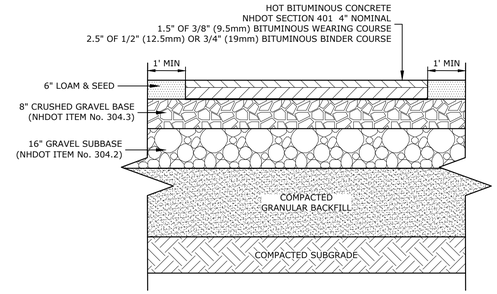
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

VERTICAL GRANITE CURB
NO SCALE



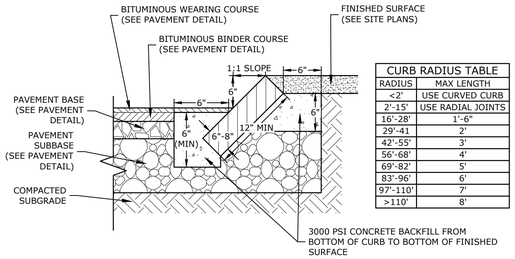
NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. FINAL PAVEMENT SECTION DESIGN SHALL BE APPROVED BY THE PROJECTS GEOTECHNICAL ENGINEER.

TYPICAL STANDARD DUTY PAVEMENT SECTION
NO SCALE



NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. FINAL PAVEMENT SECTION DESIGN SHALL BE APPROVED BY THE PROJECTS GEOTECHNICAL ENGINEER.

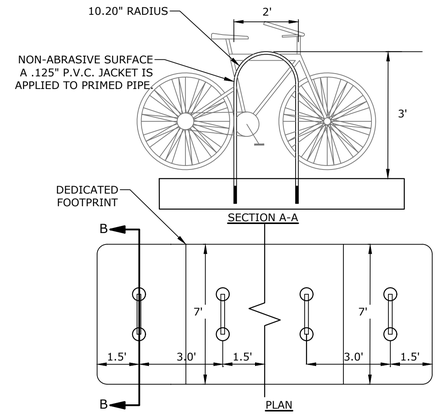
TYPICAL HEAVY DUTY PAVEMENT SECTION
NO SCALE



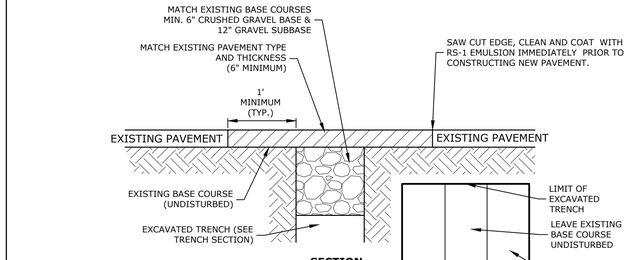
CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF SLOPED GRANITE CURB (SGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

SLOPED GRANITE CURB
NO SCALE

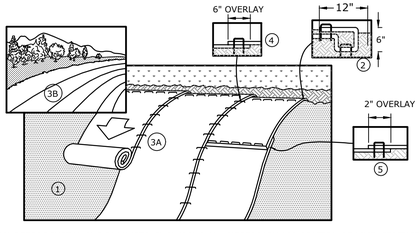


BIKE RACK
NO SCALE



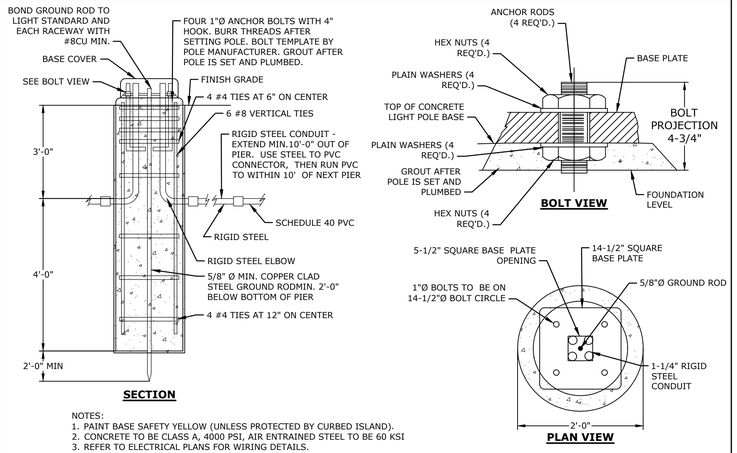
NOTE:
1. COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH
NO SCALE



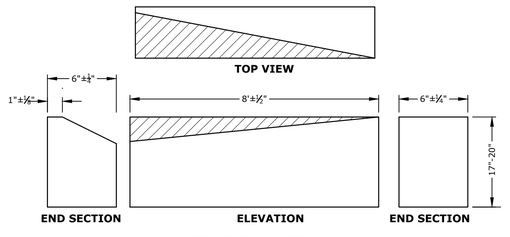
NOTES:
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES SPACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAPLES IN APPROPRIATE LOCATIONS AS SHOWN ON THE STAPLE PATTERN GUIDE.
4. STAPLE LENGTHS SHALL BE A MINIMUM OF 8 INCHES.
5. EROSION CONTROL BLANKET SHALL BE 'EAST COAST EROSION CONTROL ECC-2B™' OR APPROVED EQUAL.

STABILIZATION BLANKET
NO SCALE



NOTES:
1. PAINT BASE SAFETY YELLOW (UNLESS PROTECTED BY CURBED ISLAND).
2. CONCRETE TO BE CLASS A, 4000 PSI, AIR ENTRAINED STEEL TO BE 60 KSI
3. REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.

TYPICAL LIGHT POLE BASE
NO SCALE



TRANSITION SECTION
GRANITE SLOPE CURB TO VERTICAL GRANITE CURB

NOTES:
1. THE INTENT OF THIS ITEM IS TO PROVIDE A SMOOTH TRANSITION BETWEEN STRAIGHT GRANITE CURB AND SLOPE CURB WITHOUT REQUIRING FIELD CHIPPING DURING INSTALLATION. THE SLOPE CURB MAY REQUIRE ADJUSTMENTS TO MEET THE TRANSITION PIECE HEIGHT. TRANSITION SLOPE CURB TO STANDARD REVEAL AS QUICKLY AS POSSIBLE TO PROVIDE FOR THIS SMOOTH TRANSITION.

CURB TRANSITION
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
12/19/22

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

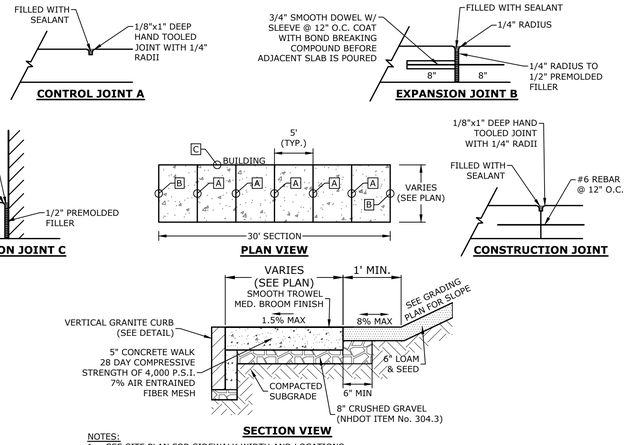
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DATE:	12/19/2022
FILE:	P0595-015_DETAILS.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

DETAILS SHEET

SCALE: AS SHOWN

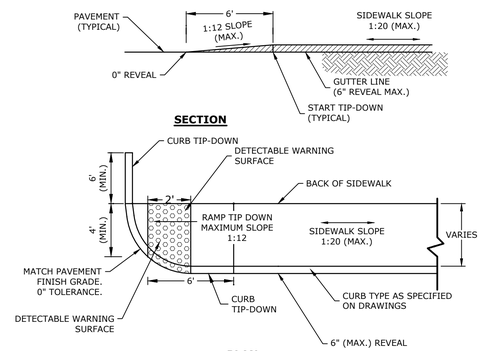
C-502

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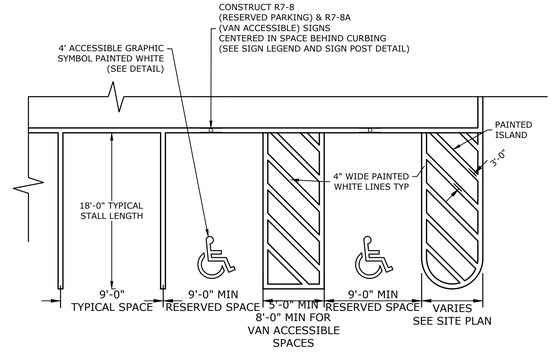
NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH AND LOCATIONS.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDE SLOPE GRADES.
3. ISOLATION JOINTS ADJACENT TO BUILDING SHALL BE COORDINATED WITH BUILDING DRAWINGS.

CONCRETE SIDEWALK WITH GRANITE CURB
NO SCALE



NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. PROVIDE 8" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
3. DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

CONCRETE SIDEWALK TIP-DOWN RAMP WITH DETECTABLE WARNING PANEL
NO SCALE



NOTE:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

PARKING SPACE STRIPING
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
12/19/22

NOTE:
STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

CROSSWALK STRIPING
NO SCALE

NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. A 8" COMPACTED CRUSHED GRAVEL BASE (NHDOT ITEM No. 304.3) SHALL BE PROVIDED BENEATH RAMPS.
3. DETECTABLE WARNING PANEL SHALL BE CAST IRON WITH BLACK COATING

CONCRETE SIDEWALK TIP-DOWN RAMP WITH DETECTABLE WARNING PANEL
NO SCALE

NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

ACCESSIBLE SYMBOL
NO SCALE

NOTE:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

STOP BAR & LEGEND
NO SCALE

NOTE:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF PORTSMOUTH.

TYPICAL GAS TRENCH
NO SCALE

NOTES:
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

CAST IRON DETECTABLE WARNING SURFACE
NO SCALE

SIGN LEGEND & POST
NO SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

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CHECKED:	NAH
APPROVED:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-503

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File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Details.DWG Layout Tab: C-503

JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION

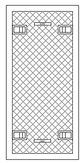
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-0"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	7.84	5.88	3.92	2.16
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

SITE SPECIFIC DATA REQUIREMENTS

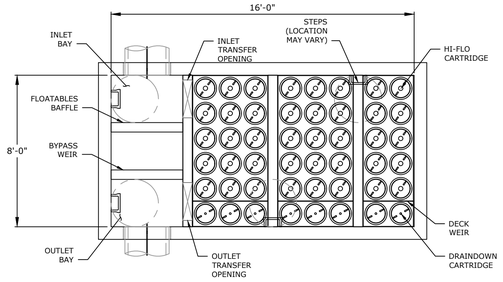
STRUCTURE ID	JFPD0816
WATER QUALITY FLOW RATE (cfs)	7.46
PEAK FLOW RATE (cfs)	23.8
RETURN PERIOD OF PEAK FLOW (yrs)	50
# OF CARTRIDGES REQUIRED (HF / DD)	(40/8)
CARTRIDGE LENGTH	54"



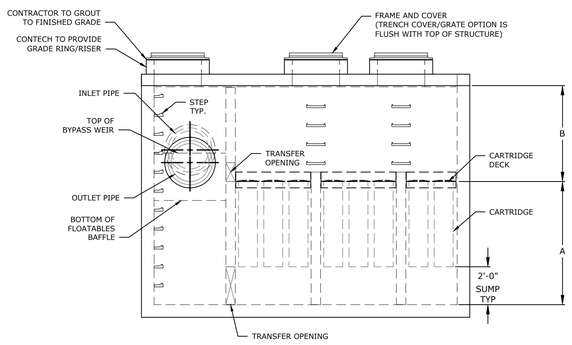
FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



24" TRENCH COVER
(LENGTH VARIES)
N.T.S.



PLAN VIEW

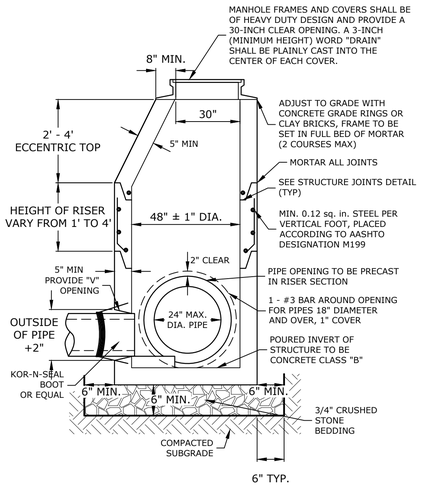


ELEVATION VIEW

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' - 10', 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-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

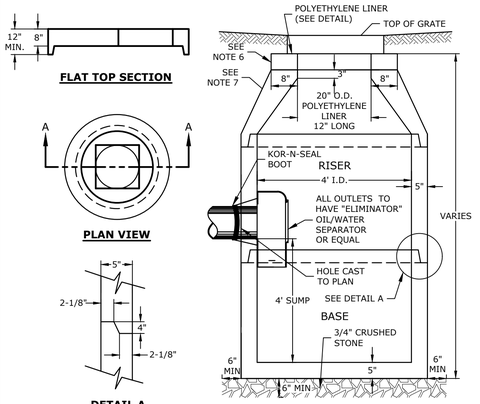
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. 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.

JELLYFISH (JFPD0816) TREATMENT UNIT
NO SCALE



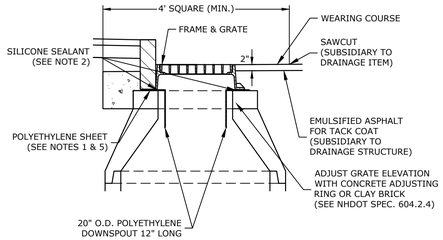
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

4' DIAMETER DRAIN MANHOLE
NO SCALE

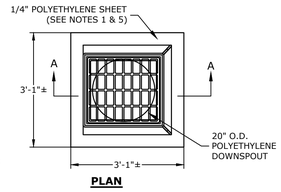


NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCH BASIN
NO SCALE



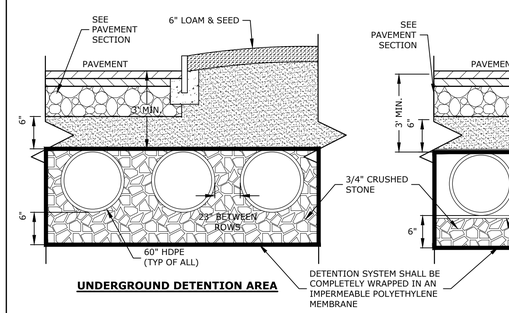
SECTION A-A



PLAN

NOTES:
1. POLYETHYLENE LINER (ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
2. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (SUBSIDIARY TO ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET.
3. PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF THE GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).
4. USE ON DRAINAGE STRUCTURES 4' MIN. DIAMETER ONLY.
5. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).
6. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.
7. PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT.
8. SEE NHDOT DR-04, "DI-DB, UNDERDRAIN FLUSHING BASIN AND POLYETHYLENE LINER DETAILS", FOR ADDITIONAL INFORMATION.
9. CATCHBASINS WITHIN CITY RIGHT OF WAY SHALL HAVE A POLYETHYLENE LINER

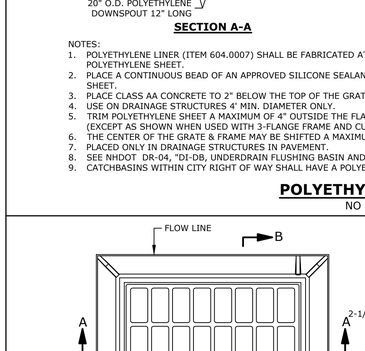
POLYETHYLENE LINER
NO SCALE



FIELD ELEVATIONS				
	TOP OF STONE ELEV	TOP OF PIPE ELEV	BOTTOM OF PIPE ELEV	BOTTOM OF STONE ELEV
PUD-01	50.50'	50.50'	45.00'	44.50'

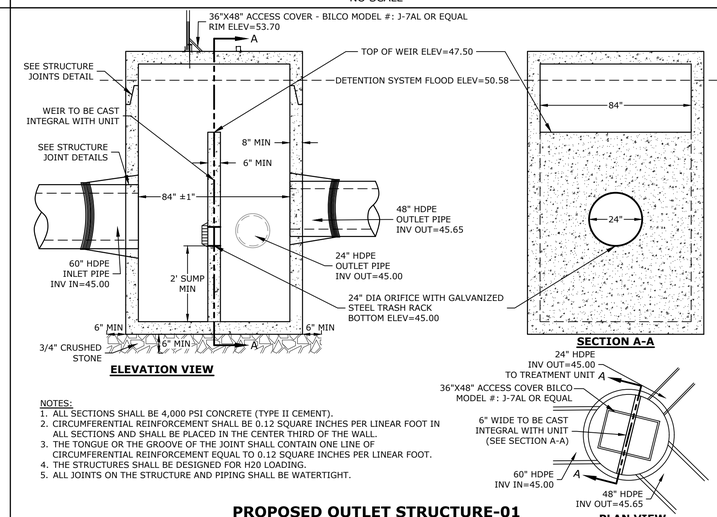
NOTES:
1. UNDERGROUND DETENTION SYSTEM TO BE 60" HDPE PIPE DESIGNED FOR H-20 LOADING. CONTRACTOR TO SUBMIT PIPE SPECIFICATIONS AND FINAL MANUFACTURES DESIGN TO ENGINEER FOR APPROVAL.
2. MANUFACTURER TO SUBMIT PLANS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
3. THE DESIGN ENGINEER SHALL PROVIDE SUFFICIENT INSPECTION TO CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED PER THE APPROVED DESIGN PLAN.

UNDERGROUND DETENTION SYSTEM
NO SCALE



NOTES:
1. ALL DIMENSIONS ARE NOMINAL
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   2.1. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   2.2. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   2.3. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. FRAME AVAILABLE IN 4" OR 8" HEIGHTS
4. FREE OPEN AREA = 2.55 SQ. FT.
5. USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.

CATCH BASIN FRAME & GRATE
NO SCALE



NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

PROPOSED OUTLET STRUCTURE-01
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
12/19/22

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

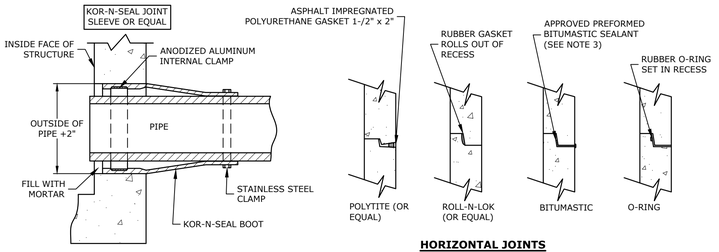
PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DETAILS.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-504

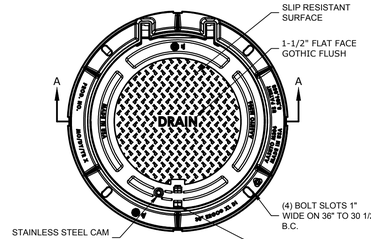
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T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Details.DWG Layout Tab: C-504

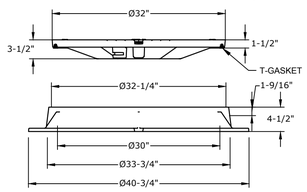


PIPE JOINTS | **HORIZONTAL JOINTS**

NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

STRUCTURE JOINTS
NO SCALE

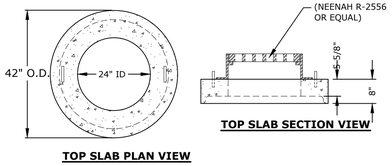




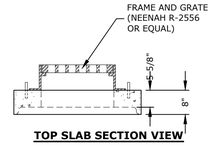
SECTION A-A

NOTES:
1. MANHOLE FRAME AND COVER SHALL BE 32" HINGED ERGO XL BY EJ CO.
2. ALL DIMENSIONS ARE NOMINAL.
3. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
4. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN HE CENTER OF THE COVER.

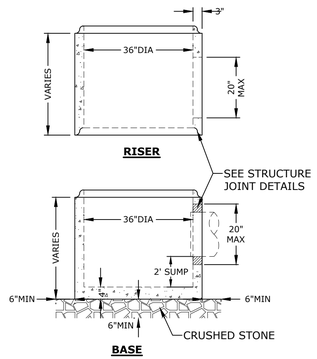
DRAIN MANHOLE FRAME & COVER
NO SCALE



TOP SLAB PLAN VIEW

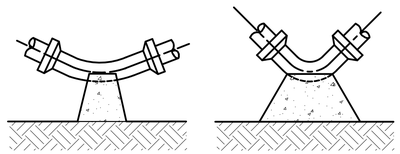


TOP SLAB SECTION VIEW

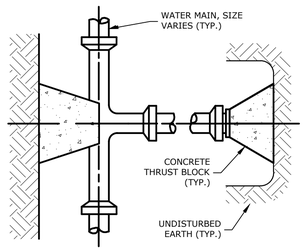


NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
3. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.
4. PRECAST CONCRETE YARD DRAINS SHALL BE PHOENIX PRECAST PRODUCTS OR EQUAL.

YARD DRAIN
NO SCALE

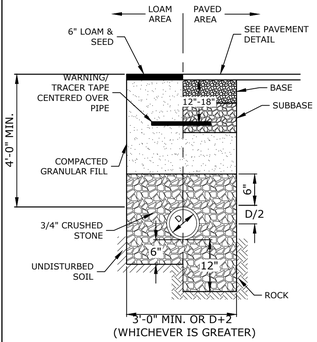


TEST PRESSURE = 200psi	SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
	REACTION TYPE	PIPE SIZE				
		4"	6"	8"	10"	12"
	A 90°	0.89	2.19	3.82	11.14	17.24
	B 180°	0.65	1.55	2.78	8.38	12.00
	C 45°	0.48	1.19	2.12	6.02	9.32
	D 22-1/2°	0.25	0.60	1.06	3.08	4.74
	E 11-1/4°	0.13	0.30	0.54	1.54	2.38



NOTES:
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE WITH CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.

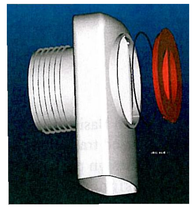
THRUST BLOCKING
NO SCALE



(WHICHEVER IS GREATER)

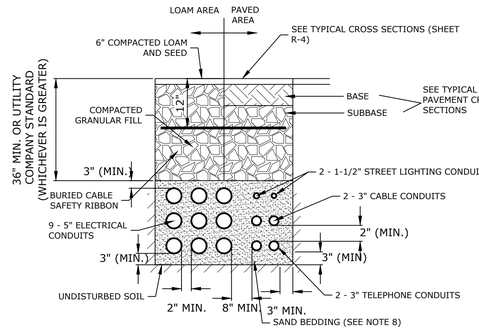
NOTE:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

STORM DRAIN TRENCH
NO SCALE



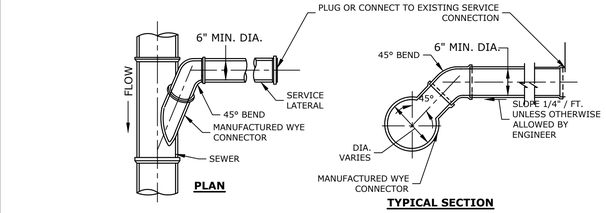
NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

"ELIMINATOR" OIL FLOATING DEBRIS TRAP
NO SCALE

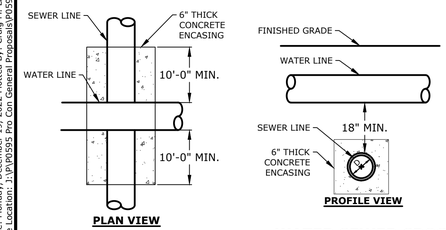


NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.

TYPICAL ELECTRICAL AND COMMUNICATION CONDUIT
NO SCALE

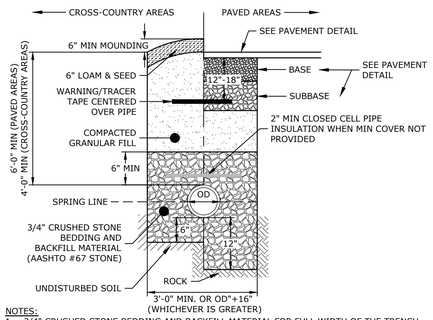


STANDARD SERVICE LATERAL CONNECTION
NO SCALE



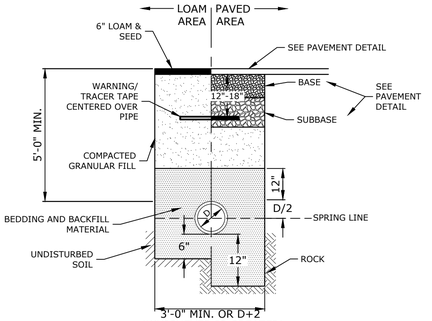
NOTES:
1. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED FROM ANY EXISTING OR PROPOSED WATER LINE.
2. AN 18" MINIMUM EDGE TO EDGE VERTICAL SEPARATION SHALL BE PROVIDED, WITH WATER ABOVE SEWER, AT ALL CROSSINGS.
3. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.
4. WHERE AN 18" VERTICAL SEPARATION CANNOT BE PROVIDED, SEWER PIPE SHALL BE CONSTRUCTED USING A SDR 26 PVC PIPE OR ENCASED CONCRETE FOR A MINIMUM DISTANCE OF 10 FEET ON BOTH SIDES OF THE LINE BEING CROSSED, AS SHOWN ABOVE.
5. CROSSINGS SHALL CONFORM TO THE CITY PORTSMOUTH DPW STANDARDS AND SPECIFICATIONS.

WATER SEWER CROSSING
NO SCALE



NOTES:
1. 3/4" CRUSHED STONE BEDDING AND BACKFILL MATERIAL FOR FULL WIDTH OF THE TRENCH FROM MINIMUM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO MINIMUM OF 6" OVER THE TOP OF THE PIPE.
2. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

TYPICAL SEWER TRENCH
NO SCALE



NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. WATER MAIN SHALL BE INSTALLED PER CITY OF PORTSMOUTH STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

TYPICAL WATER TRENCH
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
12/19/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
12/19/22

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

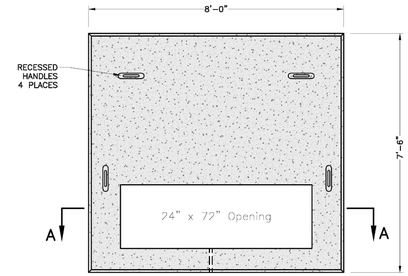
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DATE:	12/19/2022
FILE:	P0595-015_DETAILS.DWG
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CHECKED:	NAH
APPROVED:	PMC

DETAILS SHEET

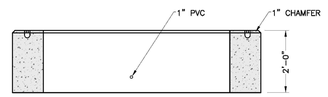
SCALE: AS SHOWN

C-505

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PLAN

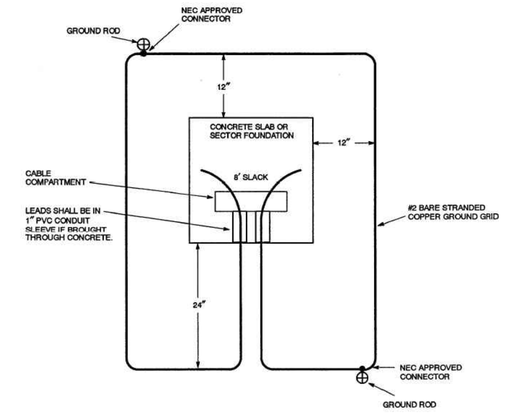


SECTION A-A

NOTES:
1. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
2. CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
3. STEEL REINFORCEMENT - ASTM A615, GRADE 60
4. PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS

TYPICAL 3-PHASE TRANSFORMER PAD

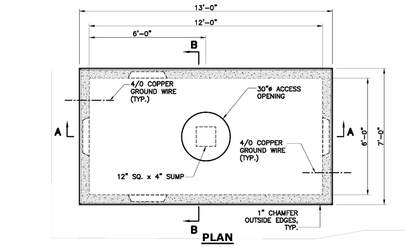
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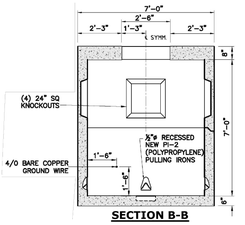
NOTES:
1. THE GROUND GRID SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AND IS TO BE BURIED AT LEAST 12 INCHES BELOW GRADE. EIGHT FEET OF EXTRA WIRE FOR EACH GROUND GRID LEG SHALL BE LEFT EXPOSED IN THE CABLE COMPARTMENT TO ALLOW FOR THE CONNECTION TO THE TRANSFORMER. THE TWO 8-FOOT GROUND RODS MAY BE EITHER GALVANIZED STEEL OR COPPERWELD AND THEY SHALL BE CONNECTED TO THE GRID WITH NEC APPROVED CONNECTORS.

TYPICAL PAD-MOUNTED EQUIPMENT GROUNDING GRID DETAIL

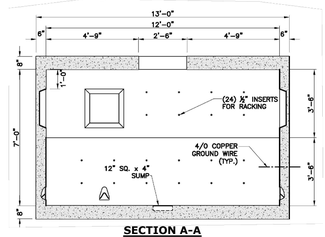
NO SCALE



PLAN



SECTION B-B



SECTION A-A

NOTE:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. ALL REINFORCEMENT PERASTM A615, GRADE 60, 1" MINIMUM COVER.
3. DESIGNED FOR HS20-44 LOADING.
4. EXTERIOR COATING PROVIDED.
5. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION.

TYPICAL ELECTRIC MANHOLE

NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 12/19/22

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER – 12/19/22

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

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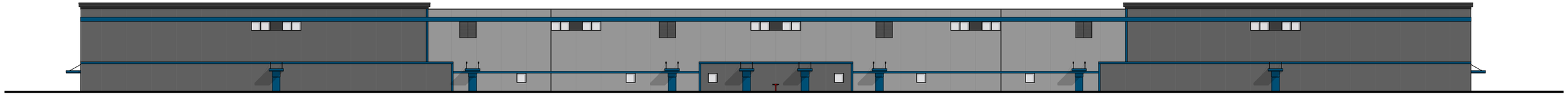
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C-506

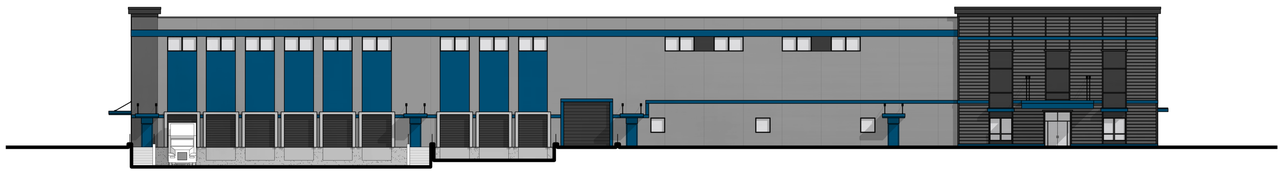
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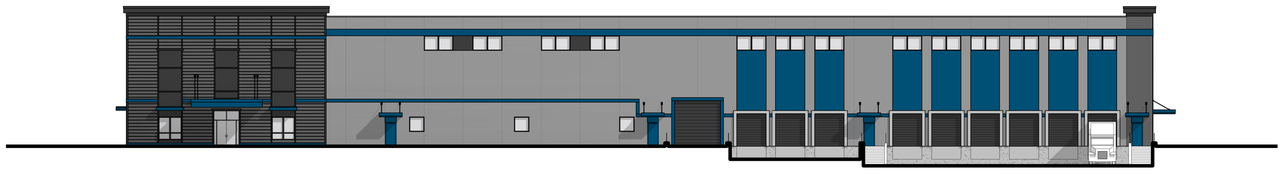
1 NEW HAMPSHIRE AVENUE ELEVATION
3/64" = 1'-0"



2 ROCHESTER AVENUE ELEVATION
3/64" = 1'-0"



3 NEWFIELDS AVENUE ELEVATION
3/64" = 1'-0"



4 STRATHAM STREET ELEVATION
3/64" = 1'-0"

PROCON
CONNECT • CREATE • CONSTRUCT

Scale: 3/64" = 1'-0"

PROPOSED EXTERIOR ELEVATIONS

Project
ADVANCED MANUFACTURING
100 NEW HAMPSHIRE AVE
PORTSMOUTH, NH

Date
12/12/2022

Dwg. No.
A1



Page 1 of 1

100 NH Ave Portsmouth
Photometrics Alt 2

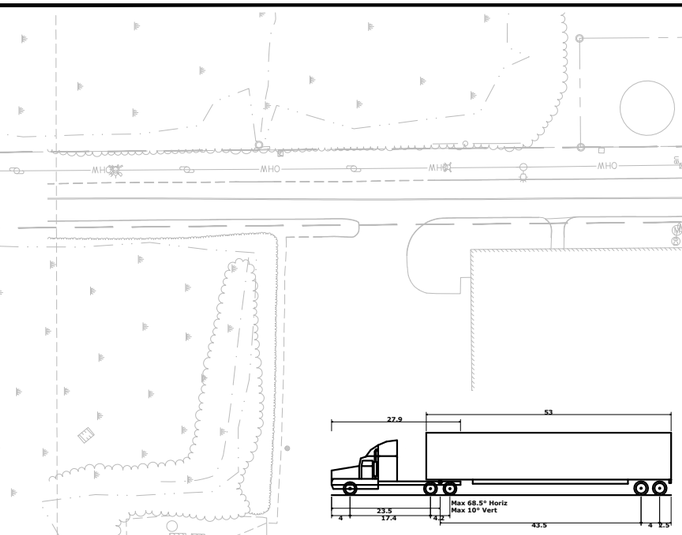
Drawn By: Daniel Hebert
Checked By:
Date:12/16/2022

Scale:

Revisions

#	Date	Comments

Post Office Box 4550
Manchester, NH 03108
t.603.624.4827 f.603.624.9765
www.charroninc.com
CHARRON



WB-67 - Interstate Semi-Trailer

Overall Length	**73.501ft**
Overall Width	**8.500ft**
Overall Body Height	**13.500ft**
Min Body Ground Clearance	**1.334ft**
Max Track Width	**8.500ft**
Lock-to-lock time	**6.00s**
Max Steering Angle (Virtual)	**28.40°**

AVIATION AVENUE

LEE STREET

TH=58.8'

ROCHESTER AVENUE

NEWFIELDS STREET

STRATHAM STREET

NEW HAMPSHIRE AVENUE

PROPOSED LEASE AREA
±11.4 ACRES

PROPOSED ADVANCED MANUFACTURING
OVERALL BUILDING FOOTPRINT:
±209,750 SF

314'

668'

OFFICE
9,072 SF

OFFICE
9,072 SF

Tighe&Bond

N

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

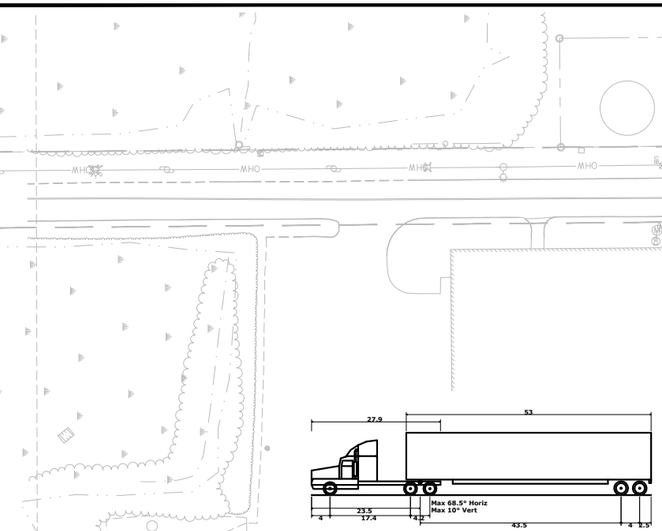
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CHECKED:	NAH
APPROVED:	PMC

WB-67 TRUCK ENTERING TURNING EXHIBIT

SCALE: AS SHOWN

1 OF 3

Last Save Date: December 15, 2022 2:14 PM By: CML
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WB-67 - Interstate Semi-Trailer

Overall Length	**73.501ft**
Overall Width	**8.500ft**
Overall Body Height	**13.500ft**
Min Body Ground Clearance	**1.334ft**
Max Track Width	**8.500ft**
Lock-to-lock time	**6.00s**
Max Steering Angle (Virtual)	**28.40°**

Tighe&Bond

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
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CHECKED:	NAH
APPROVED:	PMC

WB-67 TRUCK EXITING TURNING EXHIBIT

SCALE: AS SHOWN

2 OF 3

Last Save Date: December 15, 2022 2:14 PM By: CML
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AVIATION AVENUE

LEE STREET

ROCHESTER AVENUE

NEWFIELDS STREET

STRATHAM STREET

NEW HAMPSHIRE AVENUE

TH=58.8'

47.83

8.16 20.8 6

PROPOSED LEASE AREA
±11.4 ACRES

Portsmouth Fire Truck

Overall Length	47.830ft
Overall Width	8.500ft
Overall Body Height	10.432ft
Min Body Ground Clearance	0.862ft
Track Width	8.000ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	38.00°

PROPOSED ADVANCED MANUFACTURING
OVERALL BUILDING FOOTPRINT:
±209,750 SF

314'

668'

OFFICE
9,072 SF

OFFICE
9,072 SF

Tighe&Bond

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

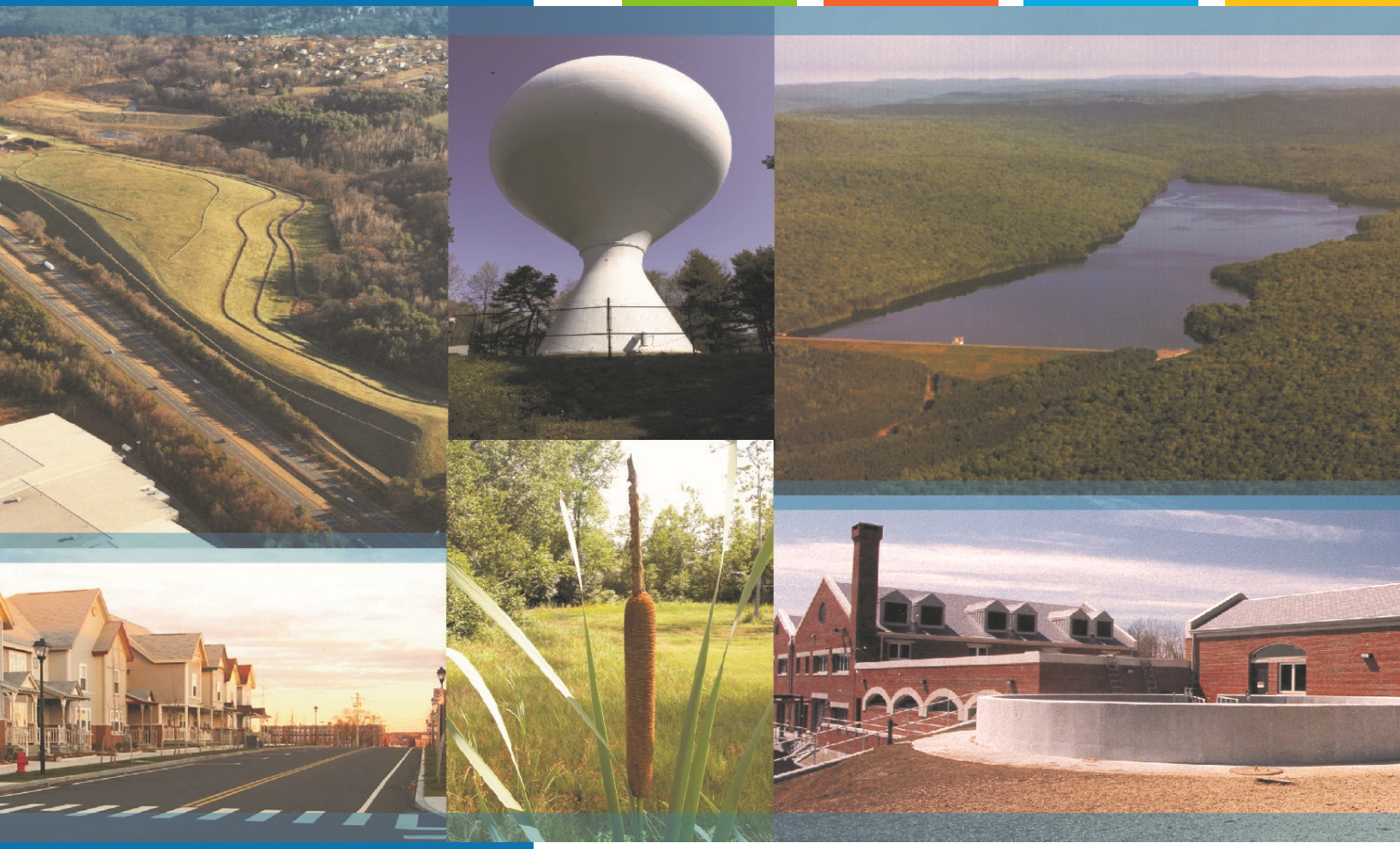
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DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

FIRE TRUCK TURNING EXHIBIT

SCALE: AS SHOWN

3 OF 3

Last Save Date: December 15, 2022 2:14 PM By: CML
Plot Date: Thursday, December 15, 2022 2:14 PM By: Craig M. Langton
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Proposed Advanced Manufacturing Facility

Portsmouth, NH

Drainage Analysis

Prepared For:

Aviation Avenue Group, LLC
210 Commerce Way Suite 300
Portsmouth, NH 03801

December 19, 2022



100% Recyclable

Section 1 Drainage Analysis

1.1 Calculation Methods....1-1
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Appendices

A Civil Plans (Bound Separately)
B Extreme Precipitation Tables
C Contech Engineered Solutions – Jellyfish Filter Maintenance Guide
D Remediation Site Documentation
E BMP Worksheets
F NRCS Web Soil Survey

J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Report_Evaluation\Drainage Report\P0595-015_Drainage Analysis.docx

Section 1
Drainage Analysis

The project site is identified as Map 308 Lot 1 on the City of Portsmouth Tax Maps. The site is located on a piece of land that is bound by Stratham Street to the north, New Hampshire Avenue to the east, Newfields Street to the south, and Rochester Avenue to the west. The proposed project is for the construction of a ±209,750 SF advanced manufacturing facility including ±18,145 SF of office space, two (2) parking areas, two (2) loading dock areas, minor realignment of a portion of Rochester Avenue, and associated site improvements consisting of underground utilities, landscaping, lighting, and a stormwater management system. There is approximately 196,665 SF of existing impervious area that is currently untreated before entering the municipal drainage system. The proposed stormwater management system has been designed to provide treatment for the existing impervious surface that are currently untreated and for ±161,130 SF of additional impervious that results from the proposed project.

The Stormwater Management System was designed in accordance with the requirements of the New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) rules and regulations (Env-Wq 1500). The system includes deep sump catch basins with oil water separator hoods, an underground detention system and a proprietary Jellyfish Filter Treatment Unit. The use of a proprietary treatment unit is proposed due to the site being located within multiple remediation areas as well a Groundwater Management Zone (GMZ), and per the requirements of Env-Wq 1507.02 (c) no infiltration, filtering, or groundwater recharge practices are permitted in these areas.

1.1 Calculation Methods

The design storms analyzed in this study are the 1-year, 2-year, 10-year, 25-year and 50-year 24-hour Type III duration storm events. The stormwater modeling system, HydroCAD 10.0 was utilized to predict the peak runoff rates from these storm events. A Type III storm pattern was used in the model. The rainfall data for these storm events was obtained from the data published by the Northeast Regional Climate Center (NRCC) at Cornell University, with an additional 15% added factor of safety as required by Env-Wq 1503.08(l) and shown in Table 1.1.

TABLE 1.1 – EXTREME PRECIPITATION ESTIMATES (NRCC)

YEAR	24-hr Estimate (inches)	+ 15% (inches)
1	2.66	3.06
2	3.21	3.69
10	4.87	5.60
25	6.17	7.10
50	7.40	8.51

The time of concentration was computed using the TR-55 Method, which provides a means of determining the time for an entire watershed to contribute runoff to a specific location via sheet flows, shallow concentrated flow, and channel flow. Runoff curve numbers were

calculated by estimating the coverage areas and then summing the curve number for the coverage area as a percent of the entire watershed.

References:

1. HydroCAD Stormwater Modeling System, by HydroCAD Software Solutions LLC, Chocorua, New Hampshire.

2. New Hampshire Stormwater Management Manual, Volume 2, Post-Construction Best Management Practices Selection and Design, December 2008.

3. "Extreme Precipitation in New York & New England." Extreme Precipitation in New York & New England by Northeast Regional Climate Center (NRCC), 26 June 2012.

1.2 Pre-Development Conditions

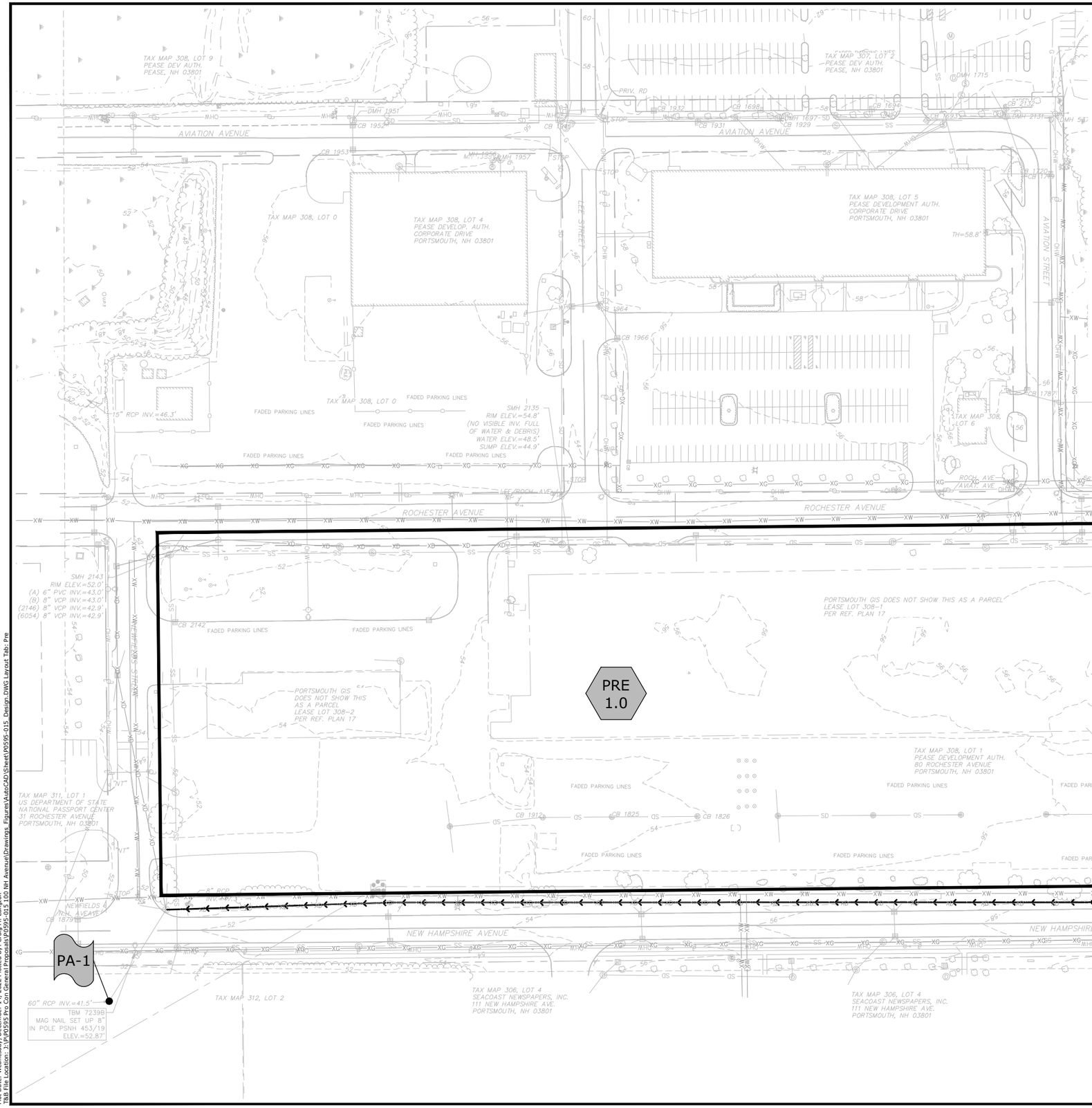
To analyze the Pre-Development condition, the site has been modeled utilizing one (1) sub-catchment area (PRE-1.0) with the distinct point of analysis (PA-1). This point of analysis and watershed are depicted on the plan entitled "Pre-Development Watershed Plan", Sheet C-801.

The point of analysis and their contributing watershed area is described below:

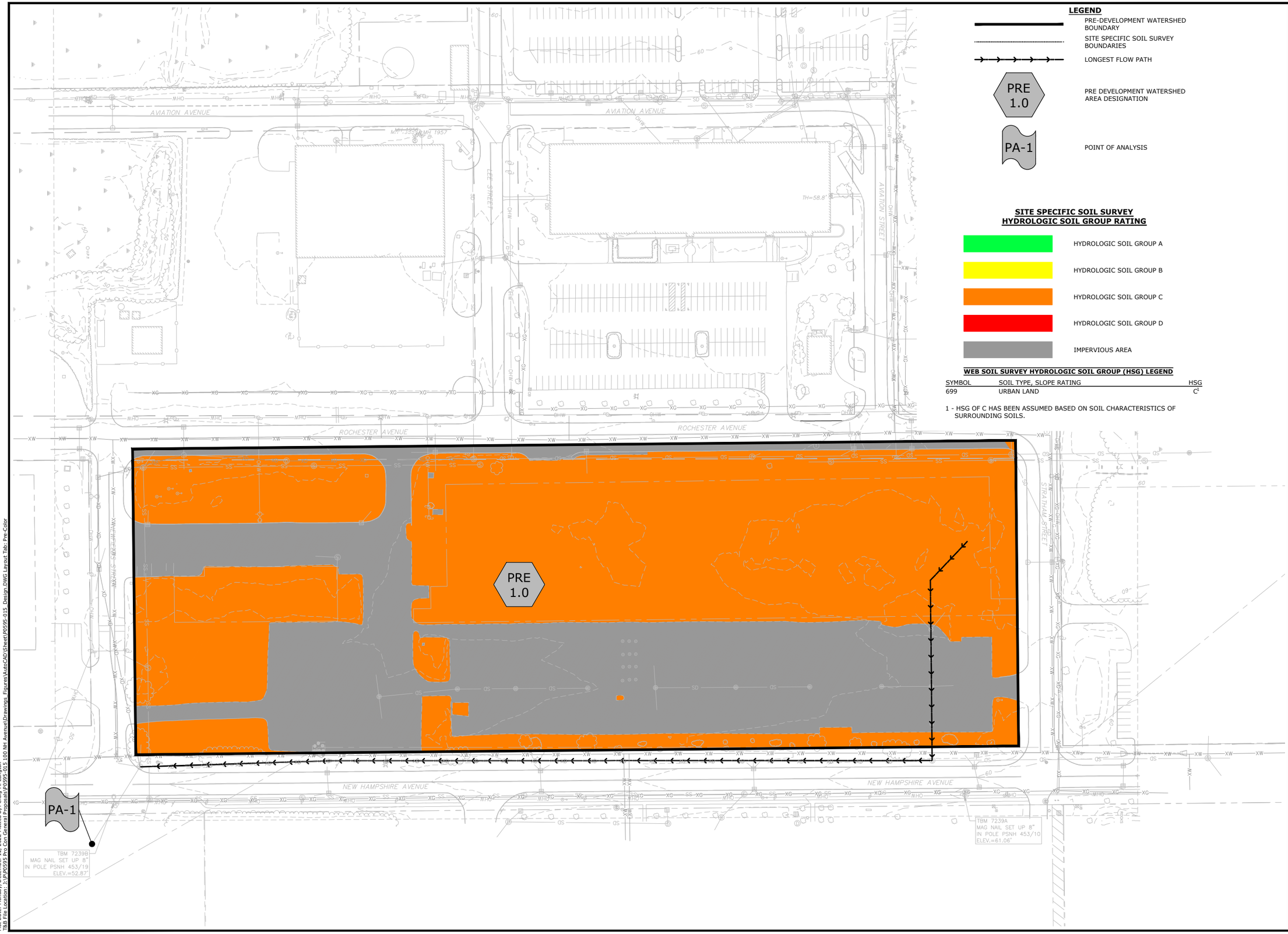
Point of Analysis One (PA-1)

Point of analysis PA-1 is comprised of one (1) watershed area (PRE-1.0). This area includes the land that is currently utilized as an abandoned parking lot along with a grassed area. Runoff from this area travels southwest to northeast across the site via overland flow which is then collected in a closed drainage system then flowing through Point of Analysis 1 (PA-1).

1.2.1 Pre-Development Watershed Plan


PRE 1.0
PA-1
AVIATION AVENUE
ROCHESTER AVENUE
NEW HAMPSHIRE AVENUE
LEE STREET
AVIATION STREET
STRAWBERRY BANK
TAX MAP 308, LOT 9
PEASE DEV AUTH.
PEASE, NH 03801
TAX MAP 308, LOT 0
TAX MAP 308, LOT 4
PEASE DEVELOP. AUTH.
CORPORATE DRIVE
PORTSMOUTH, NH 03801
TAX MAP 307, LOT 2
PEASE DEV AUTH.
PEASE, NH 03801
TAX MAP 308, LOT 5
PEASE DEVELOPMENT AUTH.
CORPORATE DRIVE
PORTSMOUTH, NH 03801
TH=58.8'
TAX MAP 308, LOT 6
FADED PARKING LINES
SMH 2135
RIM ELEV.=54.8'
(NO VISIBLE INV. FULL
OF WATER & DEBRIS)
WATER ELEV.=48.5'
SUMP ELEV.=44.9'
15" RCP INV.=46.3'
18" RCP INV.=51.6'
PORTSMOUTH GIS DOES NOT SHOW THIS AS A PARCEL
LEASE LOT 308-1
PER REF. PLAN 17
PORTSMOUTH GIS
DOES NOT SHOW THIS
AS A PARCEL
LEASE LOT 308-2
PER REF. PLAN 17
SMH 2143
RIM ELEV.=52.0'
(A) 6" PVC INV.=43.0'
(B) 8" VCP INV.=43.0'
(2146) 8" VCP INV.=42.9'
(6054) 8" VCP INV.=42.9'
TAX MAP 308, LOT 1
PEASE DEVELOPMENT AUTH.
80 ROCHESTER AVENUE
PORTSMOUTH, NH 03801
TAX MAP 311, LOT 1
US DEPARTMENT OF STATE
NATIONAL PASSPORT CENTER
31 ROCHESTER AVENUE
PORTSMOUTH, NH 03801
TAX MAP 307, LOT 1
CINTHESYS REAL ESTATE
68 NEW HAMPSHIRE AVE.
PORTSMOUTH, NH 03801
TAX MAP 312, LOT 2
TAX MAP 306, LOT 4
SEACOAST NEWSPAPERS, INC.
111 NEW HAMPSHIRE AVE.
PORTSMOUTH, NH 03801
TAX MAP 306, LOTS 0003-***
(MULTIPLE PARCELS,
NAMES, AND ADDRESSES)
PORTSMOUTH, NH 03801
60" RCP INV.=41.5'
TBM 7239B
MAG NAIL SET UP 8"
IN POLE PSNH 453/19
ELEV.=52.87'
TBM 7239A
MAG NAIL SET UP 8"
IN POLE PSNH 453/10
ELEV.=61.06'
56"-8" PVC INV.=55.8'
12" RCP W/FES
INV.=59.1'
12" RCP W/FES INV.=59.5'
8" RCP
INV.=47.1'
(NEWFIELDS &
NH AVE.)
CB 1870
BUS STOP
CB 1912
CB 1825
CB 1826
CB 1832
CB 1831
CB 1964
CB 1966
CB 1781
CB 1952
CB 1953
CB 1932
CB 1931
CB 1698
CB 1694
CB 1929
CB 1693
CB 1772
CB 2132
CB 2142
DMH 1951
DMH 1715
DMH 1697-SD
DMH 2131
MH 1956
MH 1957
SMH 1958
SMH 1959
SMH 1960
SMH 1961
SMH 1962
SMH 1963
SMH 1965
SMH 1967
SMH 1968
SMH 1969
SMH 1970
SMH 1971
SMH 1972
SMH 1973
SMH 1974
SMH 1975
SMH 1976
SMH 1977
SMH 1978
SMH 1979
SMH 1980
SMH 1981
SMH 1982
SMH 1983
SMH 1984
SMH 1985
SMH 1986
SMH

1.2.2 Pre-Development Soil Plan



LEGEND

- PRE-DEVELOPMENT WATERSHED BOUNDARY
- SITE SPECIFIC SOIL SURVEY BOUNDARIES
- LONGEST FLOW PATH
- PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- PA-1 — POINT OF ANALYSIS

SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP RATING

- HYDROLOGIC SOIL GROUP A
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- IMPERVIOUS AREA

WEB SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE, SLOPE RATING	HSG
699	URBAN LAND	C[1]

1 - HSG OF C HAS BEEN ASSUMED BASED ON SOIL CHARACTERISTICS OF SURROUNDING SOILS.

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

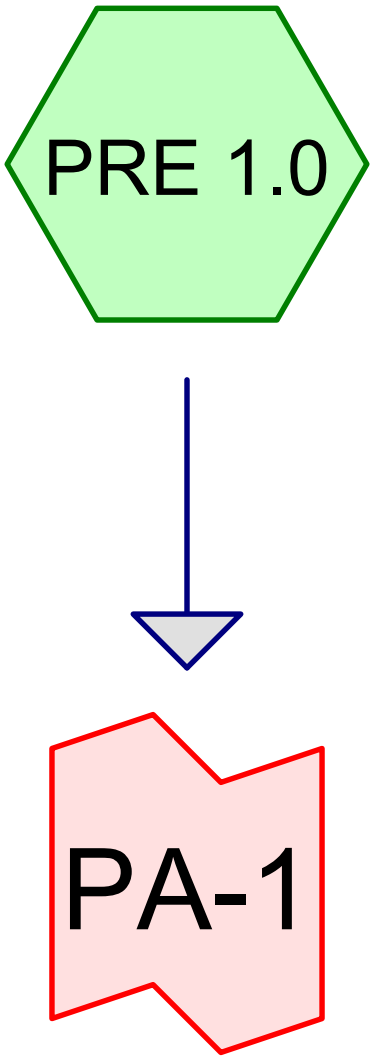
PRE-DEVELOPMENT SOIL COVERAGE COLOR PLAN

SCALE: AS SHOWN

C-803

Last Save Date: December 12, 2022 4:02 PM By: CML
Last Plot Date: December 12, 2022 4:02 PM By: Craig M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings_Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Pre-Color

1.2.3 Pre-Development Calculation



Subcat Reach Pond Link

Routing Diagram for P0595-015_Pre
Prepared by Tighe & Bond, Printed 12/14/2022
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
6.914	74	>75% Grass cover, Good, HSG C (PRE 1.0)
4.515	98	Paved parking, HSG C (PRE 1.0)
11.429	**83**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE 1.0: Runoff Area=497,841 sf 39.50% Impervious Runoff Depth>1.49"
Flow Length=1,512' Tc=5.0 min CN=83 Runoff=20.01 cfs 1.423 af

Link PA-1: Inflow=20.01 cfs 1.423 af
Primary=20.01 cfs 1.423 af

Total Runoff Area = 11.429 ac Runoff Volume = 1.423 af Average Runoff Depth = 1.49"
60.50% Pervious = 6.914 ac 39.50% Impervious = 4.515 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE 1.0: Runoff Area=497,841 sf 39.50% Impervious Runoff Depth>2.02"
Flow Length=1,512' Tc=5.0 min CN=83 Runoff=27.08 cfs 1.922 af

Link PA-1: Inflow=27.08 cfs 1.922 af
Primary=27.08 cfs 1.922 af

Total Runoff Area = 11.429 ac Runoff Volume = 1.922 af Average Runoff Depth = 2.02"
60.50% Pervious = 6.914 ac 39.50% Impervious = 4.515 ac

Summary for Subcatchment PRE 1.0:

Runoff = 49.71 cfs @ 12.07 hrs, Volume= 3.542 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.60"

Area (sf)	CN	Description
301,177	74	>75% Grass cover, Good, HSG C
196,664	98	Paved parking, HSG C
497,841	83	Weighted Average
301,177		60.50% Pervious Area
196,664		39.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0150	0.83		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.2	38	0.0050	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
2.3	595	0.0030	4.27	13.42	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
2.3	869	0.0030	6.20	59.70	**Pipe Channel,** 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.012 Concrete pipe, finished
5.0	1,512	Total			

Summary for Link PA-1:

Inflow Area = 11.429 ac, 39.50% Impervious, Inflow Depth > 3.72" for 10-Year event
Inflow = 49.71 cfs @ 12.07 hrs, Volume= 3.542 af
Primary = 49.71 cfs @ 12.07 hrs, Volume= 3.542 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE 1.0: Runoff Area=497,841 sf 39.50% Impervious Runoff Depth>5.12"
Flow Length=1,512' Tc=5.0 min CN=83 Runoff=67.64 cfs 4.876 af

Link PA-1: Inflow=67.64 cfs 4.876 af
Primary=67.64 cfs 4.876 af

Total Runoff Area = 11.429 ac Runoff Volume = 4.876 af Average Runoff Depth = 5.12"
60.50% Pervious = 6.914 ac 39.50% Impervious = 4.515 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE 1.0: Runoff Area=497,841 sf 39.50% Impervious Runoff Depth>6.46"
Flow Length=1,512' Tc=5.0 min CN=83 Runoff=84.49 cfs 6.154 af

Link PA-1: Inflow=84.49 cfs 6.154 af
Primary=84.49 cfs 6.154 af

Total Runoff Area = 11.429 ac Runoff Volume = 6.154 af Average Runoff Depth = 6.46"
60.50% Pervious = 6.914 ac 39.50% Impervious = 4.515 ac

1.3 Post-Development Conditions

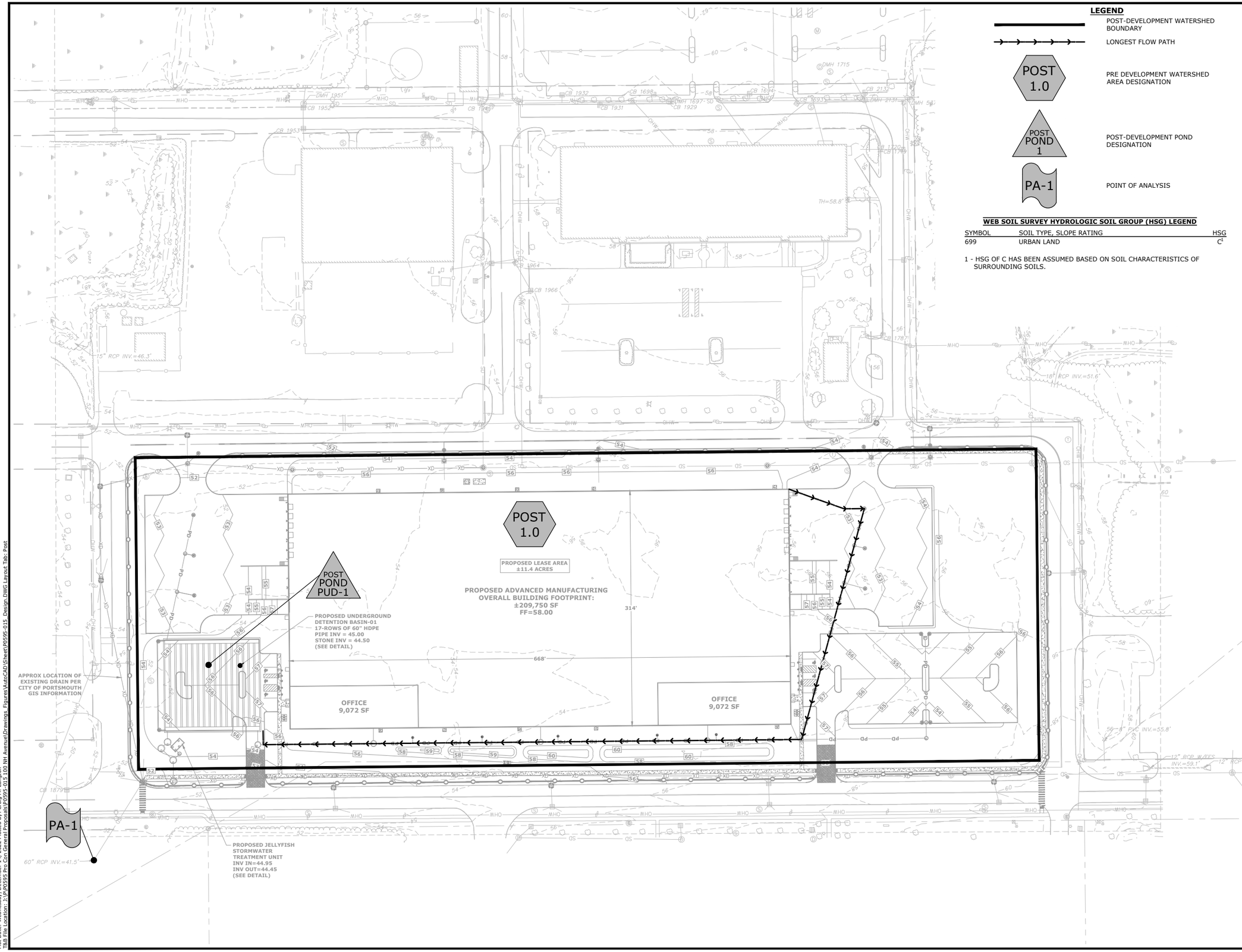
The post-development drainage condition is characterized by one (1) watershed area (POST-1.0) modeled at the same point of analysis as the pre-development condition. This point of analysis and watersheds are depicted on the plan entitled "Post Development Watershed Plan", Sheets C-802.

The point of analysis and their contributing watershed area is described below:

Point of Analysis One (PA-1)

Point of analysis PA-1 is comprised of one (1) watershed area (POST-1.0). This area includes all additional proposed impervious area on site as well the proposed green / landscaped areas on site. The proposed impervious areas generating runoff on site include roofs, parking lots, concrete sidewalks, and loading dock areas. Runoff from site is captured via overland flow then captured in the proposed onsite drainage system where it is detained and treated prior to being discharged through Point of Analysis 1 (PA-1).

1.3.1 Post-Development Watershed Plan



LEGEND

- POST-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- POST 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST POND 1 — POST-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS

WEB SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE, SLOPE RATING	HSG
699	URBAN LAND	C[1]

1 - HSG OF C HAS BEEN ASSUMED BASED ON SOIL CHARACTERISTICS OF SURROUNDING SOILS.

Tighe&Bond

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

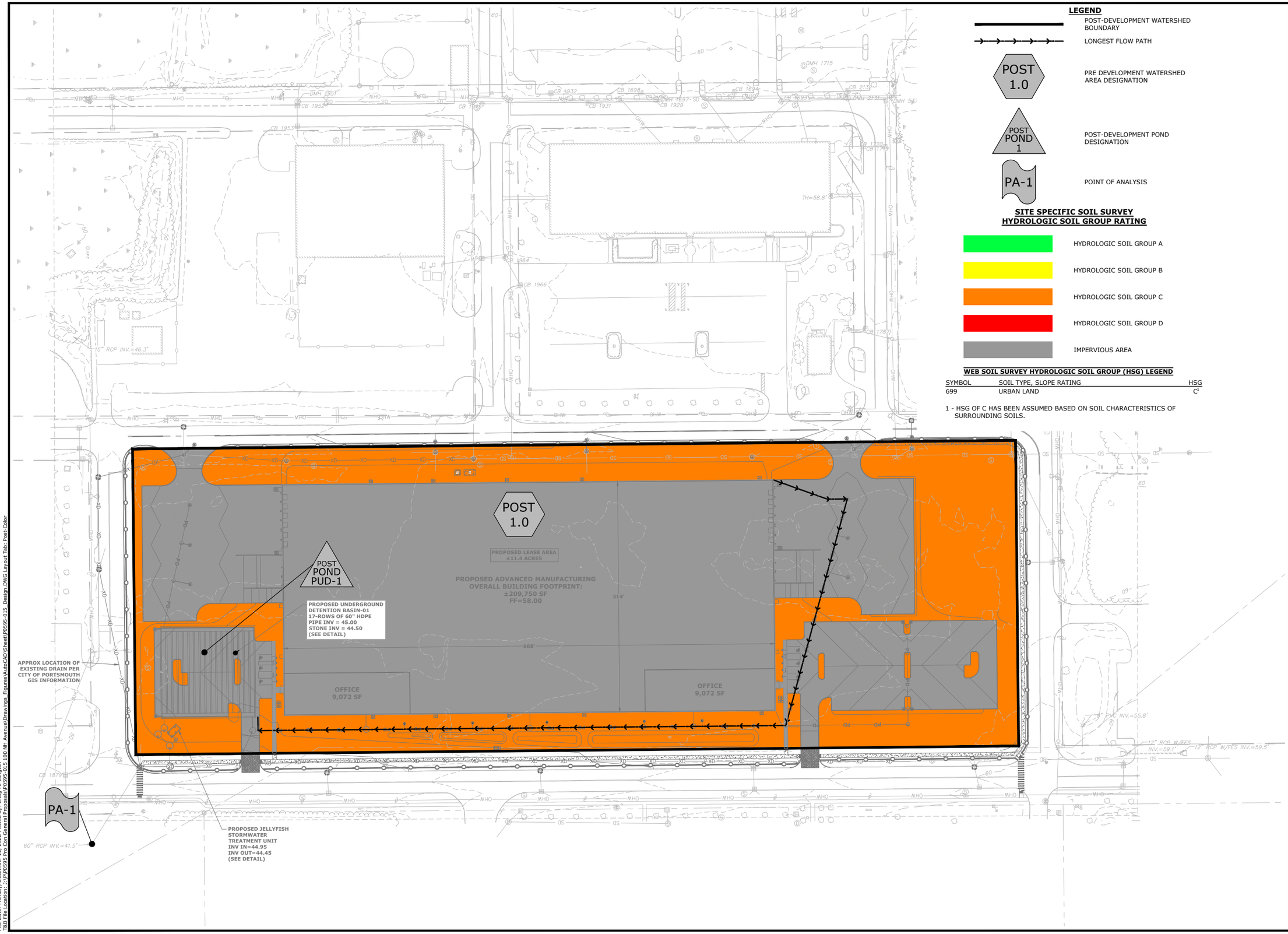
POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Save Date: December 14, 2022 11:43 AM By: CML
Plot Date: Wednesday, December 14, 2022 11:43 AM By: Craig M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Post

1.3.2 Post-Development Soil Plan



LEGEND

- POST-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- POST 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST POND 1 — POST-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS

SITE SPECIFIC SOIL SURVEY
HYDROLOGIC SOIL GROUP RATING

- HYDROLOGIC SOIL GROUP A
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- IMPERVIOUS AREA

WEB SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE, SLOPE RATING	HSG
699	URBAN LAND	C[1]

1 - HSG OF C HAS BEEN ASSUMED BASED ON SOIL CHARACTERISTICS OF SURROUNDING SOILS.

Tighe&Bond

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Aviation Avenue Group, LLC

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
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APPROVED:	PMC

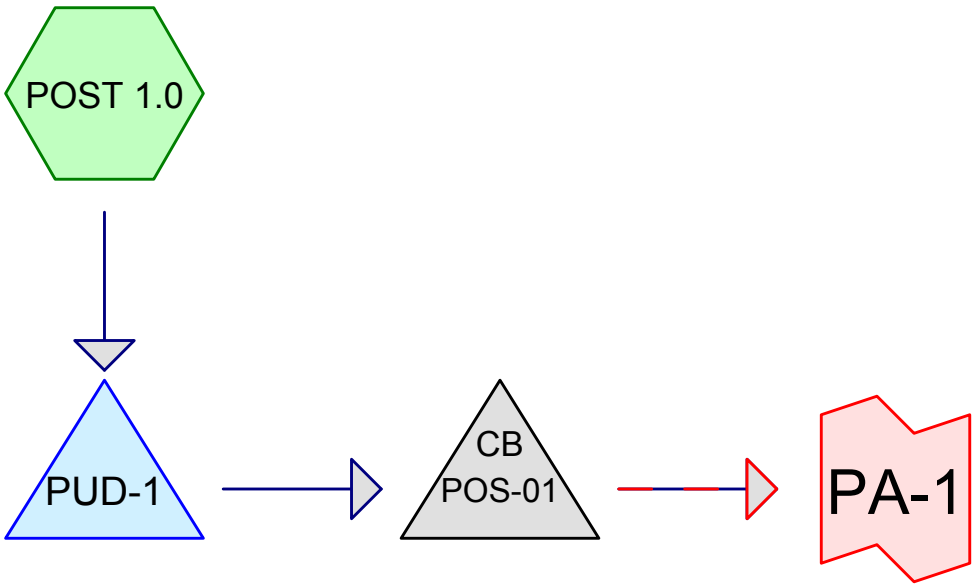
POST-DEVELOPMENT SOIL COVERAGE COLOR PLAN

SCALE: AS SHOWN

C-804

Last Save Date: December 12, 2022 4:02 PM By: CML
Plot Date: December 12, 2022 4:02 PM By: Christopher M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: Post-Color

1.3.3 Post-Development Calculation



Subcat Reach Pond Link

Routing Diagram for P0595-015_Post
Prepared by Tighe & Bond, Printed 12/14/2022
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.215	74	>75% Grass cover, Good, HSG C (POST 1.0)
2.469	98	Paved parking, HSG C (POST 1.0)
5.745	98	Roofs, HSG C (POST 1.0)
11.429	**91**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.0: Runoff Area=497,842 sf 71.87% Impervious Runoff Depth>2.13"
Flow Length=934' Tc=5.0 min CN=91 Runoff=28.25 cfs 2.025 af

Pond POS-01: Peak Elev=46.40' Inflow=14.24 cfs 2.025 af
Primary=9.45 cfs 1.769 af Secondary=4.79 cfs 0.255 af Outflow=14.24 cfs 2.025 af

Pond PUD-1: Peak Elev=47.28' Storage=15,242 cf Inflow=28.25 cfs 2.025 af
Outflow=14.24 cfs 2.025 af

Link PA-1: Inflow=14.24 cfs 2.025 af
Primary=14.24 cfs 2.025 af

Total Runoff Area = 11.429 ac Runoff Volume = 2.025 af Average Runoff Depth = 2.13"
28.13% Pervious = 3.215 ac 71.87% Impervious = 8.214 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.0: Runoff Area=497,842 sf 71.87% Impervious Runoff Depth>2.72"
Flow Length=934' Tc=5.0 min CN=91 Runoff=35.79 cfs 2.590 af

Pond POS-01: Peak Elev=46.58' Inflow=18.71 cfs 2.590 af
Primary=11.41 cfs 2.198 af Secondary=7.30 cfs 0.392 af Outflow=18.71 cfs 2.590 af

Pond PUD-1: Peak Elev=47.71' Storage=19,767 cf Inflow=35.79 cfs 2.590 af
Outflow=18.71 cfs 2.590 af

Link PA-1: Inflow=18.71 cfs 2.590 af
Primary=18.71 cfs 2.590 af

Total Runoff Area = 11.429 ac Runoff Volume = 2.590 af Average Runoff Depth = 2.72"
28.13% Pervious = 3.215 ac 71.87% Impervious = 8.214 ac

Summary for Subcatchment POST 1.0:

Runoff = 58.48 cfs @ 12.07 hrs, Volume= 4.347 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.60"

Area (sf)	CN	Description
250,258	98	Roofs, HSG C
140,048	74	>75% Grass cover, Good, HSG C
107,536	98	Paved parking, HSG C
497,842	91	Weighted Average
140,048		28.13% Pervious Area
357,794		71.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	77	0.0125	1.16		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.2	27	0.0125	2.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	102	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.9	216	0.0050	4.20	7.43	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.4	125	0.0050	5.09	16.00	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.8	223	0.0025	4.72	33.35	**Pipe Channel,** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
0.6	164	0.0015	4.43	55.63	**Pipe Channel,** 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Corrugated PE, smooth interior
4.5	934	Total, Increased to minimum Tc = 5.0 min			

Summary for Pond POS-01:

Inflow Area = 11.429 ac, 71.87% Impervious, Inflow Depth > 4.56" for 10-Year event
Inflow = 42.20 cfs @ 12.15 hrs, Volume= 4.344 af
Outflow = 42.20 cfs @ 12.15 hrs, Volume= 4.344 af, Atten= 0%, Lag= 0.0 min
Primary = 18.00 cfs @ 12.14 hrs, Volume= 3.391 af
Secondary = 24.20 cfs @ 12.15 hrs, Volume= 0.954 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.42' @ 12.14 hrs
Flood Elev= 54.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	45.00'	**24.0" Vert. To JellyFish Treatment Unit** C= 0.600
#2	Secondary	45.65'	**48.0" Vert. To PDMH-13** C= 0.600

Primary OutFlow Max=17.93 cfs @ 12.14 hrs HW=47.41' TW=0.00' (Dynamic Tailwater)
└─**1=To JellyFish Treatment Unit** (Orifice Controls 17.93 cfs @ 5.71 fps)

Secondary OutFlow Max=23.95 cfs @ 12.15 hrs HW=47.41' TW=0.00' (Dynamic Tailwater)
└─**2=To PDMH-13** (Orifice Controls 23.95 cfs @ 4.51 fps)

Summary for Pond PUD-1:

Inflow Area = 11.429 ac, 71.87% Impervious, Inflow Depth > 4.56" for 10-Year event
Inflow = 58.48 cfs @ 12.07 hrs, Volume= 4.347 af
Outflow = 42.20 cfs @ 12.15 hrs, Volume= 4.344 af, Atten= 28%, Lag= 4.4 min
Primary = 42.20 cfs @ 12.15 hrs, Volume= 4.344 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 45.00' Surf.Area= 16,096 sf Storage= 0 cf
Peak Elev= 48.51' @ 12.16 hrs Surf.Area= 16,096 sf Storage= 28,105 cf
Flood Elev= 50.00' Surf.Area= 16,096 sf Storage= 40,389 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.6 min (795.5 - 781.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	44.50'	0 cf	**128.59'W x 125.17'L x 6.08'H Field A** 97,923 cf Overall - 48,988 cf Embedded = 48,934 cf x 0.0% Voids
#2A	45.00'	41,267 cf	**ADS N-12 60"** x 85 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.91 sf x 20.00'L = 458.2 cf Row Length Adjustment= +11.00' x 19.30 sf x 17 rows 125.59' Header x 19.30 sf x 2 = 4,847.8 cf Inside
		41,267 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	45.00'	**24.0" Vert. Orifice** C= 0.600
#2	Primary	47.50'	**8.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=40.99 cfs @ 12.15 hrs HW=48.49' TW=47.41' (Dynamic Tailwater)
├─**1=Orifice** (Orifice Controls 15.77 cfs @ 5.02 fps)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 25.22 cfs @ 3.26 fps)

Summary for Link PA-1:

Inflow Area = 11.429 ac, 71.87% Impervious, Inflow Depth > 4.56" for 10-Year event
Inflow = 42.20 cfs @ 12.15 hrs, Volume= 4.344 af
Primary = 42.20 cfs @ 12.15 hrs, Volume= 4.344 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.0: Runoff Area=497,842 sf 71.87% Impervious Runoff Depth>6.03"
Flow Length=934' Tc=5.0 min CN=91 Runoff=76.11 cfs 5.747 af

Pond POS-01: Peak Elev=47.98' Inflow=60.59 cfs 5.741 af
Primary=21.29 cfs 4.239 af Secondary=39.31 cfs 1.502 af Outflow=60.59 cfs 5.741 af

Pond PUD-1: Peak Elev=48.97' Storage=32,678 cf Inflow=76.11 cfs 5.747 af
Outflow=60.59 cfs 5.741 af

Link PA-1: Inflow=60.59 cfs 5.741 af
Primary=60.59 cfs 5.741 af

Total Runoff Area = 11.429 ac Runoff Volume = 5.747 af Average Runoff Depth = 6.03"
28.13% Pervious = 3.215 ac 71.87% Impervious = 8.214 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.0: Runoff Area=497,842 sf 71.87% Impervious Runoff Depth>7.42"
Flow Length=934' Tc=5.0 min CN=91 Runoff=92.55 cfs 7.071 af

Pond POS-01: Peak Elev=48.42' Inflow=76.08 cfs 7.062 af
Primary=23.53 cfs 4.988 af Secondary=52.55 cfs 2.073 af Outflow=76.08 cfs 7.062 af

Pond PUD-1: Peak Elev=49.39' Storage=36,337 cf Inflow=92.55 cfs 7.071 af
Outflow=76.08 cfs 7.062 af

Link PA-1: Inflow=76.08 cfs 7.062 af
Primary=76.08 cfs 7.062 af

Total Runoff Area = 11.429 ac Runoff Volume = 7.071 af Average Runoff Depth = 7.42"
28.13% Pervious = 3.215 ac 71.87% Impervious = 8.214 ac

1.4 Peak Rate Comparisons

The following table summarizes and compares the pre- and post-development peak runoff rates from the 1-year, 2-year, 10-year, 25-year and 50-year storm events at each point of analysis.

Table 1.4 – Comparison of Pre- and Post-Development Flows (CFS)

Point of Analysis	1-Year Storm	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed (PA-1)	20.01	27.08	49.71	67.64	84.49
Post-Development Watershed (PA-1)	14.24	18.71	42.20	60.59	76.08

The Peak Runoff Control Requirements of Env-Wq 1507.06 are required to be met for the point of analysis. As shown in Table 1.4 the Post-Development flows are decreased from the Pre-Development flows at PA-1.

The Channel Protection requirements of Env-Wq 1507.05 are met for the point of analysis as the 2-year, 24-hour Post-Development peak flowrate (18.71 cfs) is less than or equal to the 1-year, 24-hour pre-development peak flowrate (20.01 cfs).

1.5 Mitigation Description

1.5.1 Mitigation Calculations

The proposed project area has been evaluated to treat the required water quality flow (WQF) per the requirements of Env-Wq 1500. These calculations have been provided in appendix E of this report.

1.5.2 Pre-Treatment Methods for Protecting Water Quality

Pretreatment methods for protecting water quality on this site include offline deep sump catch basins with oil water separator hoods.

Table 1.5 – Pollutant Removal Efficiencies

BMP	Total Suspended Solids	Total Phosphorus
Deep Sump Catch Basin w/Hood[1]	15%	5%

1. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.

1.5.3 Treatment Methods for Protecting Water Quality

The runoff from proposed impervious areas will be captured in the proposed closed drainage system directed to an underground detention system and then treated by an ADS Water Quality Unit. The water quality unit has been sized to treat the Water Quality Flow from the contributing subcatchment areas. The system has been designed with an internal bypass structure that diverts peak flows greater than the 1-inch storm event.

Table 1.6 below, shows design pollutant removal efficient for the proposed Jellyfish Filter Treatment Unit which meets the requirements of Env-Wq 1508.10. Additional reference information on the proposed Jellyfish Filter Treatment Unit can be found in Appendix C.

Table 1.6 – Pollutant Removal Efficiencies		
BMP	Total Suspended Solids	Total Phosphorus
Jellyfish Filter Treatment Unit [1]	89%	59%

1. Pollutant removal efficiencies per Contech Engineered Solutions Jellyfish Filter Performance testing results.

Table 1.7 – Pollutant Removal Calculations				
Total Suspended Solids Removal				
BMP	TSS Removal Rate	Starting TSS Load	TSS Removed	Remaining TSS Load
Deep Sump Catch Basin w/Hood[1]	0.15	1.00	0.15	0.85
Jellyfish Filter Treatment Unit [2]	0.89	0.85	0.76	0.09
			Total Suspended Solids Removed:	**91%**

Total Phosphorus Removal				
	TP Removal Rate	Starting TP Load	TP Removed	Remaining TP Load
Deep Sump Catch Basin w/Hood[1]	0.05	1.00	0.05	0.95
Jellyfish Filter Treatment Unit [2]	0.59	0.95	0.56	0.39
			Total Phosphorus Removed:	**61%**

1. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.
2. Pollutant removal efficiencies per Contech Engineered Solutions Jellyfish Filter Performance testing results.

APPENDIX A

(Bound Separately)

APPENDIX B

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.808 degrees West
Latitude	43.075 degrees North
Elevation	0 feet
Date/Time	Tue, 29 Jun 2021 09:16:17 -0400

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	2.66	2.92	**1yr**	2.35	2.81	3.21	3.94	4.54	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.51	1.94	2.49	3.21	3.57	**2yr**	2.84	3.43	3.93	4.67	5.32	**2yr**
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	5.93	6.70	**5yr**
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	7.10	7.98	**10yr**
25yr	0.47	0.75	0.96	1.32	1.76	2.32	**25yr**	1.52	2.13	2.76	3.61	4.73	6.17	7.10	**25yr**	5.46	6.82	7.78	9.02	10.06	**25yr**
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	10.81	11.99	**50yr**
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	12.96	14.30	**100yr**
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	15.54	17.05	**200yr**
500yr	0.79	1.30	1.69	2.45	3.43	4.71	**500yr**	2.96	4.34	5.71	7.65	10.19	13.50	16.15	**500yr**	11.95	15.53	17.61	19.77	21.55	**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	0.73	0.89	**1yr**	0.63	0.87	0.92	1.32	1.66	2.23	2.53	**1yr**	1.97	2.43	2.85	3.16	3.88	**1yr**
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	4.55	5.07	**2yr**
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	5.54	6.26	**5yr**
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	6.43	7.22	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.78	3.56	4.70	5.94	**25yr**	4.16	5.72	6.69	7.84	8.73	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.53	2.12	2.35	3.10	3.97	5.31	6.88	**50yr**	4.70	6.61	7.80	9.11	10.08	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.47	**100yr**	1.74	2.42	2.63	3.45	4.40	5.96	7.96	**100yr**	5.27	7.65	9.09	10.60	11.64	**100yr**
200yr	0.59	0.89	1.13	1.64	2.29	2.82	**200yr**	1.98	2.76	2.94	3.83	4.86	6.67	9.21	**200yr**	5.91	8.85	10.59	12.34	13.46	**200yr**
500yr	0.69	1.03	1.32	1.92	2.73	3.38	**500yr**	2.36	3.30	3.41	4.39	5.56	7.76	11.16	**500yr**	6.87	10.73	12.98	15.12	16.29	**500yr**

Upper Confidence Limits

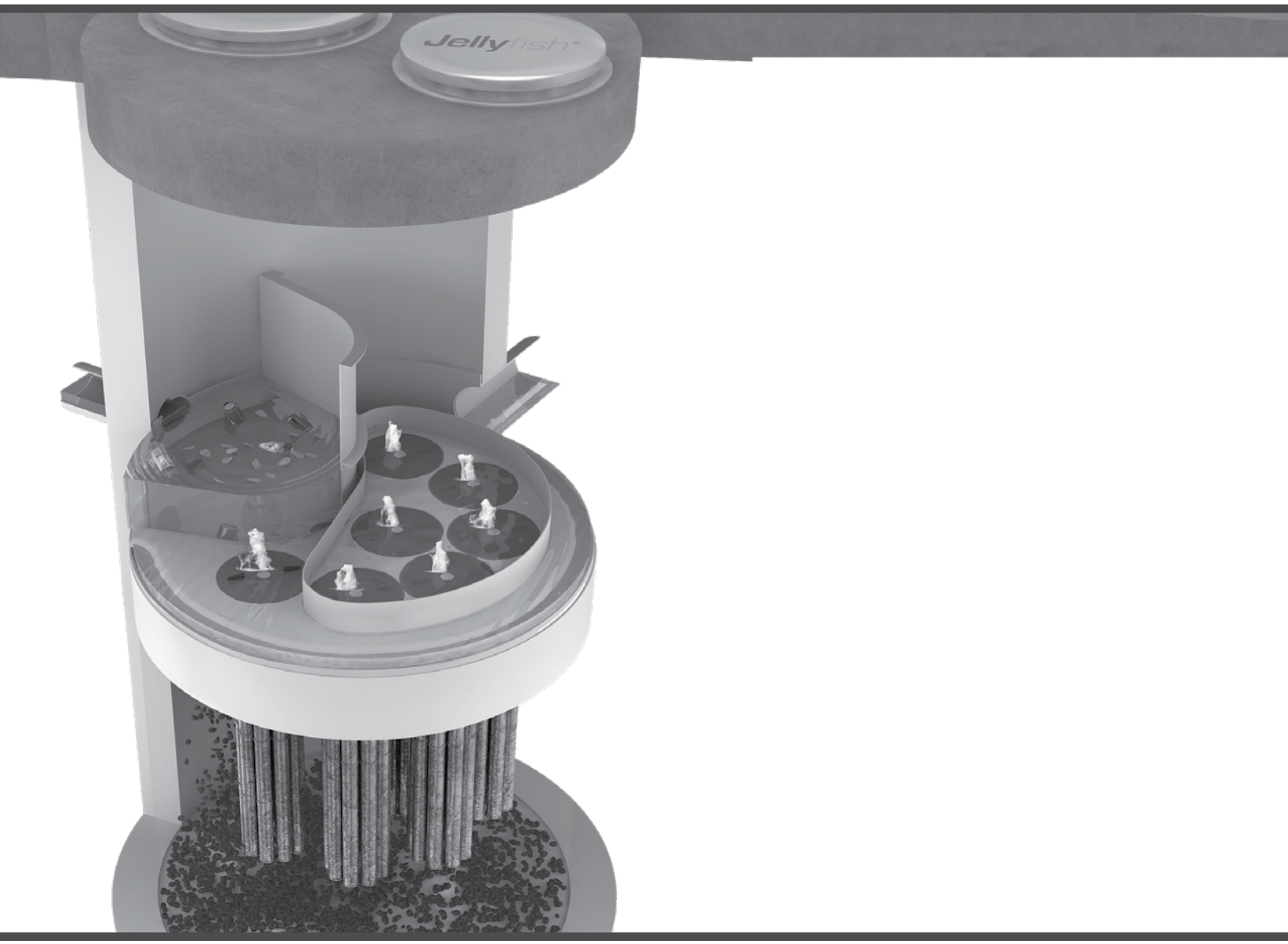
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.75	2.21	3.00	3.14	**1yr**	2.66	3.02	3.58	4.37	5.05	**1yr**
2yr	0.33	0.52	0.64	0.86	1.06	1.26	**2yr**	0.92	1.24	1.48	1.96	2.51	3.43	3.69	**2yr**	3.03	3.54	4.07	4.82	5.64	**2yr**
5yr	0.40	0.61	0.76	1.05	1.33	1.61	**5yr**	1.15	1.58	1.88	2.53	3.24	4.33	4.93	**5yr**	3.84	4.74	5.36	6.34	7.13	**5yr**
10yr	0.47	0.71	0.89	1.24	1.60	1.96	**10yr**	1.38	1.92	2.27	3.09	3.93	5.33	6.16	**10yr**	4.72	5.92	6.75	7.80	8.71	**10yr**
25yr	0.57	0.87	1.08	1.54	2.03	2.55	**25yr**	1.75	2.49	2.93	4.05	5.10	7.79	8.26	**25yr**	6.90	7.95	9.02	10.27	11.35	**25yr**
50yr	0.66	1.01	1.26	1.81	2.43	3.10	**50yr**	2.10	3.03	3.57	4.96	6.24	9.76	10.34	**50yr**	8.64	9.94	11.25	12.63	13.88	**50yr**
100yr	0.78	1.18	1.47	2.13	2.92	3.77	**100yr**	2.52	3.68	4.34	6.10	7.64	12.21	12.94	**100yr**	10.81	12.44	14.02	15.57	16.99	**100yr**
200yr	0.91	1.37	1.73	2.51	3.50	4.59	**200yr**	3.02	4.49	5.29	7.51	9.36	15.32	16.21	**200yr**	13.56	15.59	17.49	19.17	20.80	**200yr**
500yr	1.12	1.67	2.15	3.13	4.44	5.95	**500yr**	3.84	5.81	6.86	9.90	12.27	20.70	21.84	**500yr**	18.32	21.00	23.45	25.25	27.19	**500yr**

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APPENDIX C

CONTECH®
ENGINEERED SOLUTIONS

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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Cartridge Assembly & Cleaning.....5

Inspection Process 7

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.

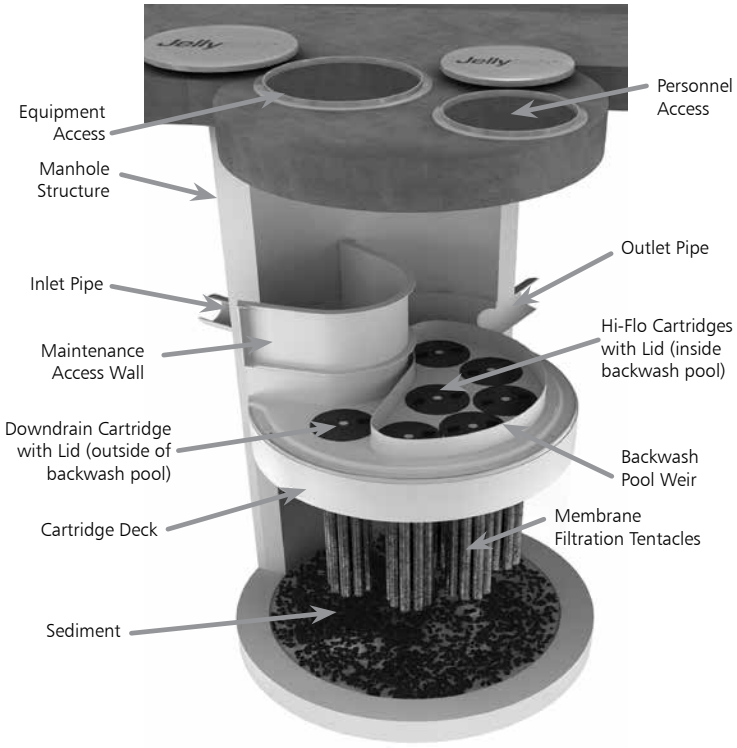
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion 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:

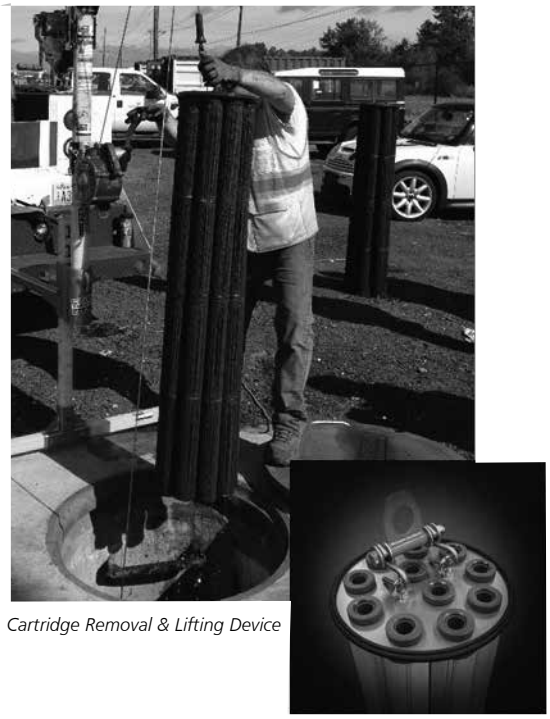
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. 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

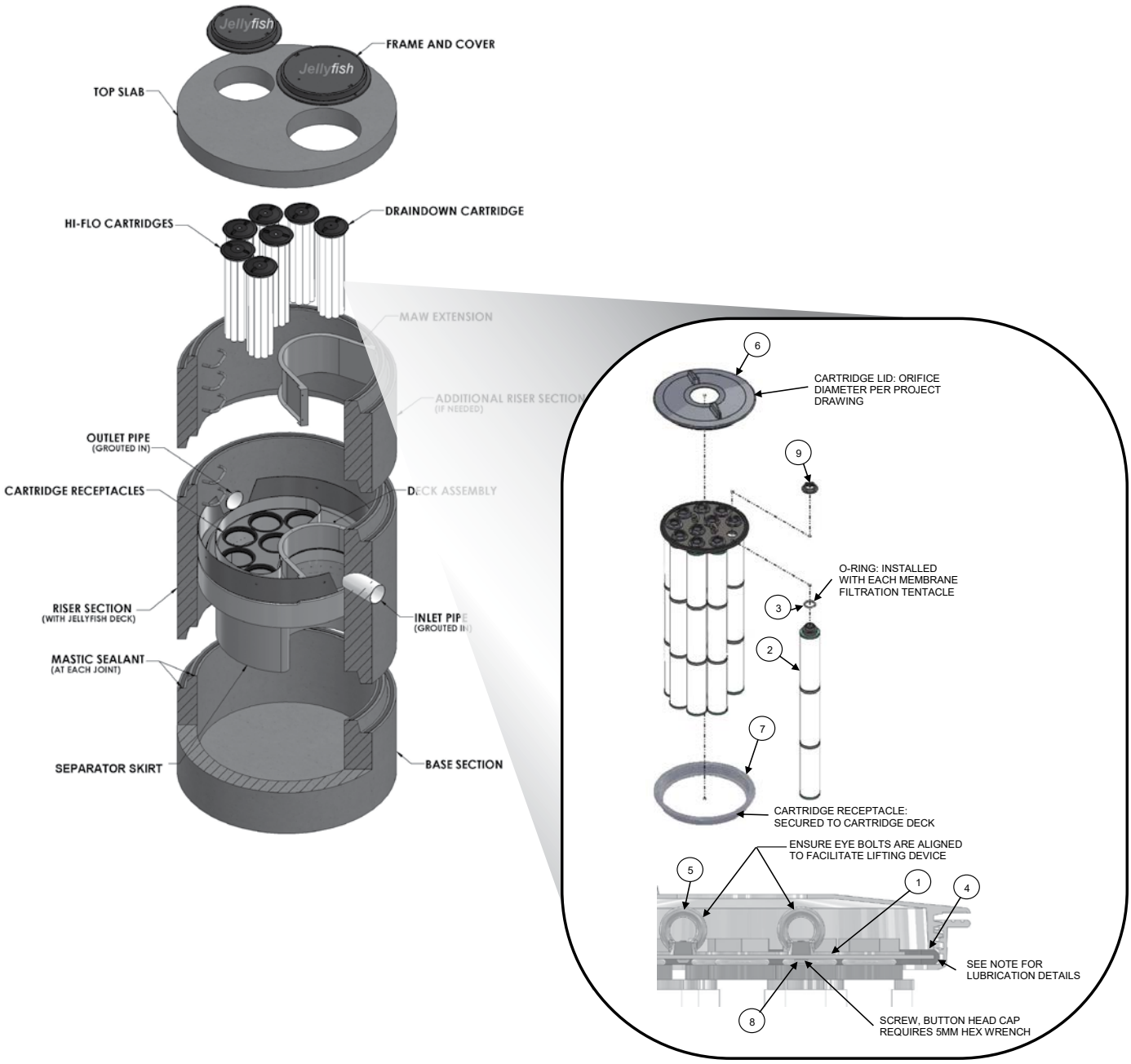


TABLE 1: BOM

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:						



Jellyfish®

CONTECH ENGINEERED SOLUTIONS

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

800.338.1122
www.ContechES.com

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APPENDIX D

Superfund Site Project Report

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Project Related Documents (2)

	Document Type	Name/Title	Date Submitted	File Size
4543399	CORRESPONDENCE	DES REVIEW WHITE PAPERS FOR SITE 73 AND 49	12/07/2011	.08 MB
4543398	CORRESPONDENCE	PEASE AFB DES REVIEW OF WHITE PAPERS FOR SITES 73 AND 49	12/07/2011	.01 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/05/2021	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4895543	REPORT TO DES	DRAFT 2020 REMEDIAL STATUS REPORT	01/05/2021	5.00 MB

10/05/2020	Annual Report Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4879382	REPORT TO DES	2019 BIENNIAL GROUNDWATER MONITORING REPORT	10/05/2020	5.00 MB

07/10/2018	Annual Report Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4722926	REPORT TO DES	2017 BIENNIAL AND PERFORMANCE MONITORING REPORT	07/10/2018	5.00 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/28/2016	Additional Information Received	HILTON	10/20/2016	Not Approved	SEE 6/30/16 DES LETTER FOR PBC SITES WITHOUT CONCURRENCE

Activity Documents (3)

	Document Type	Document Title	Document Date	File Size
4625363	REPORT TO DES	FINAL LONG-TERM MONITORING PLAN REVISION 5 - ZONE 3	09/01/2016	5.00 MB
4649646	CORRESPONDENCE	TRANSMITTAL EMAIL TO AFCEC	06/30/2016	.04 MB
4649632	CORRESPONDENCE	DES LETTER FOR PBC SITES WITHOUT CONCURRENCE	06/30/2016	.04 MB

11/19/2015	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4579330	REPORT TO DES	2014 ANNUAL REPORT 01-NOV-2015	11/19/2015	5.00 MB

04/24/2015	Additional Information Received	HILTON	07/02/2015	Not Approved	EMAIL RESPONSE TO PROPOSED LTM CHANGES

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4559687	CORRESPONDENCE	DES COMMENTS 7.2.15 TO 4.23.15 LTM CHANGES	07/02/2015	.05 MB
4545104	REPORT TO DES	PROPOSED LONG-TERM MONITORING PROGRAM CHANGES 23-APR-2015	04/24/2015	2.39 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
02/25/2015	Additional Information Received	HILTON	02/25/2015	Technical Report Approved	LTMP APPROVED

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4538382	CORRESPONDENCE	ZONE 3 LTMP REV 3 MOD APROVAL	03/02/2015	.04 MB
4538376	CORRESPONDENCE-TO	PROPOSED MODIFICATION TO THE ZONE 3 LONG-TERM MONITORING PLAN 23-FEB-2015	02/25/2015	.35 MB

10/15/2014	Annual Report Received	HILTON	11/01/2014	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4517123	REPORT TO DES	2013 ANNUAL REPORT 01-OCT-2014	10/15/2014	5.00 MB

06/12/2014	Additional Information Received	HILTON	02/25/2015	Technical Report Approved	LTMP REVISION 3 APPROVED SEE 25-FEB-2015 CORRSPONDENCE

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4504066	CORRESPONDENCE-TO	REQUEST FOR DISCONTIUATION OF MONITORING 11-JUN-2014	06/12/2014	.66 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/14/2014	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4497434	REPORT TO DES	DRAFT 2013 NONHEATING SEASON SUB-SLAB VAPOR AND INDOOR AIR SAMPLINC REPORT 01-MAY-2014	05/14/2014	5.00 MB

04/07/2014	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4488911	CORRESPONDENCE-TO	EXPLANATION OF SIGNIFICANT DIFFERENCES 01-MAR-2014	04/07/2014	1.30 MB

02/12/2014	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4486984	REPORT TO DES	HAVEN WELL MONTHLY DATA REPORT FEBRUARY 2014 12-FEB-2014	02/12/2014	1.45 MB

10/17/2013	Annual Report Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4474024	REPORT TO DES	2012 ANNUAL REPORT FOR ZONE 3 12-SEP-2013	10/17/2013	5.00 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
10/11/2013	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4473132	REPORT TO DES	HAVEN WELL SENTRY/SENTINEL WELLS QUARTERLY DATA REPORT SUMMER 2013 01-SEP-2013	10/11/2013	.69 MB

10/11/2013	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4473133	REPORT TO DES	HAVEN WELL MONTHLY DATA REPORT SEPTEMBER 2013 01-SEP-2013	10/11/2013	1.27 MB

08/30/2013	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4464049	CORRESPONDENCE-TO	REPLACEMENT PAGES FOR THE FINAL 2013 NONHEATING SEASON SUB-SLAB VAPOR AND INDOOR 26-AUG-2013	08/30/2013	5.00 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/26/2013	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4458343	REPORT TO DES	HAVEN WELL JULY 2013 PRELIMINARY DATA 01-JUL-2013	07/26/2013	1.62 MB

04/09/2013	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4438314	REPORT TO DES	MONTHLY DATA REPORT FEBRUARY 2013 01-APR-2013	04/09/2013	1.21 MB

03/11/2013	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4434948	REPORT TO DES	MONTHLY DATA REPORT 01-JAN-2013	03/11/2013	2.93 MB

12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424835	REPORT TO DES	MONTHLY DATA REPORT (SEPTEMBER 2012) 01-SEP-2012	12/11/2012	.58 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424834	REPORT TO DES	MONTHLY DATA REPORT (AUGUST 2012) 01-AUG-2012	12/11/2012	.61 MB

12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424833	REPORT TO DES	MONTHLY DATA REPORT (JULY 2012) 01-JUL-2012	12/11/2012	.65 MB

12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424832	REPORT TO DES	MONTHLY DATA REPORT (JUNE 2012) 01-JUN-2012	12/11/2012	.58 MB

12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424831	REPORT TO DES	MONTHLY DATA REPORT (MAY 2012) 01-MAY-2012	12/11/2012	.62 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424829	REPORT TO DES	MONTHLY DATA REPORT (FEBRUARY 2012) 01-FEB-2012	12/11/2012	.57 MB

12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424828	REPORT TO DES	MONTHLY DATA REPORT (JANUARY 2012) 01-FEB-2012	12/11/2012	.57 MB

12/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4424827	REPORT TO DES	MONTHLY DATA REPORT (DECEMBER 2011) 01-DEC-2012	12/11/2012	.61 MB

10/23/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4418631	REPORT TO DES	FINAL SUPPLEMENTAL REMEDIAL ACTION WORK PLAN 01-OCT-2012	10/23/2012	5.00 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
10/11/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4416497	CORRESPONDENCE-TO	EXPLANATION OF SIGNIFICANT DIFFERENCES 01-JUL-2012	10/11/2012	1.05 MB

08/31/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4409340	CORRESPONDENCE-TO	EXPLANATION OF SIGNIFICANT DIFFERENCES 01-AUG-2012	08/31/2012	3.63 MB

08/08/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4402784	REPORT TO DES	ZONE 3 2011 ANNUAL REPORT 07-AUG-2012	08/08/2012	5.00 MB

07/09/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4395449	CORRESPONDENCE-TO	DRAFT EXPLANATION OF SIGNIFICANT DIFFERENCES 01-JUL-2012	07/09/2012	1.05 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/16/2012	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4361917	REPORT TO DES	MONTHLY DATA REPORT 01-MAR-2012	04/16/2012	.63 MB

12/16/2011	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4337905	REPORT TO DES	MONTHLY DATA REPORT 16-DEC-2011	12/16/2011	.37 MB

12/12/2011	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4337484	REPORT TO DES	MONTHLY DATA REPORT 12-DEC-2011	12/12/2011	.37 MB

12/07/2011	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4543663	CORRESPONDENCE	DES REVIEW WHITE PAPERS FOR SITE 73 AND 49	12/07/2011	.08 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
11/22/2011	Additional Information Received	UNASSIGNED			
11/18/2011	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4334120	REPORT TO DES	MONTHLY DATA REPORT 07-NOV-2011	11/18/2011	.32 MB

11/02/2011	Additional Information Received	UNASSIGNED			

Activity Documents (3)

	Document Type	Document Title	Document Date	File Size
4543401	CORRESPONDENCE	SITE 49 SUPPLEMENTAL REMEDIATION WP WHITE PAPER	11/02/2011	.19 MB
4543402	CORRESPONDENCE	SITE 73 SUPPLEMENTAL REMEDIATION WP WHITE PAPER DRAFT	11/02/2011	.18 MB
4543400	CORRESPONDENCE	PEASE WHITE PAPERS	11/02/2011	.03 MB

09/12/2011	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4320379	REPORT TO DES	MONTHLY DATA REPORT 08-SEP-2011	09/12/2011	.32 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/24/2011	Additional Information Received	HILTON	08/31/2011	Technical Infomation Provided	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4315571	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 23-AUG-2011	08/24/2011	.74 MB

08/23/2011	Additional Information Received	HILTON	08/31/2011	Technical Infomation Provided	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4315567	REPORT TO DES	MONTHLY DATA REPORT 22-AUG-2011	08/23/2011	.32 MB

07/27/2011	Additional Information Received	HILTON	08/15/2011	Technical Infomation Provided	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4310754	REPORT TO DES	MONTHLY DATA REPORT 21-JUL-2011	07/27/2011	.32 MB

07/23/2011	Additional Information Received	HILTON	08/14/2011	Technical Infomation Provided	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4310739	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 22-JUL-2011	07/23/2011	.73 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/23/2011	Additional Information Received	HILTON	07/13/2011	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4305771	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 20-JUN-2011	06/23/2011	.73 MB

05/19/2011	Additional Information Received	HILTON	06/17/2011	Technical Infomation Provided	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4298638	REPORT TO DES	MONTHLY DATA REPORT 19-MAY-2011	05/19/2011	.37 MB

05/11/2011	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4296656	REPORT TO DES	ZONE 3 2010 ANNUAL REPORT 10-MAY-2011	05/11/2011	5.00 MB

04/26/2011	Additional Information Received	HILTON	05/20/2011	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4293800	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 22-APR-2011	04/26/2011	.73 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/01/2011	Additional Information Received	HILTON	04/15/2011	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4286126	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 29-MAR-2011	04/01/2011	.72 MB

04/01/2011	Additional Information Received	HILTON	04/13/2011	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4286127	REPORT TO DES	MONTHLY DATA REPORT 01-APR-2011	04/01/2011	.31 MB

12/13/2010	Additional Information Received	HILTON	12/15/2010	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4268181	REPORT TO DES	MONTHLY DATA REPORT 13-DEC-2010	12/13/2010	.38 MB

11/22/2010	Additional Information Received	HILTON	11/30/2010	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4265036	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 22-NOV-2010	11/22/2010	.92 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
11/16/2010	Additional Information Received	HILTON	11/20/2010	Technical Infomation Provided	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4263025	REPORT TO DES	MONTHLY DATA REPORT 15-NOV-2010	11/16/2010	.34 MB

10/12/2010	Additional Information Received	HILTON	11/03/2010	Technical Infomation Provided	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4257229	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 12-OCT-2010	10/12/2010	.76 MB

09/30/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4255666	REPORT TO DES	MONTHLY DATA REPORT 27-SEP-2010	09/30/2010	.72 MB

09/14/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4252988	REPORT TO DES	MONTHLY DATA REPORT 14-SEP-2010	09/14/2010	.30 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/20/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4250259	REPORT TO DES	MONTHLY DATA REPORT 20-AUG-2010	08/20/2010	.31 MB

07/26/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4248118	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 22-JUL-2010	07/26/2010	1.11 MB

06/23/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4239811	REPORT TO DES	ZONE 3 2009 ANNUAL REPORT 21-JUN-2010	06/23/2010	5.00 MB

06/11/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4239250	REPORT TO DES	MONTHLY DATA REPORT 11-JUN-2010	06/11/2010	.29 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/11/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4239249	REPORT TO DES	MONTHLY DATA REPORT 11-JUN-2010	06/11/2010	.35 MB

06/01/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4237931	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 28-MAY-2010	06/01/2010	.75 MB

05/17/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4234876	REPORT TO DES	SPRING SAMPLING AND ANALYSIS PLAN ADDENDUM FOR SITES 73 & 81 01-MAY-2010	05/17/2010	.08 MB

05/10/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4233971	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 05-MAY-2010	05/10/2010	.72 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/13/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4227753	REPORT TO DES	MONTHLY DATA REPORT 13-APR-2010	04/13/2010	.37 MB

04/08/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4226539	REPORT TO DES	MONTHLY DATA REPORT 08-APR-2010	04/08/2010	.29 MB

03/29/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4224877	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 29-MAR-2010	03/29/2010	.72 MB

03/15/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4222317	REPORT TO DES	QUARTERLY DATA REPORT 12-MAR-2010	03/15/2010	.30 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/15/2010	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4222316	REPORT TO DES	MONTHLY DATA REPORT 12-MAR-2010	03/15/2010	.31 MB

11/09/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4199788	REPORT TO DES	MONTHLY DATA REPORT 30-NOV-2009	11/09/2009	.37 MB

09/24/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4193656	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 24-SEP-2009	09/24/2009	.72 MB

09/24/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4193655	REPORT TO DES	MONTHLY DATA REPORT 23-SEP-2009	09/24/2009	.33 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/03/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4191681	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 22-JUL-2009	09/03/2009	.73 MB

08/27/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4189803	REPORT TO DES	DATA REPORT 27-AUG-2009	08/27/2009	5.00 MB

08/27/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4189802	REPORT TO DES	VOC RESAMPLE 25-AUG-2009	08/27/2009	.31 MB

08/27/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4189801	REPORT TO DES	REPORT OF ANALYTICAL RESULTS FOR 8/25/09 26-AUG-2009	08/27/2009	.64 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/12/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4186685	REPORT TO DES	ZONE 3 2008 ANNUAL REPORT 11-AUG-2009	08/12/2009	5.00 MB

08/10/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4186629	REPORT TO DES	MONTHLY DATA REPORT - JULY 2009 10-AUG-2009	08/10/2009	.30 MB

07/27/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4185273	REPORT TO DES	REPORT OF ANALYTICAL RESULTS FOR JULY SAMPLING 22-JUL-2009	07/27/2009	.73 MB

07/08/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4182711	REPORT TO DES	MONTHLY DATA REPORT 08-JUL-2009	07/08/2009	.31 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/26/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4181599	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS FOR JUNE SAMPLING 26-JUN-2009	06/26/2009	.76 MB

06/22/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4180552	REPORT TO DES	QUARTERLY SAMPLING REPORT - WINTER 2009 22-JUN-2009	06/22/2009	.29 MB

06/22/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4180551	REPORT TO DES	QUARTERLY SAMPLING REPORT SPRING 2009 22-JUN-2009	06/22/2009	.29 MB

06/16/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4180085	REPORT TO DES	MONTHLY DATA REPORT 16-JUN-2009	06/16/2009	.28 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/27/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4177535	REPORT TO DES	REPORT OF ANALYTICAL RESULTS FOR MAY SAMPLING 22-MAY-2009	05/27/2009	.75 MB

05/06/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4175742	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 06-MAY-2009	05/06/2009	.36 MB

04/21/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4173079	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 17-APR-2009	04/21/2009	.79 MB

04/06/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4171075	REPORT FROM DES	REPORT OF ANALYTICAL REULTS 06-APR-2009	04/06/2009	2.21 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/06/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4171072	REPORT TO DES	MARCH 2009 HAVEN WELL MONTHLY DATA REPORT 06-APR-2009	04/06/2009	.32 MB

03/26/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4168441	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 19-MAR-2009	03/26/2009	.70 MB

03/19/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4166080	REPORT TO DES	MONTHLY DATA REPORT - FEBRUARY 2009 18-MAR-2009	03/19/2009	.32 MB

03/10/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4164572	REPORT TO DES	JANUARY 2009 HAVEN WELL MONTHLY DATA REPORT 10-MAR-2009	03/10/2009	.33 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
02/22/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4163512	REPORT TO DES	REPORT OF ANALYTICAL RESULTS - HAVEN WELL 20-FEB-2009	02/22/2009	.72 MB

02/09/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4160966	CORRESPONDENCE-TO	RECOMMENDATIONS FOR MODIFICATIONS TO LONG-TERM MONITORING PLANS 09-FEB-2009	02/09/2009	.31 MB

02/09/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4160963	REPORT TO DES	DECEMBER 2008 MONTHLY DATA REPORT 09-FEB-2009	02/09/2009	.31 MB

02/02/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4160797	REPORT TO DES	REPORT OF ANALYTICAL RESULTS 06-FEB-2009	02/02/2009	5.00 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/06/2009	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4156237	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 06-JAN-2009	01/06/2009	.70 MB

12/15/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4151864	REPORT TO DES	FALL 2008 HAVEN WELL SENTRY-SENTINEL WELL PRELIMINARY DATA 15-DEC-200	12/15/2008	3.96 MB

12/12/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4151865	REPORT TO DES	HAVEN WELL MONTHLY DATA REPORT - NOVEMBER 2008 08-DEC-2008	12/12/2008	.32 MB

11/04/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4145958	REPORT TO DES	SEPTEMBER 2008 HAVEN WELL MONTHLY REPORT - 04-NOV-2008	11/04/2008	.33 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
10/22/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4143870 MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 22-OCT-2008	10/22/2008	1.32 MB

10/10/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4142007 MONITORING NONPERMIT	HAVEN WELL SENTRY/SENTINEL QUARTERLY GROUNDWATER SAMPLING 10-OCT-2008	10/10/2008	.74 MB

09/25/2008	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4138051 MONITORING NONPERMIT	SEPTEMBER 2008 REPORT OF ANALYTICAL RESULTS 22-SEP-2008	09/25/2008	1.21 MB

09/22/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4137765 REPORT TO DES	AUGUST 2008 HAVEN WELL MONTHLY DATA REPORT 15-SEP-2008	09/22/2008	.27 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/28/2008	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4130318	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS 28-AUG-2008	08/28/2008	.73 MB

08/20/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4127369	MONITORING NONPERMIT	JULY 2008 HAVEN WELL MONTHLY DATA REPORT 20-AUG-2008	08/20/2008	.32 MB

08/14/2008	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4125774	MONITORING NONPERMIT	REPORT OF ANALYTICAL RESULTS FOR 7/16/08 14-AUG-2008	08/14/2008	.71 MB

07/21/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4116436	REPORT TO DES	HAVEN WELL MONTHLY DATA REPORT - MAY 2008 21-JUL-2008	07/21/2008	.36 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/27/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4108311	REPORT TO DES	REPORT OF ANALYTICAL RESULTS FOR 6/19/08 27-JUN-2008	06/27/2008	.76 MB

06/10/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4098511	REPORT TO DES	MAY 2008 HAVEN WELL MONTHLY DATA REPORT 10-JUN-2008	06/10/2008	.32 MB

06/10/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4098510	REPORT TO DES	APRIL 2008 HAVEN WELL MONTHLY DATA REPORT 05-JUN-2008	06/10/2008	.32 MB

06/10/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4098509	REPORT TO DES	HAVEN WELL SENTRY/SENTINEL QUARTERLY REPORT 10-JUN-2008	06/10/2008	.31 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/06/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4101820	REPORT TO DES	ZONE 3 2007 ANNUAL REPORT 05-JUN-2008	06/06/2008	64.83 MB

05/23/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4089588	REPORT TO DES	REPORT OF ANALYTICAL RESULTS FOR 5/14/08 22-MAY-2008	05/23/2008	.75 MB

05/08/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4083944	REPORT TO DES	HAVEN WELL MONTHLY REPORT - MARCH 2008 08-MAY-2008	05/08/2008	.32 MB

04/22/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4074446	REPORT TO DES	REPORT OF ANALYTICAL DATA FOR 4/14/08 21-APR-2008	04/22/2008	.75 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/07/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4069163	REPORT TO DES	FEBRUARY 2008 HAVEN WELL MONTHLY DATA REPORT 07-APR-2008	04/07/2008	.27 MB

03/26/2008	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4067801	MONITORING NONPERMIT	MARCH 2008 REPORT OF ANALYTICAL RESULTS 24-MAR-2008	03/26/2008	1.04 MB

02/26/2008	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4063539	MONITORING NONPERMIT	FEBRUARY 2008 ANALYTICAL RESULTS 26-FEB-2008	02/26/2008	.57 MB

02/18/2008	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4062517	MONITORING NONPERMIT	HAVEN WELL SENTRY/SENTINEL QUARTERLY SAMPLING 18-FEB-2008	02/18/2008	.34 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/09/2008	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4058322	REPORT TO DES	DRAFT STANDARD OPERATING PROCEDURE 08-JAN-2008	01/09/2008	.81 MB

12/03/2007	Annual Report Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4054776	REPORT TO DES	ZONE 3 2006 ANNUAL REPORT 30-NOV-2007	12/03/2007	85.99 MB

11/21/2007	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4054284	REPORT TO DES	OCTOBER 2007 HAVEN WELL MONTHLY DATA REPORT 21-NOV-2007	11/21/2007	.32 MB

10/23/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4050119	MONITORING NONPERMIT	HAVEN WELL SENTRY/SENTINEL WELL QUARTERLY SAMPLING - SUMMER 2007 22-OCT-2007	10/23/2007	.52 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
10/23/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4050120	MONITORING NONPERMIT	PRELIMINARY ANALYTICAL RESULTS 22-OCT-2007	10/23/2007	.59 MB

10/16/2007	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4049459	MONITORING NONPERMIT	HAVEN WELL MONTHLY DATA REPORT - SEPTEMBER 2007 16-OCT-2007	10/16/2007	.51 MB

09/21/2007	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4046620	REPORT TO DES	HAVEN WELL MONTHLY DATAT REPORT - AUGUST 2007 09-AUG-2007	09/21/2007	.68 MB

08/22/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4042774	MONITORING NONPERMIT	HAVEN WELL MONTHLY REPORT - AUG 2007 22-AUG-2007	08/22/2007	.62 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/20/2007	Additional Information Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4042248	REPORT TO DES	HAVEN WELL MONTHLY DATA REPORT - JULY 2007 20-AUG-2007	08/20/2007	1.04 MB

08/13/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4041253	MONITORING NONPERMIT	SUMMER 2007 HAVEN WELL DATA 13-AUG-2007	08/13/2007	8.56 MB

07/31/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4040251	MONITORING NONPERMIT	HAVEN WELL JULY 2007 PRELIMINARY ANALYTICAL RESULTS 31-JUL-2007	07/31/2007	.89 MB

07/11/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4036398	MONITORING NONPERMIT	HAVEN WELL MONTHLY DATA REPORT - JUNE 2007 11-JUL-2007	07/11/2007	.53 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/22/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4032186	MONITORING NONPERMIT	HAVEN WELL MONTHLY DATA REPORT MAY 2007 21-JUN-2007	06/22/2007	.47 MB

06/22/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4032187	MONITORING NONPERMIT	HAVEN WELL MONTHLY DATA REPORT MARCH 2007 21-JUN-2007	06/22/2007	1.21 MB

06/22/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4032189	MONITORING NONPERMIT	HAVEN WELL MONTHLY DATA REPORT APRIL 2007 22-JUN-2007	06/22/2007	.90 MB

06/07/2007	Non-Permit GW Monitoring Result Received	UNASSIGNED			

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4031098	MONITORING NONPERMIT	HAVEN WELL MONTHLY DATA REPORT FEBRUARY 2007 07-JUN-2007	06/07/2007	2.23 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/21/2007	Additional Information Received	UNASSIGNED			

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4029061 CORRESPONDENCE-TO	FINAL MINUTES PEASE AFB BCT MEETING 21-MAY-2007	05/21/2007	.08 MB

04/10/2007	Additional Information Received	HILTON	04/18/2007	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4021734 REPORT TO DES	HAVEN WELL MONTHLY DATA REPORT - JANUARY 2007 09-APR-2007	04/10/2007	1.35 MB

04/03/2007	Additional Information Received	HILTON	04/09/2007	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4020725 MONITORING NONPERMIT	HAVEN WELL SENTRY-SENTINEL WELL QUARTERLY GROUNDWATER SAMPLING 03-APR-2007	04/03/2007	2.69 MB

03/23/2007	Non-Permit GW Monitoring Result Received	HILTON	04/03/2007	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4018216 MONITORING NONPERMIT	HAVEN WELL SAMPLING FOR 3/14/07 23-MAR-2007	03/23/2007	1.43 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/22/2007	Additional Information Received	HILTON	04/03/2007	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4018627	CORRESPONDENCE	SUMMER 2006 ZONE 3 HAVEN SAMPLING REGARDING FEB 8 2007 LETTER 19-MAR-2007	03/22/2007	.18 MB

02/27/2007	Non-Permit GW Monitoring Result Received	HILTON	02/28/2007	Technical Report Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4016204	REPORT	HAVEN WELL - QUARTERLY GROUNDWATER SAMPLING DATA REPORT FALL 2006 27-FEB-2007	02/27/2007	.37 MB

02/23/2007	Non-Permit GW Monitoring Result Received	HILTON	02/24/2007	Technical Report Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4015884	REPORT	HAVEN WELL FEBRUARY 2007 PRELIMINARY ANALYTICAL RESULTS 23-FEB-2007	02/23/2007	6.04 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
02/20/2007	Non-Permit GW Monitoring Result Received	HILTON	02/22/2007	Technical Report Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4015189	MONITORING NONPERMIT	WINTER 2007 HAVEN WELL SENTRY-SENTUNEL WELL DATA 20-FEB-2007	02/20/2007	4.78 MB

02/02/2007	Additional Information Received	HILTON	02/08/2007	Technical Report Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4014283	CORRESPONDENCE-FROM	RESPONSE TO SUMMER 2006 ZONE 3 HAVEN SENTRY WELL SAMPLING	02/08/2007	.04 MB

01/26/2007	Non-Permit GW Monitoring Result Received	HILTON	01/27/2007	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4012609	MONITORING NONPERMIT	ANALYTICAL RESULTS FOR 1/24/07 26-JAN-2007	01/26/2007	1.49 MB

01/25/2007	Non-Permit GW Monitoring Result Received	HILTON	01/26/2007	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4012607	MONITORING NONPERMIT	ANALYTICAL RESULTS FOR 1/23/07 25-JAN-2007	01/25/2007	1.75 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/24/2007	Non-Permit GW Monitoring Result Received	HILTON	01/25/2007	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4012606	MONITORING NONPERMIT	ANALYTICAL RESULTS FOR 1/17/07 23-JAN-2007	01/24/2007	.74 MB

01/22/2007	Non-Permit GW Monitoring Result Received	HILTON	02/23/2007	Technical Report Approved	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4013663	MONITORING NONPERMIT	HAVEN WELL SENTRY SENTINAL SAMPLING 09-OCT-2006	01/22/2007	6.71 MB

01/22/2007	Non-Permit GW Monitoring Result Received	HILTON	01/24/2007	Technical Report Approved	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4013667	MONITORING NONPERMIT	SUMMER 2006 HAVEN WELL SENTRY SENTINAL 20-JUL-2006	01/22/2007	10.52 MB

01/22/2007	Non-Permit GW Monitoring Result Received	HILTON	01/23/2007	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4012604	MONITORING NONPERMIT	ANALYTICAL RESULTS FOR 7/5/06 20-JUL-2006	01/22/2007	10.52 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/22/2007	Non-Permit GW Monitoring Result Received	HILTON	01/23/2007	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4012603	MONITORING NONPERMIT	ANALYTICAL RESULTS FOR 9/27/06 09-OCT-2007	01/22/2007	6.71 MB

01/19/2007	Additional Information Received	HILTON	01/20/2007	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4011696	REPORT	HAVEN WELL MONTHLY DATA REPORT 19-JAN-2007	01/19/2007	.43 MB

01/02/2007	Non-Permit GW Monitoring Result Received	HILTON	01/03/2007	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4009327	MONITORING NONPERMIT	DECEMBER 2006 HAVEN WELL MONTHLY DATA REPORT 21-DEC-2006	01/02/2007	.89 MB

12/15/2006	Non-Permit GW Monitoring Result Received	HILTON	12/16/2006	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4008329	MONITORING NONPERMIT	OCTOBER 2006 HAVEN WELL MONTHLY DATA REPORT 13-DEC-2006	12/15/2006	.43 MB

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Assigned To: **SANDIN**

Discovery Date: **06/11/1993**

Eligibile:

Eligibilty Determined on:

MTBE: **N**

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/15/2006	Non-Permit GW Monitoring Result Received	HILTON	12/16/2006	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4008328	MONITORING NONPERMIT	NOVEMBER 2006 HAVEN WELL MONTHLY DATA REPORT 13-DEC-2006	12/15/2006	.56 MB

11/22/2006	Non-Permit GW Monitoring Result Received	HILTON	11/18/2006	Technical Report Approved	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
4004421	MONITORING NONPERMIT	SEPTEMBER 2006 HAVEN WELL MONTHLY DATA REPORT 17-NOV-2006	11/22/2006	.42 MB

11/02/2006	Additional Information Received	HILTON	11/03/2006	Technical Report Approved	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
3999731	REPORT	AUGUST 2006 HAVEN WELL MONTHLY DATA REPORT 02-NOV-2006	11/02/2006	.43 MB

06/27/2006	Permit Related GW Data Submittal	HILTON	06/28/2006	Technical Report Approved	
06/09/2006	Permit Related GW Data Submittal	HILTON	06/14/2006	Technical Report Approved	
05/24/2006	Permit Related GW Data Submittal	HILTON	05/25/2006	Technical Report Approved	
02/28/2006	Permit Related GW Data Submittal	HILTON	03/24/2006	Technical Report Approved	
04/16/2002	Additional Information Received	HILTON	05/16/2002	Technical Report Approved	
04/10/2002	Annual Report Received	HILTON	05/15/2002	Technical Report Approved	

Site Number: **100330300**

Name and Address: **PAFB ZONE 3**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004331**

Responsible Party: **U S AIR FORCE**
2261 HUGHES AVE, STE 155
JBSA LACKLAND TX 78236-9853

PHONE: 210-395-9420

Wellhead Protection Area: **Unknown**

Assigned To: **SANDIN**

Eligibile:

MTBE: **N**

Risk Level: **DW SUPPLY WITHIN 1000' OR SITE IN SWPA**

Discovery Date: **06/11/1993**

Eligibilty Determined on:

Brownfield: **N**

Activities (165)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/18/1993	Additional Information Received	SMITH	06/17/1993	Comments to Waste Management Division	

Site Number:	**100330300**	Project Number:	**0004331**
Name and Address:	**PAFB ZONE 3** **PEASE AIR FORCE BASE** **PORTSMOUTH**	Responsible Party:	**U S AIR FORCE** **2261 HUGHES AVE, STE 155** **JBSA LACKLAND TX 78236-9853** **PHONE: 210-395-9420**
Mapit			
Wellhead Protection Area:	**Unknown**	Risk Level:	**DW SUPPLY WITHIN 1000' OR SITE IN SWPA**
Assigned To:	**SANDIN**	Discovery Date:	**06/11/1993**
Eligibile:		Eligibilty Determined on:	
MTBE:	**N**	Brownfield:	**N**

No Vapor Recovery Information

Leaking Underground Storage Tank Project Report

Site Number: **100330215**

Name and Address: **PAFB 215**
PEASE AIR FORCE BASE
PORTSMOUTH

Mapit

Project Number: **0004797**

Responsible Party: **PEASE AFB**
POTSMOUTH NH 03801-0157

PHONE: 604-430-3573

Wellhead Protection Area: **Unknown**

Assigned To: **CLOSED**

Eligibile: **UNKNOWN OR NOT YET ACHIEVED**

MTBE: **N**

Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**

Discovery Date: **04/12/1994**

Eligibilty Determined on:

Brownfield: **N**

Activities (3)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/08/1995	Site Investigation Report Received	KARNAUKH-S	09/08/1995	Regulatory Action Compl.-DES File Closed	
07/19/1994	Additional Information Received	KARNAUKH-S	08/05/1994	Work Scope Approved	
04/11/1994	Work Scope Submitted	KARNAUKH-S	04/27/1994	Work Scope Approved	

Leaking Underground Storage Tank Project Report

Site Number:	**100330215**	Project Number:	**0004797**
Name and Address:	**PAFB 215** **PEASE AIR FORCE BASE** **PORTSMOUTH**	Responsible Party:	**PEASE AFB** **POTSMOUTH NH 03801-0157** **PHONE: 604-430-3573**
Mapit			
Wellhead Protection Area:	**Unknown**	Risk Level:	**NO SOURCES/NO AGQS VIO'S FROM ONSITE**
Assigned To:	**CLOSED**	Discovery Date:	**04/12/1994**
Eligibile:	**UNKNOWN OR NOT YET ACHIEVED**	Eligibilty Determined on:	
MTBE:	**N**	Brownfield:	**N**

No Vapor Recovery Information

APPENDIX E

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)

11.43	ac	A = Area draining to the practice
8.21	ac	A_I = Impervious area draining to the practice
0.72	decimal	I = Percent impervious area draining to the practice, in decimal form
0.70	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
7.96	ac-in	WQV= 1" x Rv x A
28,909	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".
0.70	inches	Q = Water quality depth. Q = WQV/A
97	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.3	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.064	inches	Ia = Initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
600.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
7.466	cfs	WQF = q_u x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac.

Designer's Notes:

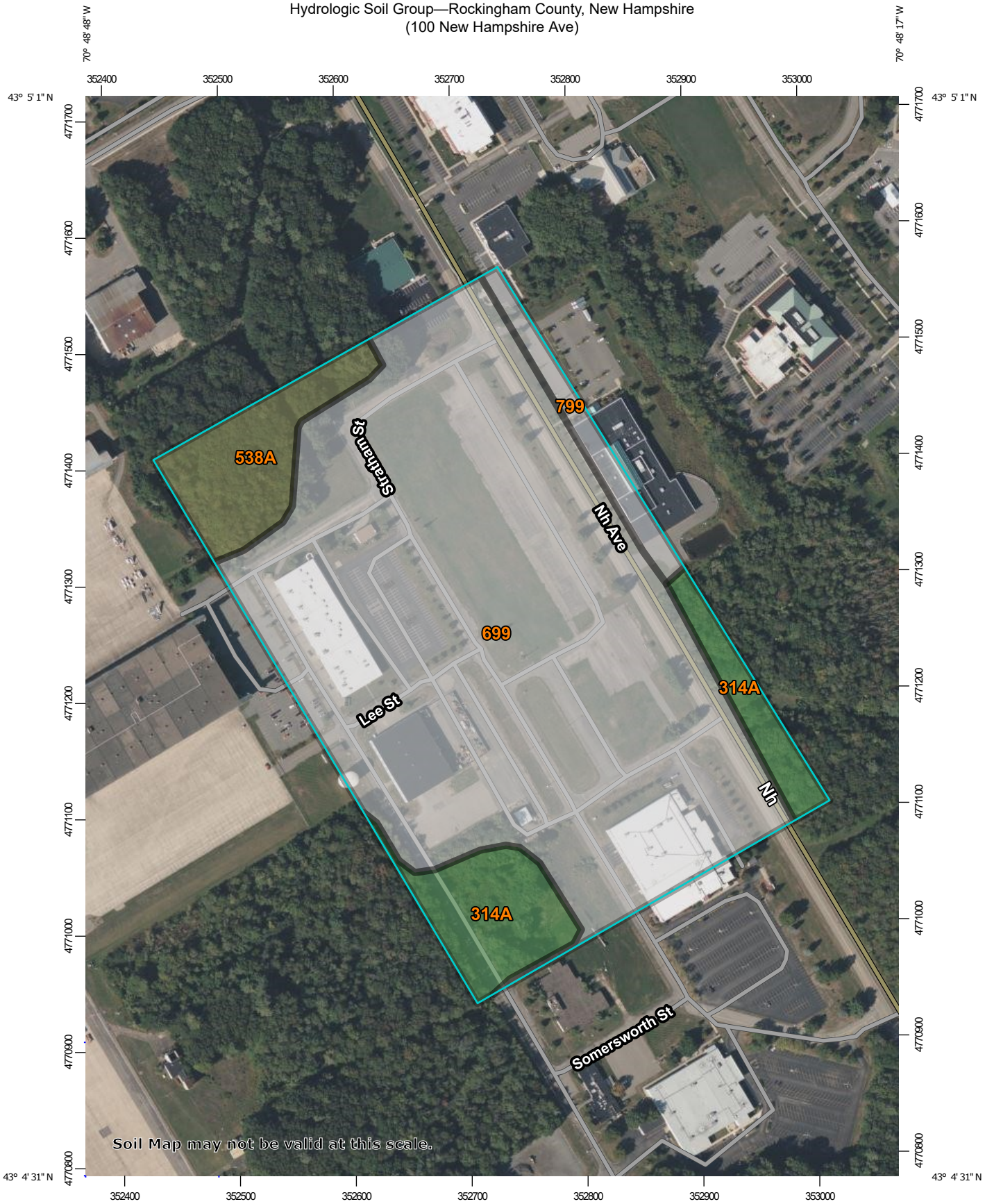
This calculation represents the treatment train directed to Contech Jellyfish Treatment Unit.

Full Treatment in compliance with Env-Wq 1508.10 shall be achieved by use of a proprietary flow-through device. The proposed Contech Jellyfish Treatment Unit - Model#: JFPD0816 will be used to treat the WQF as calculated in the above spreadsheet. The specified device is designed to treat up to 7.84 cfs of flow.

Tighe&Bond

APPENDIX F

Hydrologic Soil Group—Rockingham County, New Hampshire
(100 New Hampshire Ave)



Map Scale: 1:4,520 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

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 24, Aug 31, 2021

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
314A	Pipestone sand, 0 to 5 percent slopes	A/D	4.7	10.0%
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	C/D	3.4	7.4%
699	Urban land		36.8	79.3%
799	Urban land-Canton complex, 3 to 15 percent slopes		1.5	3.3%
Totals for Area of Interest			**46.5**	**100.0%**

Description

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.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

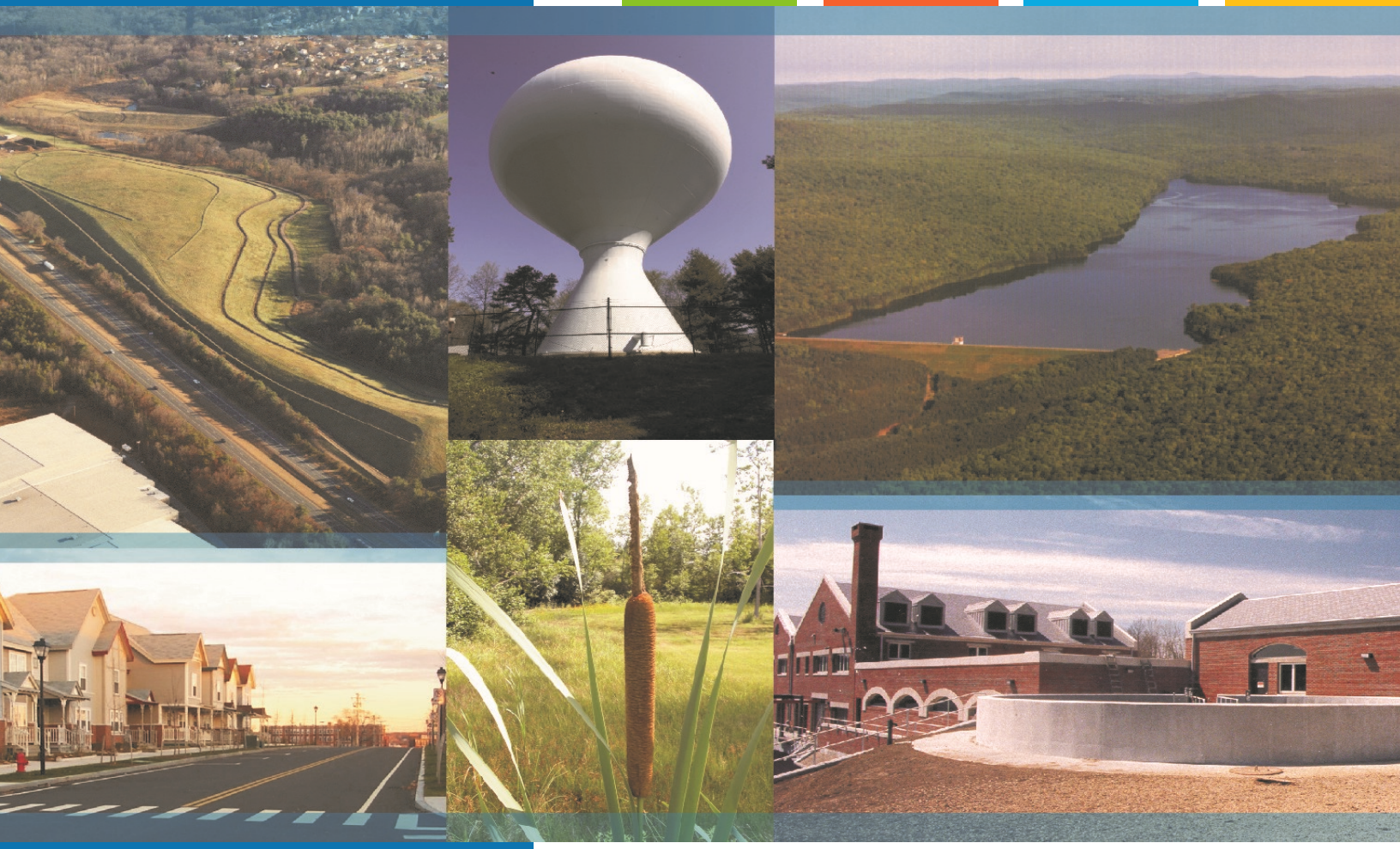
The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.



Proposed Advanced Manufacturing Facility

Portsmouth, NH

Long Term Operation & Maintenance Plan

Prepared For:

Aviation Avenue Group, LLC
210 Commerce Way Suite 300
Portsmouth, NH 03801

December 19, 2022

100% Recyclable

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Tighe&Bond

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Section 1
Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

Joe Geoghegan
Aviation Avenue Group, LLC
210 Commerce Way Suite 300
Portsmouth, NH 03801

Cell: 603 518.2113
Office: 207.650.0907

Email: Joe@tdmrk.com

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catch Basin / Sediment & Oil Separator Cleaning
- Pavement Sweeping
- Underground Detention Basin
- Jellyfish Filter Treatment Unit

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Annually / as needed
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring
Catch Basin (CB) - CBs to be cleaned of solids and oils.	Bi-Annually / as needed when catch basin sumps
Underground Detention Basin - Visual observation of sediment levels within system	Bi-Annually
Jellyfish Filter Treatment Unit - Per manufacturer recommendations	- In accordance with Manufacturer's Recommendations

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Underground Detention System Maintenance Requirements

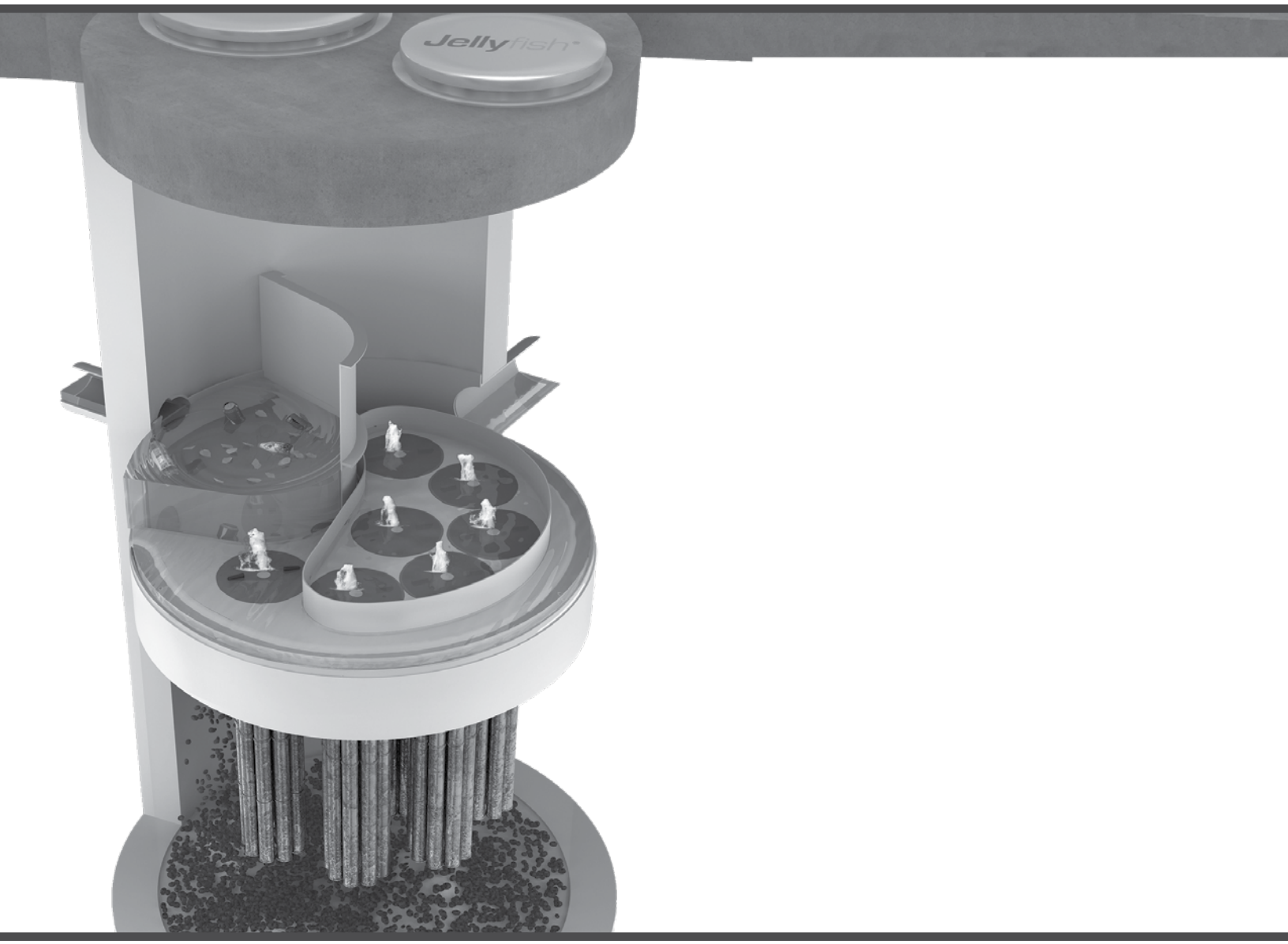
Underground Detention System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor inlet and outlet structures for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed
Deep Sump Catchbasins	Two (2) times annually	- Removal of sediment as warranted by inspection - No less than once annually

Monitor detention system for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed

1.5 Jellyfish Filter Treatment Unit Maintenance Requirements

CONTECH®
ENGINEERED SOLUTIONS

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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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.

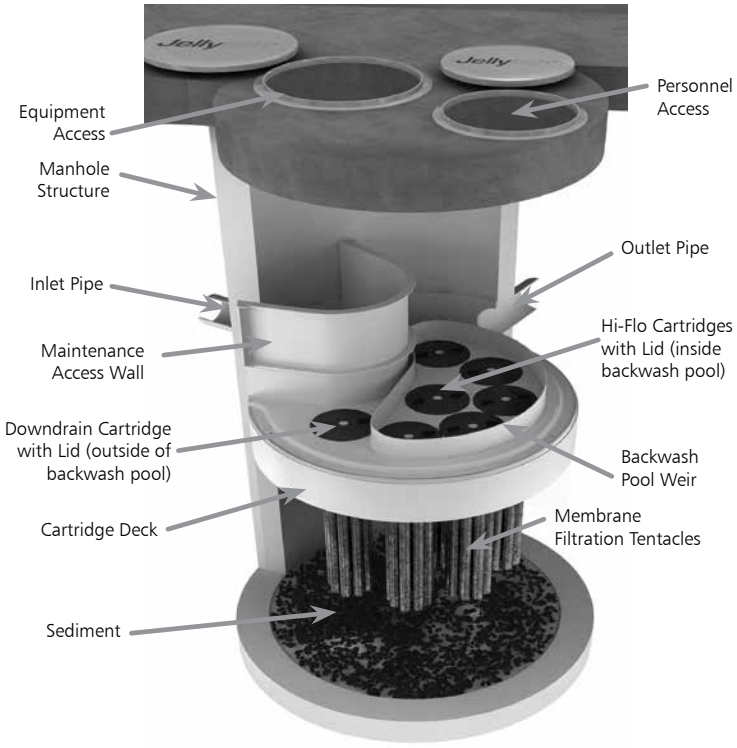
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion 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:

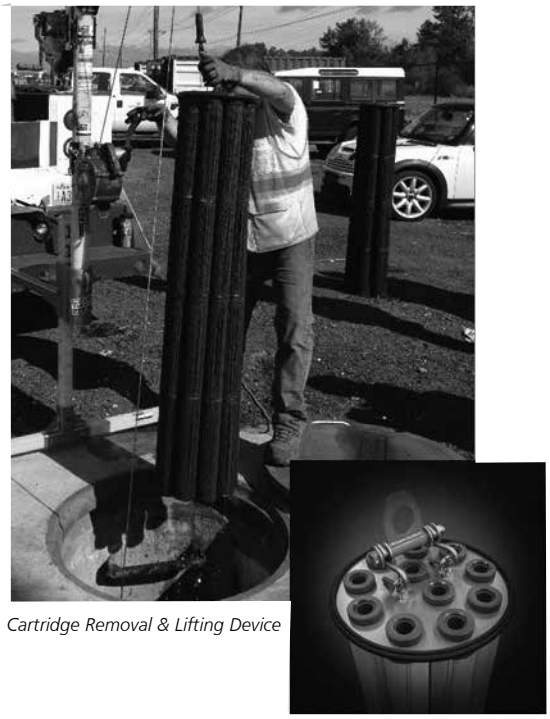
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. 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

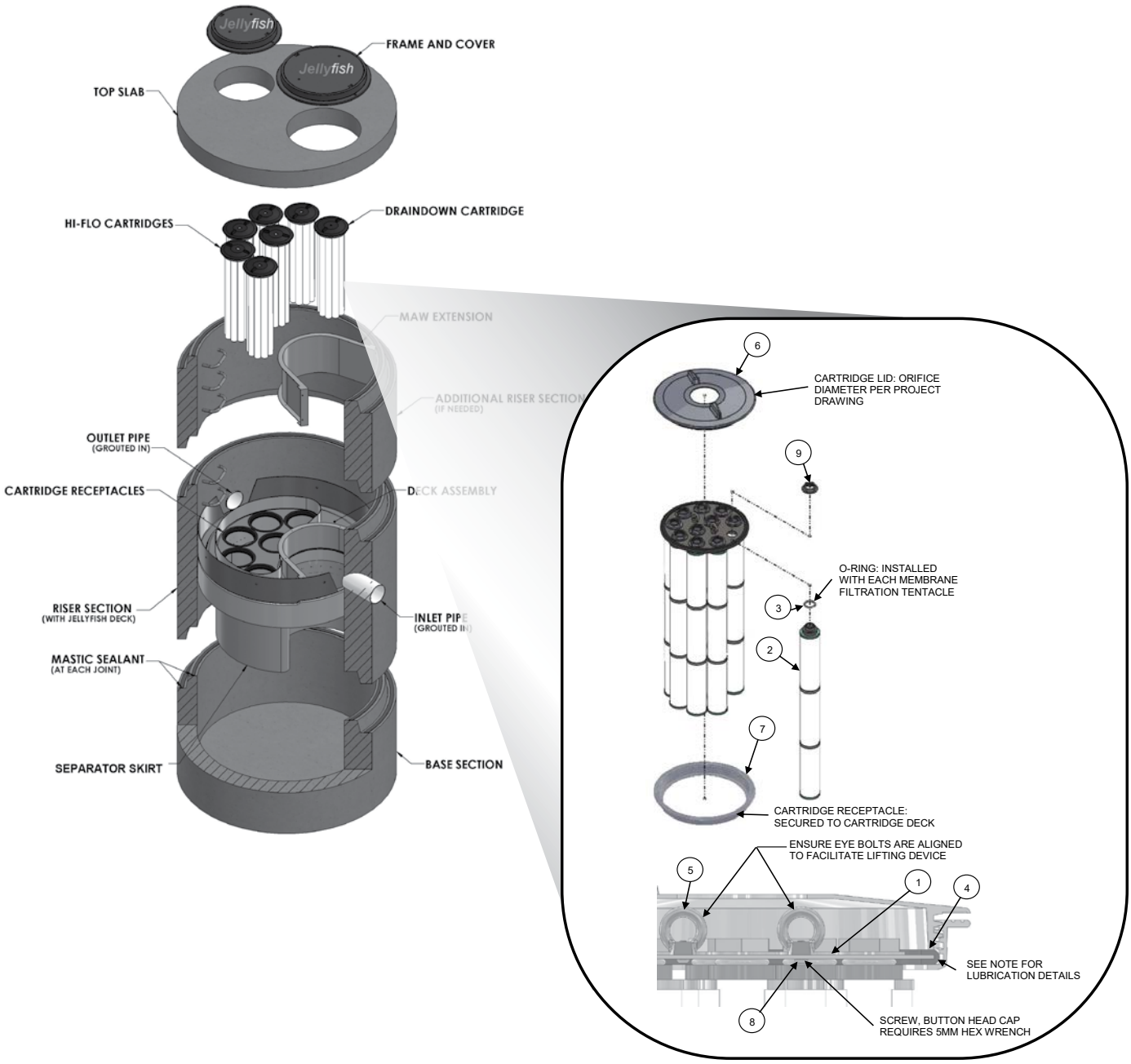


TABLE 1: BOM

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:						



Jellyfish®

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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

800.338.1122
www.ContechES.com

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1.6 Snow & Ice Management for Standard Asphalt and Walkways

Snow storage areas shall be located such that no direct untreated discharges are possible to receiving waters from the storage site (snow storage areas have been shown on the Site Plan). Salt and sand shall be used to the minimum extent practical (refer to the attached for de-icing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.

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:				

Section 2
Chloride Management Plan

Winter Operational Guidelines

The following Chloride Management Plan is for the Proposed Advanced Manufacturing Facility in Portsmouth, New Hampshire. The Plan includes operational guidelines for; winter operator certification requirements, weather monitoring, equipment calibration requirements, mechanical removal, and salt usage evaluation and monitoring. Due to the evolving nature of chloride management efforts, the Chlorides Management Plan will be reviewed annually, in advance of the winter season, to reflect the current management standards.

2.1 Background Information

The Proposed Advanced Manufacturing Facility is located within the Portsmouth Harbor Watershed in Portsmouth, New Hampshire. Portsmouth Harbor watershed is identified as a chloride-impaired waterbody.

2.2 Operational Guidelines – Chloride Management

All Aviation Avenue Group, LLC private contractors engaged at the advanced manufacturing facility premises for the purposes of winter operational snow removal and surface maintenance, are responsible for assisting in meeting compliance for the following protocols. Aviation Avenue Group, LLC private contractors are expected to minimize the effects of the use of de-icing, anti-icing and pretreatment materials by adhering to the strict guidelines outlined below.

The advanced manufacturing facility winter operational de-icing, anti-icing and pretreatment materials will adhere to the following protocols:

2.2.1 Winter Operator Certification Requirements

All private contractors engaged at the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance must be current UNHT2 Green SnowPro Certified operators or equivalent and will use only pre-approved methods for spreading abrasives on private roadways and parking lots. All private contractors engaged at the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance shall provide to Aviation Avenue Group, LLC management two copies of the annual UNHT2 Green SnowPro certificate or equivalent for each operator utilized on the advanced manufacturing facility premises. The annual UNHT2 Green SnowPro certificate or equivalent for each operator will be available on file in the advanced manufacturing facility office and be present in the vehicle/carrier at all times.

2.2.2 Improved Weather Monitoring

Aviation Avenue Group, LLC will coordinate weather information for use by winter

maintenance contractors. This information in conjunction with site specific air/ground surface temperature monitoring will ensure that private contractors engaged at the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance will make more informed decisions as to when and to what extent de-icing, anti-icing and pretreatment materials are applied to private roadways, sidewalks, and parking lots.

2.2.3 Equipment Calibration Requirements

All equipment utilized on the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance will conform to the following calibration requirements.

2.2.3.1 Annual Calibration Requirements

All private contractors engaged at the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of the annual calibration report for each piece of equipment utilized on the advanced manufacturing facility premises. Each calibration report shall include the vehicle/carrier VIN number and the serial numbers for each component including, but not limited to, spreader control units, salt aggregate spreader equipment, brining/pre-wetting equipment, ground speed orientation unit, and air/ground surface temperature monitor. Annual calibration reports will be available on file in the advanced manufacturing facility office and be present in the vehicle/carrier at all times.

Prior to each use, each vehicle/carrier operator will perform a systems check to verify that unit settings remain within the guidelines established by the Aviation Avenue Group, LLC Team in order to accurately dispense material. All private contractors engaged at the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance will be subject to spot inspections by members of the Aviation Avenue Group, LLC Team to ensure that each vehicle/carrier is operating in a manner consistent with the guidelines set herein or State and Municipal regulations. All units will be recalibrated, and the updated calibration reports will be provided each time repairs or maintenance procedures affect the hydraulic system of the vehicle/carrier.

2.2.4 Increased Mechanical Removal Capabilities

All private contractors engaged at the advanced manufacturing facility premises will endeavor to use mechanical removal means on a more frequent basis for roadways, parking lots and sidewalks. Dedicating more manpower and equipment to increase snow removal frequencies prevents the buildup of snow and the corresponding need for de-icing, anti-icing and pretreatment materials. Shortened maintenance routes, with shorter service intervals, will be used to stay ahead of snowfall. Minimized snow and ice packing will reduce the need for abrasives, salt aggregates, and/or brining solution to restore surfaces back to bare surface states after winter precipitation events.

After storm events the Aviation Avenue Group, LLC management team will be

responsible for having the streets swept to recapture un-melted de-icing materials, when practical.

2.3 Salt Usage Evaluation and Monitoring

All private contractors engaged at the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of a storm report, which includes detailed information regarding treatment areas and the use of de-icing, anti- icing and pretreatment materials applied for the removal of snow and surface maintenance on the advanced manufacturing facility premises. Aviation Avenue Group, LLC will maintain copies of Summary Documents, including copies of the Storm Reports, operator certifications, equipment used for roadway and sidewalk winter maintenance, calibration reports and amount of de-icing materials used.

2.4 Summary

The above-described methodologies are incorporated into the advanced manufacturing facility Operational Manual and are to be used to qualify and retain all private contractors engaged at the advanced manufacturing facility premises for the purpose of winter operational snow removal and surface maintenance. This section of the Manual is intended to be an adaptive management document that is modified as required based on experience gained from past practices and technological advancements that reflect chloride BMP standards. All advanced manufacturing facility employees directly involved with winter operational activities are required to review this document and the current standard Best Management Practices published by the UNH Technology Transfer (T2) program annually. All advanced manufacturing facility employees directly involved with winter operational activities, and all private contractors engaged at the advanced manufacturing facility premises for the purposes of winter operational snow removal and surface maintenance, must be current UNHT2 Green SnowPro Certified operators or equivalent and undergo the necessary requirements to maintain this certification annually.

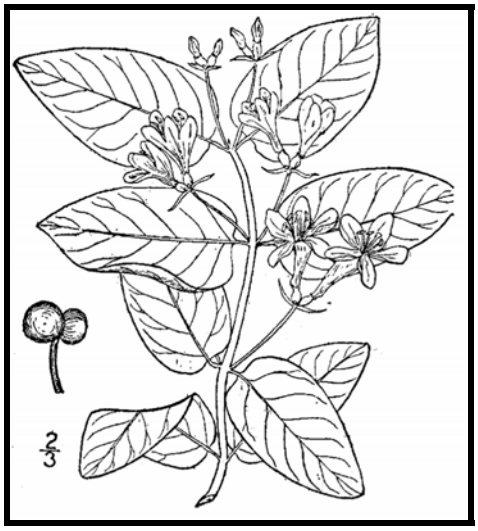
Section 3
Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

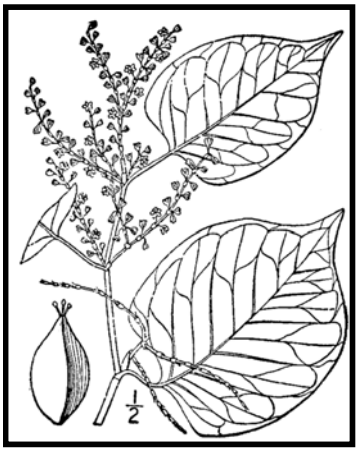
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
  </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

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Managing Invasive Plants
Methods of Control

by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time … but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.



Spraying chemicals to control invasive plants.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.



Using tools to remove woody stems.





Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.



Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.



Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

1. **Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.

2. **Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.

3. **Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.



Injecting herbicide into the hollow stem of phragmites.

4. **Dry it/cook it**—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.



Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. ***Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.*** Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

   ME: Department of Environmental Protection
   www.state.me.us/dep/blwq/docstand/nrpapage.htm

   NH: Department of Environmental Services
   www.des.state.nh.us/wetlands/

   VT: Department of Environmental Conservation
   www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

   MA: Consult your local town conservation commission

   RI: Department of Environmental Management
   www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

   CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.

3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.

4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.

5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 4
Annual Updates and Log Requirements

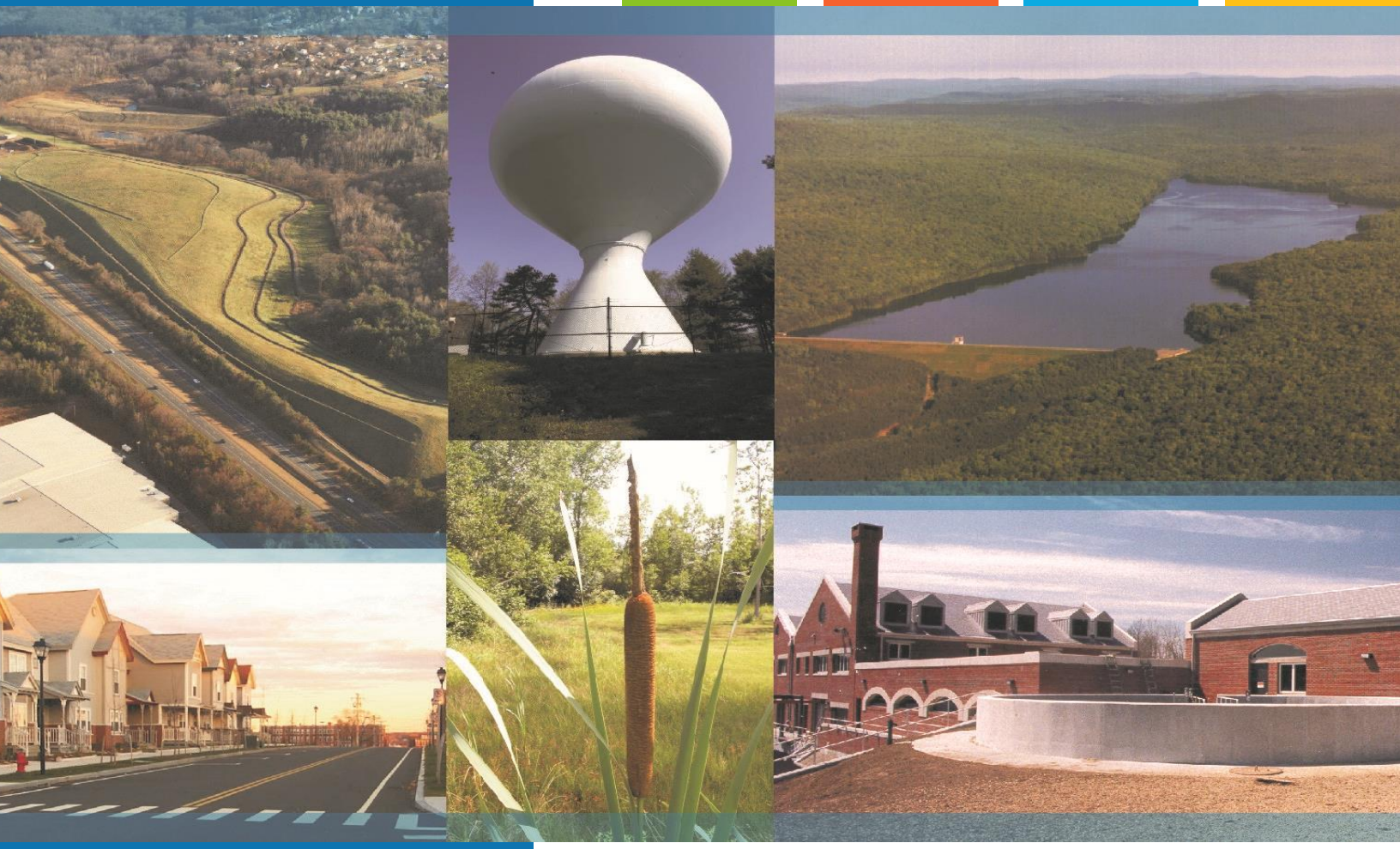
The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Copies of the Stormwater Maintenance report shall be submitted to the Pease Development Authority on an annual basis.

Stormwater Management Report						
Proposed Advanced Manufacturing Facility		**100 New Hampshire Avenue – Portsmouth NH 03801**				
BMP Description	**Date of Inspection**	**Inspector**	**BMP Installed and Operating Properly?**	**Cleaning / Corrective Action Needed**	**Date of Cleaning / Repair**	**Performed By**
Deep Sump CB's			❑Yes ❑No			
Underground Detention			❑Yes ❑No			
Jellyfish Filter Treatment Unit			❑Yes ❑No			

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Advanced Manufacturing Facility
100 New Hampshire Avenue

TRAFFIC IMPACT ASSESSMENT

Procon, INC.

October 7, 2022

Tighe&Bond

100% Recyclable

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Section 1
Introduction

This Traffic Impact Assessment (TIA) evaluates the potential traffic impact of the proposed manufacturing facility, located at 100 New Hampshire Avenue within the Pease International Tradeport in Portsmouth, NH. The TIA was prepared in accordance with NHDOT and industry standards. The Project Site is bounded by Rochester Avenue to the west, New Hampshire Avenue to the east, Stratham Street to the north, and Newfields Street to the south. The site is bounded by industrial, manufacturing, and office land uses, consistent with the Tradeport as a whole. The Site location is shown in Figure 1.

The applicant plans to construct a 209,750± square foot advanced manufacturing facility on the presently vacant lot on site and within a portion of the roadway right-of-way of Rochester Avenue from Stratham Street to Newfields Street. Access to the Site will be provided via four driveways – two on New Hampshire Avenue providing access to employee and visitor parking, and two on Rochester Avenue providing access to loading areas at the north and south ends of the proposed facility. As part of the project, parking will be provided by two on-site surface parking lots accessible with a total of 147 parking spaces. The proposed Site Plan Layout is enclosed in Appendix H. The proposed facility is expected to be complete and occupied in 2025.

Based on the analyses conducted herein, it is the professional opinion of Tighe & Bond that the traffic expected to be generated by the proposed manufacturing development is has a negligible effect on traffic operations within the study area.

Section 2
Existing Conditions

The Project Site is bounded by Rochester Avenue to the west, New Hampshire Avenue to the east, Stratham Street to the north, and Newfields Street to the south. The following sections describe the roadways and intersections included within the study area.

2.1 Roadways

2.1.1 New Hampshire Avenue

New Hampshire Avenue is classified as an urban major collector and maintained by the City of Portsmouth. The roadway runs primarily in the north to south direction connecting Pease Boulevard to the north and Durham Street, International Drive and Corporate Drive to the south. Near the project site, New Hampshire Avenue is generally a two-lane roadway with approximate 15-foot travel lanes separated by a double yellow center line. No marked shoulder or edge lines are provided. The roadway widens to provide marked left turn lanes northbound at Rochester Avenue, and both northbound and southbound at Exeter Street/Manchester Square.

A five-foot (min.) sidewalk is located on the east side of the roadway for the entirety of New Hampshire Avenue. The speed limit is posted at 35 mph in both directions.

2.1.2 Pease Boulevard

Pease Boulevard is classified as an urban major collector and is maintained by the City of Portsmouth and Town of Newington. 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.

2.1.3 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.

2.1.4 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) 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 Pease Boulevard at Arboretum Drive and New Hampshire Avenue

Arboretum Drive intersects Pease Boulevard from the north and New Hampshire Avenue intersects from the south to form a 4-way, stop controlled intersection. Pease Boulevard provides two lanes eastbound, with an exclusive left-turn lane and a shared through/right-turn lane. All other approaches provide one general purpose lane. Sidewalks are provided on the north side of Pease Boulevard on both sides of the intersection, and on the south side of Pease Boulevard east of the intersection. Crosswalks are provided across the east and north legs of the intersection. Marked edge lines with a 1-to-2-foot offset are provided on Pease Boulevard east of the intersection, with 6-foot shoulders on Arboretum Drive north of the intersection.

2.2.5 New Hampshire Avenue at Exeter Street and Manchester Square

Exeter Street intersects New Hampshire Avenue from the west and Manchester Square intersects from the east to form a 4-way, unsignalized intersection with stop control on Exeter Street and Manchester Square. Exclusive left turn lanes are provided on New Hampshire Avenue in both directions, and an exclusive right turn lane is provided on

Manchester Square westbound. All other movements are provided through single general purpose or shared lanes on each approach. Sidewalks are present on the east side of New Hampshire Avenue and on the south side of Exeter Street and Manchester Square, with crosswalks across the south and east legs of the intersection. No marked shoulders are present.

2.2.6 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.

2.2.7 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.

2.2.8 Grafton Road at Aviation Avenue

Aviation Avenue intersects Grafton Road from the north to form a 3-way, T-intersection, with Aviation Avenue under stop control. All approaches provide a single general-purpose lane, with a wide departure lane on Aviation Avenue to accommodate truck turns from Grafton Road. A multi-use path is provided along the northwest side of Grafton Road, with a wide crosswalk across Aviation Avenue. 1-to-2-foot shoulders are provided on Grafton Road, with 1-to-4-foot shoulders on Aviation Avenue.

2.2.9 Grafton Road at Golf Course and Park & Ride Driveways

The driveway for the Pease Golf Course approaches from the west and the combined driveway for the Portsmouth Transportation Center and Park & Ride lot approaches from the east to form a 4-way, unsignalized intersection with Grafton Road. The golf course and Park & Ride driveways are stop controlled. Grafton Road provides a single general-purpose lane in each direction at this intersection with typical 8-foot shoulders that taper and narrow to approximately 1-foot at the intersection. The driveway approaches also feature a single general-purpose lane, with no marked shoulders. A multi-use path is provided along the west side of Grafton Road, with a wide crosswalk across the golf course driveway.

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 Route 33 (Greenland Road) at I-95 Southbound Ramps

I-95 Southbound Exit 3B provides an off-ramp to Route 33 (Greenland Road) to the west of Grafton Road, creating a 3-way, T-type signalized intersection. Route 33 westbound provides a four-lane approach with two left-turn lanes and two through lanes, while Route 33 eastbound provides three through lanes and a right-turn lane to the I-95 southbound on-ramp. The I-95 southbound off-ramp provides two left turn lanes and a right turn lane, while the on-ramp contains two lanes departing the intersection. The multi-use path continues along the north side of Route 33, but does not directly connect to the intersection, and no crosswalks or other pedestrian accommodations are provided.

2.2.13 Route 33 (Greenland Road) at I-95 Northbound Ramps

The I-95 Northbound ramps intersect Route 33 (Greenland Road) at a 3-way, T-type signalized intersection. Route 33 eastbound provides two through lanes at the intersection, with a channelized ramp departing Route 33 in advance of the intersection, yielding to, and merging with the on-ramp serving the left turn from Route 33 westbound, which provides an exclusive left-turn lane and two through lanes. The northbound off-ramp provides separate left and right turn lanes. 6-foot shoulders are provided on Route 33, with 1-to-2-foot left and right shoulders on the off-ramp. No pedestrian accommodations are provided in the vicinity of the intersection.

2.3 Traffic Volumes

Turning movement counts (TMC) were collected at the study area intersections on a typical weekday in February 2022 during the weekday morning (7:00 AM to 9:00 AM) and afternoon peak hour (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 96-hour period from Wednesday thru Saturday. 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 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

Year	AADT	Peak Hour Traffic Volumes		Source
		AM Peak (8:00 AM to 9:00 AM)	PM Peak (4:00 PM to 5:00 PM	
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	12,894	1,161	1,428	Tighe & Bond February 2022 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 2018 and 2021, 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 2022. Based on this understanding, it is prudent to assume that post-2020 traffic volumes represent current conditions, and that it would be overly conservative to apply adjustment factors to conform current traffic volumes to a pre-pandemic level. Adjustments were considered and have been applied to peak hour intersection volumes based on a comparison of post-pandemic 2022 traffic volumes to 2021 volumes.

Based on a review of the collected traffic volumes and comparison to the historical volumes, it was determined the existing morning and afternoon peak hour traffic volumes should be adjusted by a factor of 4% during the weekday morning peak period, and 9% 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 2021 peak hour volumes. NHDOT seasonal adjustment factors were applied to both the historical volumes and existing traffic volumes per NHDOT guidelines. The raw TMC and ATR data are provided in Appendix A. The Traffic Volume Adjustment Factor calculation and NHDOT traffic volumes on Pease Boulevard are provided in Appendix B. Adjusted 2022 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 2022 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 6th 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 F. The queue analysis results are summarized based upon the length of vehicle queueing on an intersection approach. For unsignalized intersections, queues are quantified for 95th percentile (design queues). For signalized intersections, queues are quantified by 95th percentile (design) and 50th 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 G.

As shown in Table 3, most of the overall intersections and individual intersection approaches operate at acceptable LOS D or better during the peak hours with the exception of the following:

- **Route 33 (Greenland Road) at Grafton Road:**
  - The eastbound left movement operates at LOS F during the weekday morning and weekday afternoon peak hour.
  - The intersection operates at overall LOS E during the weekday afternoon peak, with failing operations on the eastbound left and southbound right movements.
- **Route 33 (Greenland Road) at I-95 Northbound Ramps:**
  - The westbound left turn from Route 33 operates at LOS E during the weekday morning and weekday afternoon peak hour. Predicted 50th and 95th percentile queues exceed available storage.
  - The northbound left turn from the off-ramp operates at LOS E during the weekday morning and weekday afternoon peak hour.
- **Grafton Road at Pease Golf Course/Park & Ride Driveways:**
  - The westbound movement from the Park & Ride and Portsmouth Transportation Center driveway operates at LOS F during both peak periods.
- **New Hampshire Avenue/Corporate Drive at International Drive/Durham Street:**
  - The stop-controlled International Drive approach operates at LOS F during the weekday afternoon peak hour.

2.5 Collision History

Crash data was collected from police reports from the City of Portsmouth Police Department and Town of Newington Police Department for the most recent three-year period between January 2019 and December 2021 for the study area intersections. At the time of study completion, updated crash data was not available for the intersections of New Hampshire Avenue/Corporate Drive at Durham Street/International Drive and Corporate Drive at Grafton Road; in lieu of updated data, crash data from 2007 to 2009 has been provided from a historical report, and will be supplemented by more recent data once available. Table 2 on the following page provides a summary of the collisions within the study area. Appendix E includes detailed collision summaries for each of the study intersections.

As shown in Table 2, there were 66 motor vehicle collisions reported in the study area during the three-year period analyzed. Crashes occurred most frequently at the intersection of New Hampshire Avenue at Exeter Street and Manchester Square, with eleven collisions, accounting for about 17% of the reported total. The intersection of Grafton Road at the Pease Golf Course and Park & Ride Driveways experienced the second highest number of collisions with nine, accounting for about 14% of the reported total. The Route 33 (Greenland Road) at Grafton Road and Corporate Drive at Grafton Road each experienced eight collisions, each representing approximately 12 percent of the total. The intersections of Pease Boulevard at the Us Route 4 Southbound Ramps and New Hampshire Avenue/Corporate Drive at Durham Street/International Drive each experienced seven collisions, each representing approximately 11 percent of the total. The remaining intersections experienced five or fewer crashes within the study period. For the three-year period, the intersections of Grafton Road at the I-95 Southbound off-ramp and Route 33 (Greenland Road) at the I-95 Southbound ramps did not have any reported collisions based on data provided by the City of Portsmouth.

TABLE 2

Study Area Collision History Summary

	2007	2008	2009	2019	2020	2021	Total	Percent
Gosling Road at US Route 4 NB Ramps				1	0	3	**4**	**6.1%**
Pease Boulevard at US Route 4 SB Ramps				1	3	3	**7**	**10.6%**
Pease Boulevard at International Drive				1	0	0	**1**	**1.5%**
Pease Blvd at NH Ave/ Arboretum Dr				1	1	3	**5**	**7.6%**
NH Ave at Exeter St/ Manchester Sq				4	4	3	**11**	**16.7%**
Grafton Road at Aviation Avenue				2	2	0	**4**	**6.1%**
Grafton Road at Golf Course/Park and Ride				4	1	4	**9**	**13.6%**
Route 33 at Graton Road				5	1	2	**8**	**12.1%**
Route 33 at I-95 NB Ramps				1	1	0	**2**	**3.0%**
NH Ave at International Dr/ Durham Street	1	2	4				**7**	**10.6%**
Corporate Drive at Graton Road	3	5	0				**8**	**12.1%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

More detailed collision history summary data is provided in Appendix E. The most frequent types of collision were angle and rear-end, accounting for about 39% and 24% of the total collisions within the study area, respectively. The third most frequent collision type was single vehicle crashes with animal or fixed objects which made up about 8% of the total collisions. The remaining crashes were sideswipe – same direction, accounting for about 5% of the total collisions. The fifteen crashes summarized from historical data from 2007 to 2009 are unclassified, as detailed data was not available for these intersections.

About 86% of collisions occurred on weekdays, spread throughout the day. With the remaining 14% occurring on weekends. Weather and road surface conditions were only provided by the Newington Police Department and was available for the two intersections where historical data was utilized. 24 out of the 32 reported collisions in the study area for which weather data was available occurred when the weather was clear. The remaining eight collisions occurred when it was raining or snowing. 22 of the 32 reported collisions occurred when the road surface was dry.

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 Exeter Street/Manchester Square. An additional serious injury crash was reported in the historical data reviewed for the intersection of Corporate Drive at Grafton Road. The remaining 64 crashes resulted in minor injuries or property damage only. There were no pedestrian or cyclist crashes 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 New Hampshire Avenue including two bus stops at the site location (New Hampshire Ave at Stratham Street and New Hampshire Avenue at Newfields Street). Bus Route 42 also have bus 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 J.

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 2022 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:

- Lonza Biologics: This project proposes to construct 1,046,000± sf of new industrial space and 700 new parking spaces contained within two garages along Corporate Drive as an expansion of existing facilities located between Goose Bay Drive and International Drive.

- 73 Corporate Drive: This project proposes to construct additional medical office space adjacent to the existing Wentworth-Douglass facility on Corporate Drive.

- 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 No-Build Condition.

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 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 3 and 4 in Section 7 summarize the capacity and queue results, respectively. Capacity analysis worksheets with full inputs, settings, and results are provided in Appendix G.

The increase in expected future traffic based on the 1 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. Most of the overall intersections and individual intersection approaches operate at acceptable LOS D or better during the peak hours except for the following:

- **Route 33 (Greenland Road) at Grafton Road:**
  - The eastbound left movement continues to operate at LOS F during the weekday morning and weekday afternoon peak hour, with increases in approach delay and queue increases of approximately one vehicle in the 2025 No-Build Condition and up to four vehicles in the 2035 No-Build Condition in the weekday morning peak, and up to two vehicles in 2035 in the weekday afternoon peak.
  - The intersection degrades to LOS F in the 2035 No-Build Condition during the weekday morning peak hour. It continues to operate at LOS E in the weekday afternoon peak hour in the 2025 No-Build Condition, degrading to LOS F overall in the 2035 No-Build Condition.
- **Route 33 (Greenland Road) at I-95 Northbound Ramps:**
  - The westbound left turn from Route 33 continues to operate at LOS E during the weekday morning and weekday afternoon peak hour in both No-Build conditions. Predicted queue lengths continue to exceed available storage.
  - The northbound left turn from the off-ramp continues to operate at LOS E during the weekday morning peak hour in the 2025 No-Build Condition and during the weekday afternoon peak hour in both No-Build conditions. It degrades to LOS F in the weekday morning peak hour in 2035, with increases in predicted 95th percentile queues which are still contained within the available storage.
  - The eastbound right turn to I-95 degrades from LOS D to LOS F in the weekday afternoon peak hour between the 2025 and 2035 No-Build conditions.
  - The overall intersection degrades to LOS E in the 2035 No-Build condition in the weekday afternoon peak hour.
- **Grafton Road at Pease Golf Course/Park & Ride Driveways:**
  - The westbound movement from the Park & Ride and Portsmouth Transportation Center driveway continues to operate at LOS F during both peak periods.
  - The eastbound movement from the Pease Golf Course degrades from LOS D to LOS F during the weekday afternoon peak hour between the 2025 and 2035 No-Build conditions.
- **Pease Boulevard at International Drive:**

  - The signal-controlled northbound right turn from International Drive degrades from LOS C to LOS F in the weekday afternoon peak hour between the 2025 and 2035 No-Build conditions.
  - The overall intersection also degrades from LOS C to LOS F in the weekday afternoon peak hour between the 2025 and 2035 No-Build conditions.

- **Pease Boulevard at US Route 4 Southbound Ramps:**
  - The southbound right turn from the US Route 4 southbound off-ramp degrades from LOS C to LOS F in the weekday morning peak hour between the 2025 and 2035 No-Build conditions.
- **Pease Boulevard/Gosling Road at US Route 4 Northbound Ramps:**
  - The northbound left turn from the US Route 4 northbound off-ramp degrades from LOS D to LOS E in the weekday morning peak hour between the 2025 and 2035 No-Build conditions.
- **Pease Boulevard at Arboretum Drive/New Hampshire Avenue:**
  - The northbound New Hampshire Avenue approach operates at LOS E in the weekday afternoon peak hour 2035 No-Build condition.
- **Route 33 (Greenland Road) at I-95 Southbound Ramps:**
  - The left turn from the I-95 southbound off-ramp degrades to LOS E in the both peak periods in the 2025 No-Build condition, and to LOS F in the 20235 No-Build condition. Increases in predicted 95th percentile queues are contained within the available storage.
  - The left turn from Route 33 to the I-95 on-ramp operates at LOS F in the weekday afternoon peak hour in the 2035 No-Build condition.
- **New Hampshire Avenue/Corporate Drive at International Drive/Durham Street:**
  - The stop-controlled International Drive approach continues to operate at LOS F during the weekday afternoon peak hour during both No-Build conditions.
- **Corporate Drive at Grafton Road:**
  - The eastbound left turn to Grafton Road degrades from LOS C to LOS F between the 2025 and 2035 No-Build conditions in the weekday morning peak hour, and from LOS D to LOS F between the 2025 and 2035 No-Build conditions in the weekday afternoon peak hour.
- **Grafton Road at Aviation Avenue:**
  - The Aviation Avenue approach degrades from LOS C to LOS E between the 2025 and 2035 No-Build conditions in the weekday afternoon peak hour.

Section 4
Proposed Conditions

The proposed 209,750± square foot manufacturing facility will include approximately 147 surface parking spaces. The proposed development is expected to be complete and occupied in 2025. The Site Layout Plan is presented in Appendix H.

4.1 Site Access

Access to the Site will be provided via four full access, unsignalized driveways, with two on New Hampshire Avenue for passenger cars, and two on Rochester Avenue for trucks. The proposed northern site driveway on New Hampshire Avenue is located approximately 280 feet south of Stratham Street and provides access to a 99-vehicle space surface parking lot, while the second driveway is located approximately 700 feet south on New Hampshire Avenue and provides access to a 48-space surface parking lot. The two proposed driveways on Rochester Avenue provide access to two truck loading dock areas at the northern and southern end of the proposed facility. It is anticipated that trucks will access the Site to/ from Rochester Avenue to the south.

Intersection sight distance was reviewed at the proposed Site driveways in accordance with criteria set forth in the AASHTO publication *A Policy on the Geometric Design of Highways and Streets*, 7th Edition, 2018. Available site distances were estimated based on the site layout plan and available aerial mapping. The posted speed of 35 miles per hour on New Hampshire Avenue was used as a basis for the analysis.

Based on AASHTO guidelines and the posted speed of the roadway, the intersection sight distance requirement is 386 feet for passenger cars and 592 feet for combination trucks turning left under *Case B – Left Turn from Stop*. Each site driveway provides intersection sight distance exceeding the AASHTO requirements for passenger vehicles and combination trucks except for the northern site driveway on Rochester Avenue. Intersection sight distance is limited looking to the north due to the sharp curvature at Rochester Avenue/ Stratham Street. While the available sight distance is approximately 250 feet, this is not expected to be a safety issue due to the perceived low traffic volumes in this industrial area and the expected reduced vehicle speeds due to the 90 degree turn between Rochester Avenue and Stratham Street.

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 western side of the facility, with connections to the employee and visitor parking areas and the building itself, as well as a proposed crosswalk across New Hampshire Avenue at Newfields Street which connects to existing sidewalk on the east side of New Hampshire Avenue. Near the site location there is a sidewalk network that connects to Pease Boulevard and to Grafton Road. Just east of the proposed development on the eastern side of New Hampshire Avenue there is a 5-foot-wide sidewalk that connects to the 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 stops are located at the intersection of Stratham Street at New Hampshire Avenue and Newfields Street at New Hampshire

Avenue directly in front of the proposed development with bus connection at the Portsmouth Transportation Center to downtown Portsmouth.

4.3 Trip Generation

Site generated traffic volumes were estimated using rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition, 2021. The proposed land use for the project site is advanced manufacturing, which uses innovative technologies in the manufacturing process, which in turn reduces the number of employees needed over a traditional manufacturing process; however, since ITE does not have a comparable Land Use Code (LUC) for advancing manufacturing, and in the absence of end user data for similar facilities, LUC 140 – Manufacturing was used to estimate traffic for the development. This likely represents a conservative estimate of expected trips for the proposed use. Table 3 summarizes the trip generation estimates, which have been separated into passenger car trips and truck trips.

TABLE 3
Site-Generated Traffic Summary

Proposed - 209,750 SF Manufacturing Facility (Passenger Cars)			
Peak Hour Period	**Enter**	**Exit**	**Total**
Weekday Morning	105	32	137
Weekday Afternoon	46	103	149
Weekday	451	451	902

Proposed - 209,750 SF Manufacturing Facility (Trucks)			
Peak Hour Period	**Enter**	**Exit**	**Total**
Weekday Morning	3	3	6
Weekday Afternoon	2	4	6
Weekday	47	47	94

Proposed - 209,750 SF Manufacturing Facility (Total Vehicles)			
Peak Hour Period	**Enter**	**Exit**	**Total**
Weekday Morning	108	35	143
Weekday Afternoon	48	107	155
Weekday	498	498	996

Based on the ITE data, the proposed development is expected to generate 996 vehicles over a typical weekday, comprised of 902 passenger car vehicle trips and 94 truck trips. During the weekday morning peak hour, the project is expected to generate 143 vehicle trips, with 108 entering and 35 exiting, comprised of 137 passenger car trips and 6 truck trips. During the weekday afternoon peak hour, the project is expected to generate 155 vehicle trips, with 48 entering and 107 exiting, comprised of 149 passenger car trips and 6 truck trips.

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 these 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 existing travel patterns within the study area. Separate distribution patterns were determined for passenger car and truck trips. Truck trip distribution is partially based on prior consultation with PDA and distributes trucks exclusively to and from I-95 to the south, prohibiting site-generated truck distribution on Pease Boulevard.

Arrive and distribution patterns are shown in Figures 5 and 6, and are as follows:

Passenger Cars:

- 25% East to/from Pease Boulevard/Gosling Road
- 25% South to/from I-95
- 20% Northeast to/from I-95
- 20% Northwest to/from US Route 4
- 10% East (Local) to/from Route 33

Trucks:

- 55% South to/from I-95
- 45% Northeast to/from I-95

Site generated employee and visitor passenger car trips are expected to balance between the two site driveways on New Hampshire Avenue based on parking availability and the proximity of parking to the employee's work area. Similarly, truck trips are expected to be split between the two driveways on Rochester Avenue based on availability and proximity of loading dock locations.

Figures 7 and 8 show the proposed site generated traffic distributed to the study area roadways for the weekday morning and afternoon peak hours.

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 9 and 10, 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 D.

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 3.2 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 Arboretum Drive/New Hampshire Avenue:**
    - For the weekday afternoon peak hour, the northbound New Hampshire Avenue approach degrades from LOS C to LOS E in the 2025 Build condition and from LOS E to LOS F in the 2035 Build condition.
    - The overall intersection LOS degrades from LOS D in the 2035 No-Build to LOS E in the 2035 Build condition.

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 one car length or fewer. An exception is the Route 33 (Greenland Road) at I-95 Northbound ramps intersection, which experiences increasing queues extending beyond available capacity in the weekday afternoon peak hour for both the eastbound right turn and westbound left turn to I-95 Northbound. Storage is limited for the westbound left turn by the adjacent signalized intersection of Sherburne Road approximately 500 feet east of the I-95 Northbound ramp intersection, and the existing accommodation of back-to-back left turn lanes for Route 33 westbound at I-95 and eastbound at Sherburne Road.

Increasing queues are also predicted for the Grafton Road eastbound left turn at Corporate Drive in both peak periods, which operates at LOS F in both the 2035 No-Build and 2035 Build conditions.

Section 6
Conclusions & Recommendations

1. A 209,750± square foot advanced manufacturing facility is proposed to be constructed on the presently vacant lot on New Hampshire Avenue in the Pease Tradeport area in Portsmouth, NH. The development will provide approximately 147 parking spaces to accommodate employee and visitor parking. The proposed development is expected to be complete and occupied by 2025.

2. Access to the Site will be provided via for full access, unsignalized driveways. Two driveways on New Hampshire Avenue will serve passenger cars, while two driveways on Rochester Avenue will serve truck traffic to and from the proposed loading docks. Trucks will access the site to and from Rochester Avenue to the south.

3. The proposed land use for the project site is advanced manufacturing, which uses innovative technologies in the manufacturing process, which in turn reduces the number of employees needed over a traditional manufacturing process. ITE Land Use Code 140 – Manufacturing was used to estimate traffic for the development, which is based on more traditional manufacturing methods. This likely represents a conservative estimate of expected trips for the proposed use.

4. Based on the ITE data, the proposed manufacturing facility is expected to generate 996 vehicles over a typical weekday, comprised of 902 passenger car vehicle trips and 94 truck trips. During the weekday morning peak hour, the project is expected to generate 143 vehicle trips, with 108 entering and 35 exiting, comprised of 137 passenger car trips and 6 truck trips. During the weekday afternoon peak hour, the project is expected to generate 155 vehicle trips, with 48 entering and 107 exiting, comprised of 149 passenger car trips and 6 truck trips.

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. 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. One exception is the intersection of Pease Boulevard at Arboretum Drive and New Hampshire Avenue, which degrades to LOS E in the weekday afternoon peak hour in the 2035 No-Build condition and further degrades to LOS F in the 2035 Build condition.

8. Based on the results of the foregoing analysis, it is the professional opinion of Tighe & Bond that while the addition of background growth on a 13-year horizon to the 2035 design year results in undesirable LOS at some area intersections, the addition of site-generated traffic has 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											
		2022 Existing			2025 No-Build			2025 Build			2035 No-Build			2035 Build				2022 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		**B**	**15.0**	**0.71**	**B**	**15.3**	**0.71**	**B**	**15.3**	**0.72**	**C**	**25.4**	**0.88**	**C**	**25.6**	**0.88**		**B**	**19.8**	**0.86**	**C**	**21.0**	**0.89**	**C**	**22.0**	**0.90**	**F**	**124.8**	**1.50**	**F**	**129.7**	**1.54**
Pease Boulevard	EBL	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		C	25.5	0.11	C	25.7	0.11	C	26.3	0.11	C	32.2	0.09	C	33.0	0.09
	EBTR	C	25.0	0.27	C	25.7	0.28	C	25.9	0.32	D	42.4	0.43	D	42.5	0.47		B	19.7	0.58	B	19.8	0.59	C	20.3	0.64	C	22.7	0.55	C	23.0	0.59
	WBL	B	17.8	0.71	B	18.1	0.71	B	18.4	0.72	C	26.4	0.88	C	27.1	0.88		C	24.9	0.17	C	25.0	0.17	C	25.6	0.18	C	27.9	0.59	C	28.9	0.59
	WBTR	A	5.6	0.30	A	5.7	0.31	A	5.8	0.34	A	6.8	0.32	A	6.9	0.34		B	16.3	0.32	B	16.3	0.33	B	16.3	0.37	B	13.5	0.28	B	13.5	0.29
	NBTL	C	21.1	0.03	C	21.6	0.03	C	21.9	0.03	C	31.1	0.03	C	31.3	0.03		B	10.6	0.02	B	10.7	0.02	B	11.1	0.02	B	18.5	0.03	B	19.4	0.03
International Drive	NBR	C	23.6	0.47	C	24.3	0.48	C	24.6	0.49	D	46.1	0.82	D	46.8	0.82		C	22.5	0.86	C	25.0	0.89	C	27.0	0.90	F	259.0	1.50	F	277.9	1.54
	SB	C	21.0	0.02	C	21.5	0.02	C	21.8	0.02	C	31.0	0.02	C	31.2	0.02		B	11.3	0.17	B	11.5	0.18	B	11.9	0.18	C	20.2	0.27	C	21.1	0.28
Traffic Signal - Pease Boulevard at US Route 4 SB On/Off Ramps																													
Overall		**C**	**24.8**	**0.61**	**C**	**25.6**	**0.67**	**C**	**26.5**	**0.73**	**C**	**62.6**	**1.25**	**C**	**69.5**	**1.30**		**C**	**28.8**	**0.72**	**C**	**29.2**	**0.74**	**C**	**29.1**	**0.74**	**C**	**30.2**	**0.79**	**C**	**30.2**	**0.79**
Pease Boulevard	EBT	C	24.8	0.14	C	24.9	0.14	C	24.9	0.15	C	25.2	0.21	C	25.2	0.22		C	24.1	0.44	C	24.7	0.46	C	25.0	0.49	C	27.8	0.58	C	28.1	0.61
	EBR	C	24.4	0.08	C	24.6	0.08	C	24.5	0.08	C	24.6	0.13	C	24.5	0.13		C	23.5	0.34	C	24.0	0.35	C	24.0	0.35	C	27.8	0.51	C	27.8	0.51
	WBL	C	25.2	0.18	C	25.1	0.18	C	26.3	0.18	C	27.3	0.20	C	28.1	0.20		D	53.3	0.72	D	53.8	0.74	D	53.4	0.74	D	52.8	0.79	D	52.6	0.79
	WBT	B	15.8	0.40	B	15.9	0.41	B	15.5	0.42	B	16.5	0.55	B	16.3	0.56		A	6.7	0.17	A	7.1	0.17	A	7.3	0.18	B	10.8	0.28	B	11.1	0.29
US Route 4 SB On/ Off Ramps	SBL	C	29.7	0.52	C	30.7	0.54	C	31.4	0.55	D	35.2	0.63	D	35.5	0.64		C	33.7	0.48	C	33.9	0.49	C	33.9	0.49	C	34.7	0.52	C	34.8	0.52
	SBR	C	31.8	0.61	C	33.7	0.67	D	36.6	0.73	F	159.4	1.25	F	182.7	1.30		C	29.6	0.05	C	29.7	0.05	C	29.7	0.06	C	30.4	0.11	C	30.5	0.11
Traffic Signal - Pease Boulevard at US Route 4 NB On/Off Ramps																													
Overall		**C**	**29.9**	**0.70**	**C**	**30.7**	**0.73**	**C**	**30.7**	**0.74**	**D**	**41.8**	**1.01**	**D**	**41.9**	**1.01**		**C**	**25.0**	**0.65**	**C**	**25.5**	**0.67**	**C**	**26.0**	**0.69**	**C**	**31.7**	**0.82**	**C**	**32.2**	**0.84**
Pease Boulevard	EBL	C	20.4	0.09	C	20.4	0.10	C	20.2	0.11	B	16.4	0.17	B	16.2	0.18		C	30.7	0.65	C	30.2	0.67	C	32.4	0.69	D	48.3	0.82	D	49.7	0.84
	EBT	D	36.7	0.57	D	37.3	0.58	D	36.8	0.58	D	35.1	0.64	C	34.6	0.64		B	17.3	0.56	B	17.7	0.59	B	17.4	0.61	B	19.0	0.71	B	18.9	0.73
	WBTR	B	18.6	0.18	B	18.5	0.18	B	18.4	0.20	C	20.5	0.27	C	20.6	0.29		C	23.5	0.55	C	24.7	0.58	C	25.3	0.60	C	30.9	0.75	C	31.6	0.77
US Route 4 NB On/ Off Ramps	NBL	C	33.6	0.70	D	35.2	0.73	D	36.2	0.74	E	70.1	1.01	E	71.6	1.01		C	31.1	0.23	C	31.2	0.23	C	31.2	0.23	C	32.7	0.36	C	32.8	0.36
	NBR	C	25.7	0.11	C	26.2	0.12	C	26.8	0.12	C	28.9	0.13	C	29.1	0.13		C	30.7	0.17	C	30.8	0.18	C	30.8	0.18	C	31.2	0.20	C	31.3	0.20
Traffic Signal - Greenland Road (State Route 33) at I-95 SB On/Off Ramps																													
Overall		**C**	**30.7**	**0.95**	**C**	**32.5**	**0.97**	**C**	**32.7**	**0.97**	**D**	**43.3**	**1.08**	**D**	**43.8**	**1.08**		**C**	**32.2**	**0.95**	**C**	**34.2**	**0.98**	**C**	**34.9**	**0.98**	**D**	**49.2**	**1.09**	**D**	**51.8**	**1.09**
I-95 SB On/ Off Ramps	WBL	D	51.8	0.95	E	57.6	0.97	E	57.6	0.97	F	87.0	1.08	F	87.0	1.08		D	53.0	0.95	E	59.3	0.98	E	59.3	0.98	F	89.7	1.09	F	89.7	1.09
	WBR	C	27.2	0.27	C	27.4	0.28	C	27.4	0.28	C	28.5	0.39	C	28.5	0.39		C	25.7	0.10	C	25.7	0.10	C	25.7	0.10	C	25.8	0.11	C	25.8	0.11
	NBT	C	27.2	0.76	C	28.2	0.79	C	28.6	0.80	D	38.0	0.93	D	39.1	0.94		C	34.0	0.83	D	35.5	0.86	D	36.0	0.87	D	46.3	0.96	D	46.3	0.96
Greenland Road (State Route 33)	NBR	B	18.5	0.13	B	18.7	0.13	B	18.9	0.13	C	20.3	0.15	C	20.5	0.15		C	23.0	0.17	C	23.2	0.17	C	23.3	0.17	C	23.7	0.19	C	23.7	0.19
	SBL	D	38.5	0.53	D	38.5	0.54	D	38.5	0.56	D	38.2	0.61	D	38.2	0.62		D	43.7	0.83	D	45.3	0.85	D	48.9	0.89	F	81.9	1.04	F	97.1	1.09
	SBT	A	8.9	0.25	A	9.0	0.25	A	9.0	0.25	A	9.2	0.28	A	9.2	0.28		B	12.6	0.59	B	12.8	0.60	B	12.8	0.60	B	14.0	0.67	B	14.0	0.67
Traffic Signal - Greenland Road (State Route 33) at Grafton Road																													
Overall		**D**	**39.1**	**1.31**	**D**	**43.8**	**1.38**	**D**	**46.6**	**1.43**	**F**	**86.9**	**2.01**	**F**	**94.0**	**2.13**		**E**	**60.1**	**1.75**	**E**	**66.0**	**1.81**	**E**	**70.4**	**1.81**	**F**	**107.6**	**1.99**	**F**	**114.9**	**1.99**
Greenland Road (State Route 33)	EBL	F	183.1	1.31	F	211.3	1.38	F	232.4	1.43	F	494.4	2.01	F	547.6	2.13		F	392.5	1.75	F	415.5	1.81	F	415.5	1.81	F	496.8	1.99	F	496.8	1.99
	EBT	B	10.5	0.74	B	11.2	0.77	B	11.7	0.78	C	20.6	0.92	C	22.5	0.94		B	16.4	0.80	B	17.2	0.82	B	17.2	0.82	C	22.1	0.91	C	22.1	0.91
	WBT	B	18.5	0.50	B	18.7	0.51	B	18.7	0.51	B	19.5	0.57	B	19.5	0.57		D	36.5	0.94	D	41.4	0.97	D	41.4	0.97	E	69.5	1.07	E	69.5	1.07
	WBR	B	16.5	0.24	B	16.6	0.25	B	16.9	0.27	B	17.4	0.31	B	17.8	0.34		B	15.2	0.11	B	15.2	0.11	B	15.3	0.12	B	15.4	0.13	B	15.5	0.15
Grafton Road	SBL	C	22.5	0.42	C	22.4	0.42	C	22.3	0.45	C	22.4	0.58	C	22.3	0.59		B	19.4	0.59	B	19.9	0.61	C	21.8	0.68	D	40.4	0.92	E	55.4	0.99
	SBR	C	20.2	0.10	C	20.1	0.11	B	19.8	0.11	B	18.1	0.15	B	17.8	0.16		F	84.6	1.08	F	99.4	1.12	F	124.3	1.19	F	238.5	1.46	F	267.2	1.53
Traffic Signal - Greenland Road (State Route 33) at I-95 NB On/Off Ramps																													
Overall		**C**	**31.3**	**0.89**	**C**	**32.1**	**0.90**	**C**	**33.7**	**0.94**	**D**	**39.6**	**1.05**	**D**	**43.9**	**1.12**		**C**	**30.5**	**0.82**	**C**	**31.8**	**0.83**	**C**	**33.4**	**0.87**	**E**	**55.6**	**1.16**	**E**	**62.7**	**1.22**
Greenland Road (State Route 33)	EBT	C	24.6	0.55	C	25.4	0.57	C	26.6	0.58	C	29.6	0.67	C	29.7	0.67		C	24.6	0.45	C	25.6	0.47	C	26.5	0.48	C	32.0	0.60	C	33.4	0.62
	EBR	C	22.3	0.37	C	22.8	0.38	C	23.7	0.39	C	26.0	0.46	C	26.1	0.46		D	37.6	0.78	D	41.9	0.83	D	46.7	0.87	F	127.1	1.16	F	151.5	1.22
	WBL	E	63.0	0.51	E	63.2	0.52	E	63.2	0.52	E	63.2	0.54	E	63.2	0.54		E	62.1	0.82	E	62.0	0.83	E	62.0	0.83	E	60.9	0.84	E	60.7	0.84
	WBT	B	11.0	0.27	B	11.3	0.28	B	12.0	0.29	B	12.7	0.32	B	12.7	0.33		A	6.0	0.41	A	6.2	0.43	A	6.7	0.43	A	7.9	0.49	A	8.5	0.50
I-95 NB On/ Off Ramps	NBL	E	66.9	0.89	E	68.9	0.90	E	75.4	0.94	F	102.8	1.05	F	126.7	1.12		E	62.6	0.66	E	62.7	0.67	E	62.7	0.68	E	62.2	0.70	E	61.2	0.71
	NBR	D	42.6	0.44	D	43.0	0.48	D	42.2	0.49	D	46.7	0.65	D	49.2	0.71		D	52.9	0.25	D	52.7	0.26	D	51.8	0.26	D	50.6	0.29	D	49.6	0.29

TABLE 4 (CONTINUED)
Intersection Operation Summary - Capacity

	Lane Use	Weekday Morning Peak Hour																Weekday Afternoon Peak Hour											
		2022 Existing			2025 No-Build			2025 Build			2035 No-Build			2035 Build				2022 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 AWSC - Pease Boulevard at Arboretum Drive/New Hampshire Avenue																													
Overall		**B**	**13.2**	**0.52**	**B**	**13.7**	**0.54**	**C**	**15.4**	**0.61**	**C**	**15.5**	**0.62**	**C**	**18.0**	**0.69**		**C**	**17.2**	**0.75**	**C**	**18.6**	**0.78**	**D**	**26.9**	**0.89**	**D**	**28.2**	**0.91**	**E**	**43.6**	**1.02**
Pease Boulevard	EB	A	9.7	0.08	A	9.8	0.09	B	10.1	0.09	B	10.3	0.10	B	10.6	0.10		B	12.1	0.30	B	12.5	0.31	B	13.3	0.33	B	14.1	0.37	B	14.9	0.39
	WBL	B	14.9	0.47	C	15.4	0.48	C	19.6	0.61	C	17.7	0.55	C	23.8	0.69		B	14.1	0.37	B	14.6	0.39	C	16.5	0.45	C	16.8	0.45	C	18.9	0.52
	WBTR	B	11.3	0.34	B	11.6	0.36	B	11.8	0.36	B	12.7	0.41	B	13.0	0.42		A	9.4	0.06	A	9.6	0.06	A	9.9	0.06	B	10.1	0.07	B	10.4	0.07
New Hampshire Avenue	NB	B	10.6	0.26	B	10.8	0.27	B	11.5	0.30	B	11.7	0.31	B	12.5	0.35		C	22.0	0.75	C	24.4	0.78	E	38.8	0.89	E	41.9	0.91	F	69.9	1.02
Arboretum Drive	SB	B	14.9	0.52	C	15.6	0.54	C	16.6	0.56	C	18.3	0.62	C	19.8	0.64		B	11.4	0.25	B	11.7	0.26	B	12.4	0.27	B	13.0	0.31	B	13.6	0.32
Unsignalized TWSC - New Hampshire Avenue at Exeter Street/Manchester Square																													
Exeter Street	EB	C	16.3	0.09	C	16.7	0.09	C	18.5	0.10	C	18.8	0.12	C	21.0	0.13		C	16.3	0.08	C	16.7	0.08	C	18.2	0.09	C	18.6	0.10	C	20.5	0.12
Manchester Square	WBLT	C	20.7	0.12	C	21.4	0.13	C	24.5	0.16	D	25.1	0.17	D	29.0	0.20		C	21.6	0.21	C	22.5	0.22	D	25.9	0.26	D	27.3	0.29	D	32.1	0.33
	WBR	A	9.6	0.02	A	9.6	0.02	A	9.7	0.02	A	9.8	0.02	A	9.9	0.02		B	11.2	0.05	B	11.3	0.05	B	11.9	0.06	B	11.8	0.06	B	12.4	0.07
New Hampshire Avenue	NBL	A	8.4	0.03	A	8.4	0.03	A	8.6	0.03	A	8.6	0.03	A	8.8	0.03		A	7.9	0.01	A	7.9	0.01	A	8.0	0.01	A	8.0	0.01	A	8.1	0.01
	SBL	A	7.8	0.04	A	7.8	0.04	A	7.9	0.04	A	7.9	0.04	A	8.0	0.04		A	8.3	0.01	A	8.4	0.01	A	8.6	0.02	A	8.5	0.02	A	8.7	0.02
Unsignalized TWSC - New Hampshire Avenue/Corporate Drive at International Drive/Durham Street																													
Durham Street	EB	C	15.1	0.06	C	15.4	0.06	C	16.9	0.07	C	16.8	0.08	C	18.5	0.09		C	15.6	0.08	C	16.0	0.08	C	17.7	0.09	C	17.5	0.10	C	19.6	0.12
International Drive	WB	C	16.6	0.18	C	17.2	0.19	C	19.4	0.21	C	19.5	0.23	C	22.5	0.27		F	53.3	0.84	F	63.5	0.89	F	106.7	1.04	F	133.6	1.13	F	211.1	1.32
Corporate Drive	NBL	A	7.5	0.00	A	7.6	0.00	A	7.6	0.00	A	7.6	0.01	A	7.7	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
New Hampshire Avenue	SBL	A	8.8	0.02	A	8.8	0.02	A	9.1	0.02	A	9.1	0.02	A	9.3	0.02		A	7.8	0.00	A	7.9	0.00	A	7.9	0.01	A	7.9	0.01	A	8.0	0.01
Unsignalized TWSC - Corporate Drive at Grafton Road																													
Grafton Road	EBL	C	18.1	0.70	C	19.3	0.73	C	23.8	0.80	F	140.3	1.23	F	191.0	1.35		C	24.7	0.59	D	27.3	0.63	D	33.2	0.72	F	612.9	2.19	F	793.9	2.59
	EBR	A	9.6	0.24	A	9.7	0.25	A	9.7	0.25	B	10.7	0.38	B	10.7	0.38		A	8.9	0.11	A	8.9	0.12	A	8.9	0.12	A	9.1	0.17	A	9.1	0.17
Corporate Drive	NBL	A	7.7	0.02	A	7.7	0.02	A	7.8	0.02	A	8.0	0.11	A	8.1	0.12		B	10.3	0.23	B	10.5	0.24	B	10.9	0.25	B	14.6	0.54	C	15.9	0.58
Unsignalized TWSC - Grafton Road at Aviation Avenue																													
Aviation Avenue	EB	A	9.7	0.03	A	9.8	0.03	B	10.0	0.03	B	11.1	0.05	B	11.3	0.05		C	21.0	0.41	C	22.2	0.43	D	25.2	0.48	E	49.5	0.71	F	62.4	0.79
Grafton Road	NBL	A	8.2	0.14	A	8.2	0.15	A	8.3	0.15	A	8.9	0.19	A	9.0	0.19		A	9.5	0.02	A	9.6	0.03	A	9.9	0.03	B	11.0	0.04	B	11.4	0.04
Unsignalized TWSC - Grafton Road at Pease Golf Course Driveway/Park & Ride Driveway																													
Pease Golf Course Driveway	EB	B	10.3	0.02	B	10.3	0.02	B	10.5	0.02	B	11.9	0.03	B	12.2	0.03		D	26.3	0.20	D	27.8	0.21	D	31.7	0.24	F	62.3	0.44	F	77.4	0.51
Park and Ride Driveway	WB	F	90.3	0.48	F	105.8	0.54	F	150.0	0.67	F	576.3	1.51	F	953.4	2.15		F	75.9	0.53	F	89.3	0.59	F	123.9	0.70	F	501.2	1.55	F	683.1	1.88
Grafton Road	NBL	A	7.9	0.02	A	7.9	0.03	A	8.0	0.03	A	8.5	0.03	A	8.6	0.03		B	10.3	0.07	B	10.5	0.07	B	10.8	0.08	B	12.5	0.11	B	13.0	0.12
	SBL	B	12.3	0.02	B	12.5	0.02	B	13.1	0.02	B	14.7	0.03	C	15.5	0.03		A	8.5	0.01	A	8.5	0.01	A	8.6	0.01	A	8.8	0.02	A	8.9	0.02
Unsignalized TWSC - Grafton Road at I-95 SB Off Ramp																													
I-95 SB Off Ramp	WBR	C	23.1	0.48	C	24.9	0.51	D	31.4	0.62	F	61.4	0.86	F	97.8	1.01		B	11.1	0.07	B	11.2	0.07	B	11.5	0.09	B	12.1	0.11	B	12.4	0.13

TABLE 5
Intersection Operation Summary - Queues (In Feet)

	Lane Use	Available Storage	Weekday Morning Peak Hour										Weekday Afternoon Peak Hour									
			2022 Existing		2025 No-Build		2025 Build		2035 No-Build		2035 Build		2022 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	0	0	0	0	0	0	0	0	0	0	1	8	1	8	1	8	3	9	3	9
	EBTR	>1000	22	43	23	45	28	51	44	57	51	65	52	91	53	94	62	105	104	118	121	134
	WBL	690	150	186	159	195	161	199	418	378	423	385	3	15	3	16	3	16	65	110	68	113
	WBTR	>1000	50	67	53	71	59	80	86	85	97	95	22	74	23	76	28	88	29	103	34	117
	NBLT	840	2	12	2	12	2	12	5	16	5	16	1	12	1	12	1	12	3	15	3	16
International Drive	NBR	530	47	84	50	88	50	89	157	190	158	192	91	356	96	374	102	387	385	618	402	639
	SB	>1000	2	9	2	9	2	9	3	13	4	13	14	59	14	61	15	63	38	82	39	85
Traffic Signal - Pease Boulevard at US Route 4 SB On/Off Ramps																						
Pease Boulevard	EBT	>1000	31	41	32	42	34	44	53	64	56	67	143	163	148	169	158	179	190	211	200	222
	EBR	530	0	27	0	27	0	27	0	31	0	31	0	51	0	52	0	52	34	113	34	113
	WBL	370	41	61	42	62	43	62	47	55	47	55	195	251	202	258	202	258	224	282	224	282
	WBT	370	207	242	215	248	220	249	312	311	314	312	37	50	38	54	39	56	68	119	70	123
US Route 4 SB On/ Off Ramps	SBL	520	128	161	134	166	137	166	172	184	172	184	110	125	113	129	113	129	127	142	127	142
	SBR	520	112	137	128	153	152	175	423	407	452	434	0	15	0	14	0	14	0	14	0	14
Traffic Signal - Pease Boulevard at US Route 4 NB On/Off Ramps																						
Pease Boulevard	EBL	375	19	38	20	39	21	40	36	55	37	56	148	195	159	207	171	220	227	277	236	286
	EBT	375	134	180	139	185	141	184	160	284	160	287	92	110	95	113	96	113	105	122	106	123
	WBTR	460	44	72	46	73	52	81	73	110	79	117	178	246	189	256	196	261	267	327	271	331
US Route 4 NB On/ Off Ramps	NBL	360	181	228	189	235	193	235	324	346	324	346	48	77	50	79	50	79	81	119	81	119
	NBR	360	0	18	0	19	0	19	0	18	0	18	0	43	0	43	0	43	0	45	0	45
Traffic Signal - Greenland Road (State Route 33) at I-95 SB On/Off Ramps																						
I-95 SB On/ Off Ramps	WBL	675	250	346	259	363	259	363	325	422	325	422	257	372	268	389	268	389	337	451	337	451
	WBR	675	0	60	1	61	1	61	21	98	21	98	0	43	0	44	0	44	0	46	0	46
	NBT	800	274	354	287	371	289	375	348	500	350	504	278	337	289	350	289	350	332	439	332	439
Greenland Road (State Route 33)	NBR	385	0	41	0	42	0	42	0	46	0	46	0	49	0	50	0	50	0	52	0	52
	SBL	785	70	92	72	94	76	98	95	117	98	121	174	215	180	223	192	252	256	329	277	351
	SBT	>1000	66	81	68	84	68	84	77	93	77	93	218	247	228	259	228	259	268	301	268	301
Traffic Signal - Greenland Road (State Route 33) at Grafton Road																						
Greenland Road (State Route 33)	EBL	400	227	412	240	428	246	435	316	500	331	500	145	261	151	269	151	269	172	295	172	295
	EBT	>1000	176	288	187	307	193	323	272	464	289	464	199	267	210	281	210	281	249	388	249	388
	WBT	>1000	76	116	79	120	79	120	89	134	89	134	182	298	190	312	190	312	248	360	248	360
	WBR	275	0	52	0	52	0	55	0	58	0	60	0	35	0	36	0	37	0	40	0	41
Grafton Road	SBL	300	42	64	44	65	48	70	74	100	77	105	96	161	100	167	114	188	169	315	187	348
	SBR	1000	0	24	0	24	0	24	0	24	0	25	212	374	229	392	254	419	359	530	384	557
Traffic Signal - Greenland Road (State Route 33) at I-95 NB On/Off Ramps																						
Greenland Road (State Route 33)	EBT	>1000	321	416	335	434	337	436	403	519	405	520	233	352	246	371	254	382	326	477	336	494
	EBR	700	0	67	0	69	0	69	0	78	0	78	240	645	297	708	350	760	818	1093	870	1146
	WBL	200	71	123	73	126	73	126	81	136	81	136	304	368	313	376	313	376	344	410	344	408
	WBT	475	118	151	123	155	126	159	145	181	148	184	158	227	168	241	176	252	218	308	228	320
I-95 NB On/ Off Ramps	NBL	>1000	340	403	353	417	394	483	494	587	560	649	135	195	140	200	151	212	168	231	179	243
	NBR	340	22	53	35	68	42	79	116	168	157	211	0	81	0	82	0	81	0	81	0	80

TABLE 5 (CONTINUED)
Intersection Operation Summary - Queues (In Feet)

	Lane Use	Available Storage	Weekday Morning Peak Hour										Weekday Afternoon Peak Hour									
			2022 Existing		2025 No-Build		2025 Build		2035 No-Build		2035 Build		2022 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 AWSC - Pease Boulevard at Arboretum Drive/New Hampshire Avenue																						
Pease Boulevard	EB	900	--	8	--	8	--	8	--	8	--	8	--	30	--	33	--	35	--	43	--	45
	WBL	>1000	--	63	--	65	--	102	--	83	--	133	--	43	--	45	--	57	--	57	--	70
	WBTR	>1000	--	38	--	40	--	40	--	50	--	50	--	5	--	5	--	5	--	5	--	5
New Hampshire Avenue	NB	>1000	--	25	--	28	--	33	--	33	--	38	--	170	--	188	--	290	--	300	--	433
Arboretum Drive	SB	>1000	--	75	--	83	--	88	--	105	--	113	--	25	--	25	--	28	--	33	--	33
Unsignalized TWSC - New Hampshire Avenue at Exeter Street/Manchester Square																						
Exeter Street	EB	>1000	--	8	--	8	--	8	--	10	--	10	--	8	--	8	--	8	--	8	--	10
Manchester Square	WBLT	950	--	10	--	13	--	13	--	15	--	18	--	10	--	20	--	25	--	30	--	35
	WBR	80	--	3	--	3	--	3	--	3	--	3	--	3	--	5	--	5	--	5	--	5
New Hampshire Avenue	NBL	85	--	3	--	3	--	3	--	3	--	3	--	3	--	0	--	0	--	0	--	0
	SBL	165	--	3	--	3	--	3	--	3	--	3	--	3	--	0	--	0	--	3	--	3
Unsignalized TWSC - New Hampshire Avenue/Corporate Drive at International Drive/Durham Street																						
Durham St	EB	860	--	5	--	5	--	5	--	5	--	8	--	5	--	8	--	8	--	8	--	10
International Drive	WB	>1000	--	15	--	18	--	20	--	23	--	28	--	15	--	210	--	278	--	335	--	418
Corporate Drive	NBL	920	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
New Hampshire Avenue	SBL	>1000	--	3	--	3	--	3	--	3	--	3	--	3	--	0	--	0	--	0	--	0
Unsignalized TWSC - Corporate Drive at Grafton Road																						
Grafton Road	EBL	220	--	148	--	163	--	217	--	648	--	830	--	148	--	105	--	138	--	608	--	720
	EBR	220	--	23	--	25	--	25	--	45	--	45	--	23	--	10	--	10	--	15	--	15
Corporate Drive	NBL	>1000	--	3	--	3	--	3	--	10	--	10	--	3	--	23	--	25	--	83	--	93
Unsignalized TWSC - Grafton Road at Aviation Avenue																						
Aviation Avenue	EB	>1000	--	3	--	3	--	3	--	3	--	3	--	3	--	53	--	60	--	120	--	140
Grafton Road	NBL	>1000	--	13	--	13	--	13	--	18	--	18	--	13	--	3	--	3	--	3	--	3
Unsignalized TWSC - Grafton Road at Pease Golf Course Driveway/Park & Ride Driveway																						
Golf Course Driveway	EB	>1000	--	0	--	0	--	0	--	3	--	3	--	0	--	20	--	23	--	48	--	55
Park and Ride Driveway	WB	>1000	--	50	--	57	--	70	--	123	--	138	--	50	--	68	--	83	--	158	--	170
Grafton Road	NBL	800	--	3	--	3	--	3	--	3	--	3	--	3	--	5	--	8	--	10	--	10
	SBL	>1000	--	3	--	3	--	3	--	3	--	3	--	3	--	0	--	0	--	3	--	3
Unsignalized TWSC - Grafton Road at I-95 SB Off Ramp																						
I-95 SB Off Ramp	WB	>1000	--	63	--	70	--	100	--	188	--	263	--	63	--	5	--	8	--	10	--	10

Section 8
Figures



100 NEW HAMPSHIRE AVENUE MANUFACTURING FACILITY

PORTSMOUTH, NH

SITE LOCATION MAP

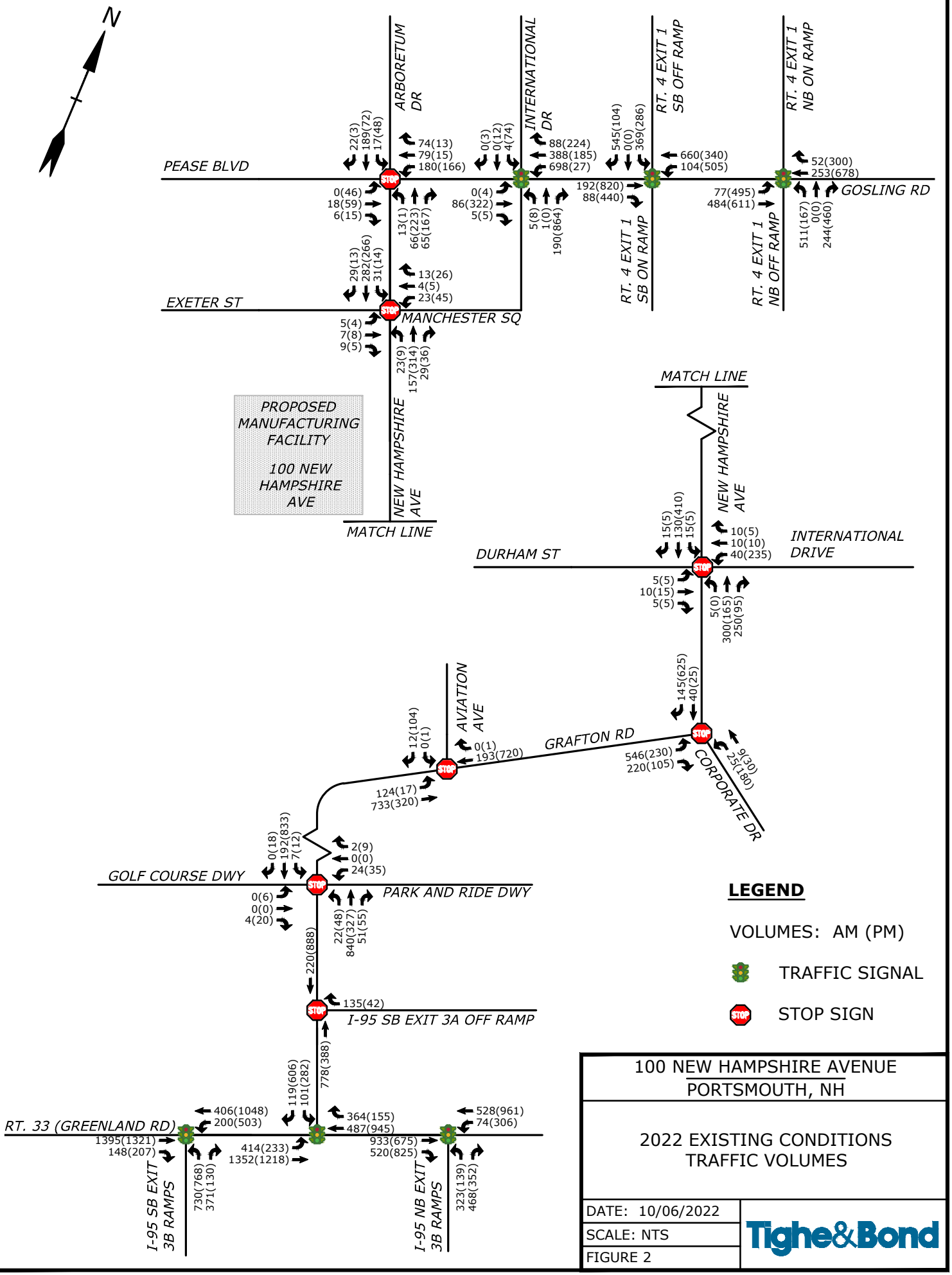
NORTH

NO SCALE

FIGURE 1

Tighe&Bond

Oct 06, 2022-11:43am Plotted By: MStoutz
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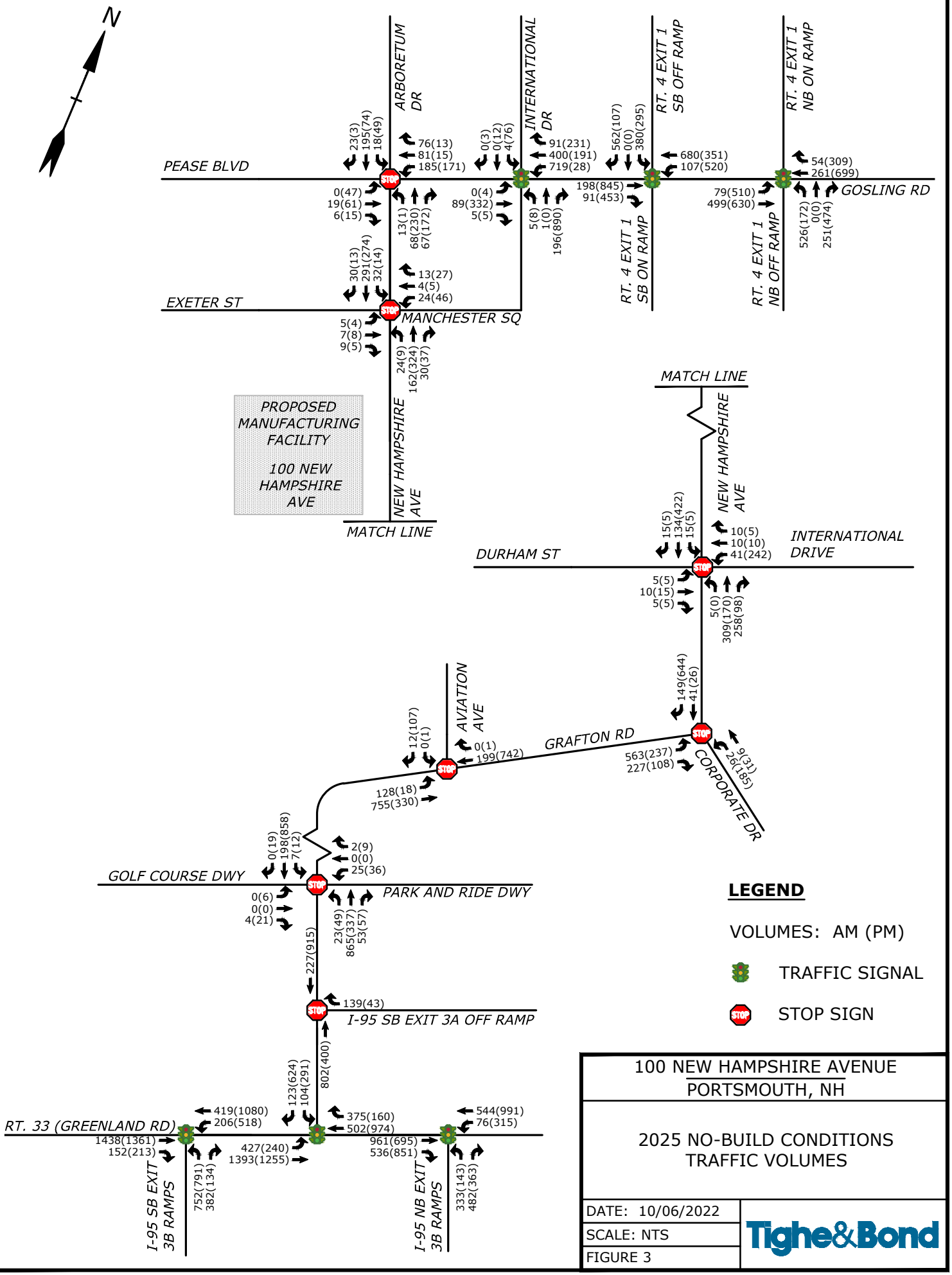
100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

2022 EXISTING CONDITIONS
TRAFFIC VOLUMES

DATE: 10/06/2022
SCALE: NTS
FIGURE 2

Tighe&Bond

Oct 06, 2022-3:57pm Plotted By: KHuang
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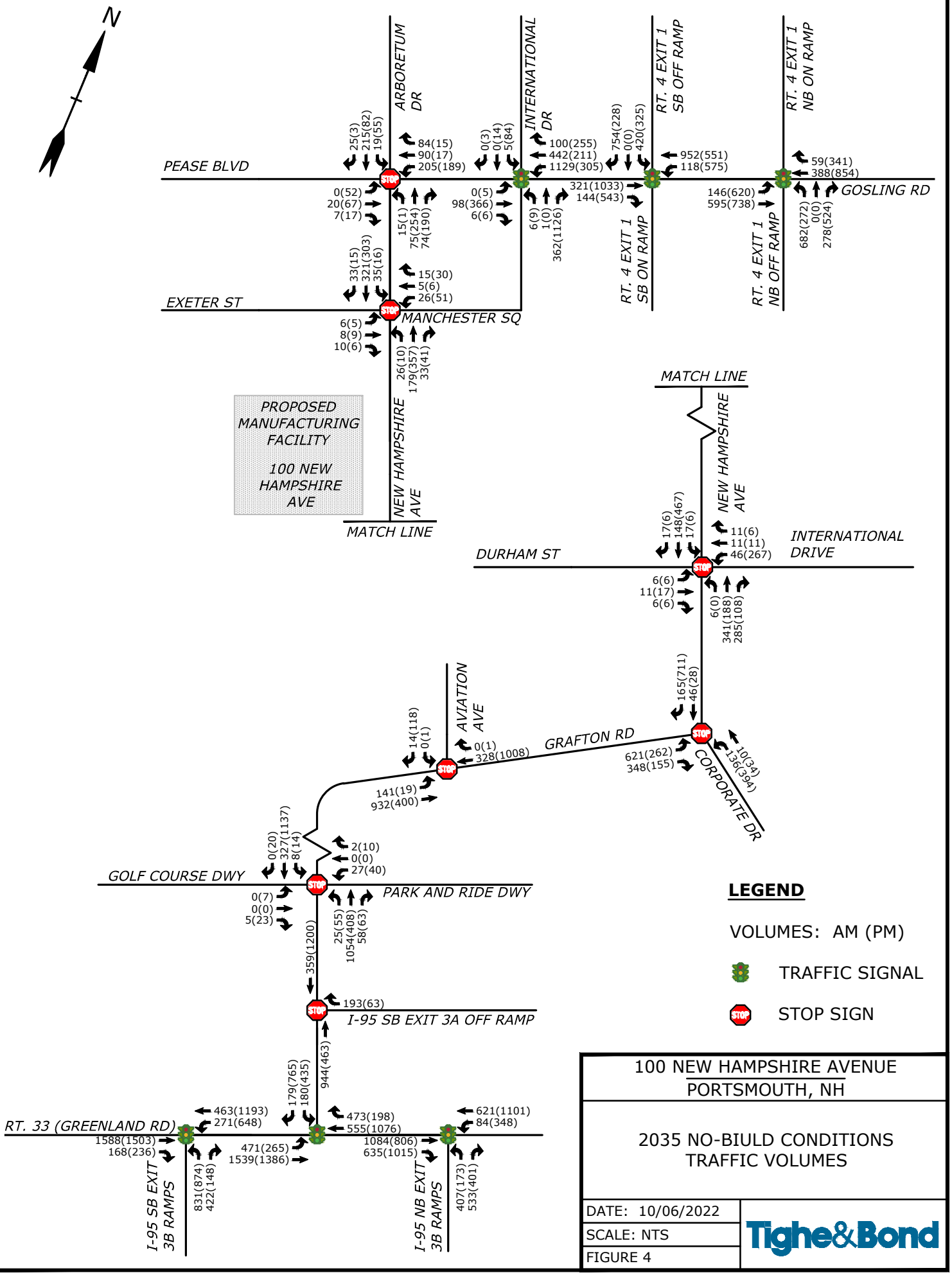
100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

2025 NO-BUILD CONDITIONS
TRAFFIC VOLUMES

DATE: 10/06/2022
SCALE: NTS
FIGURE 3

Tighe&Bond

Oct 06, 2022-3:57pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg



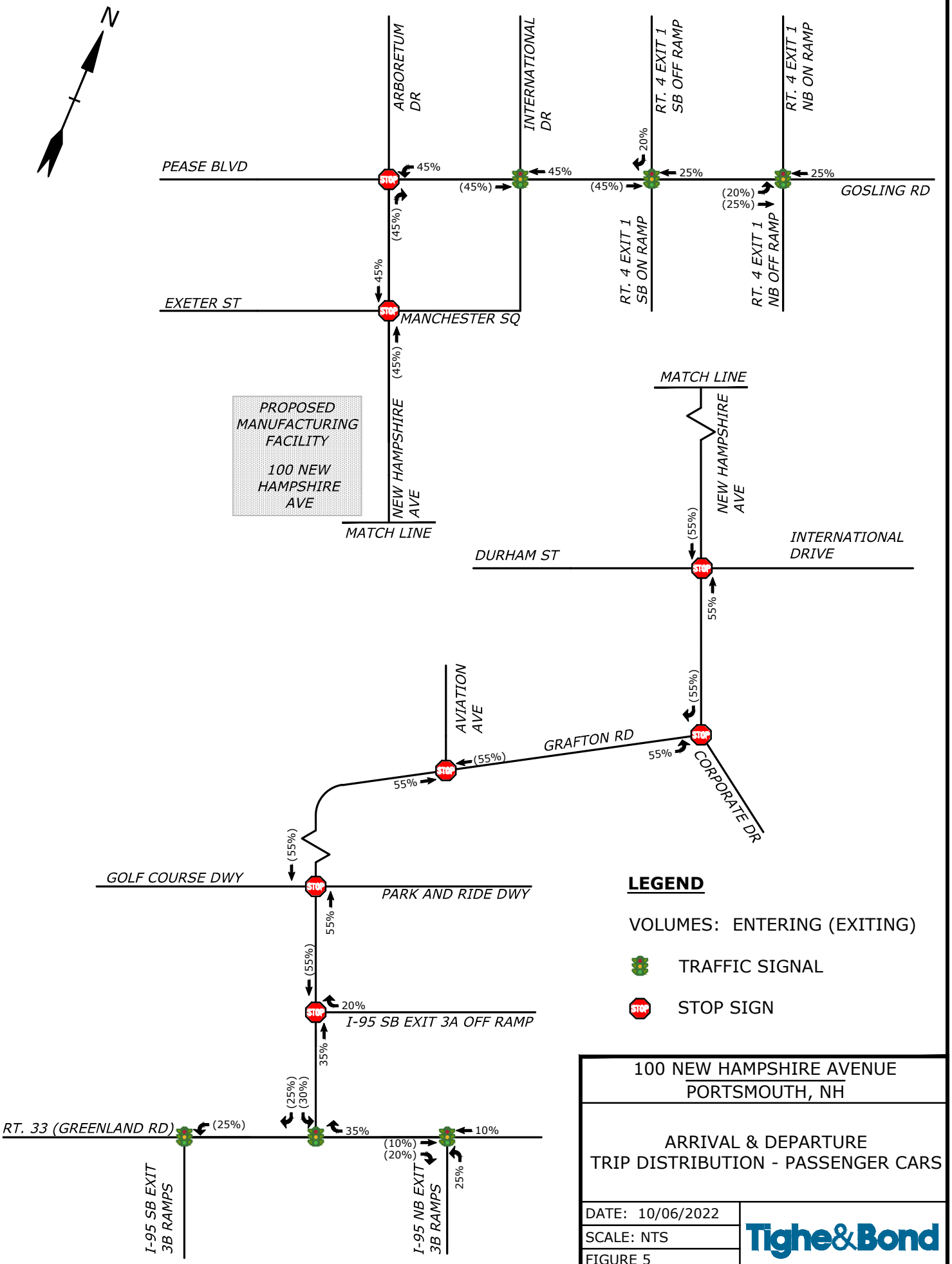
100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

2035 NO-BIULD CONDITIONS
TRAFFIC VOLUMES

DATE: 10/06/2022
SCALE: NTS
FIGURE 4

Tighe&Bond

Oct 06, 2022-3:57pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg



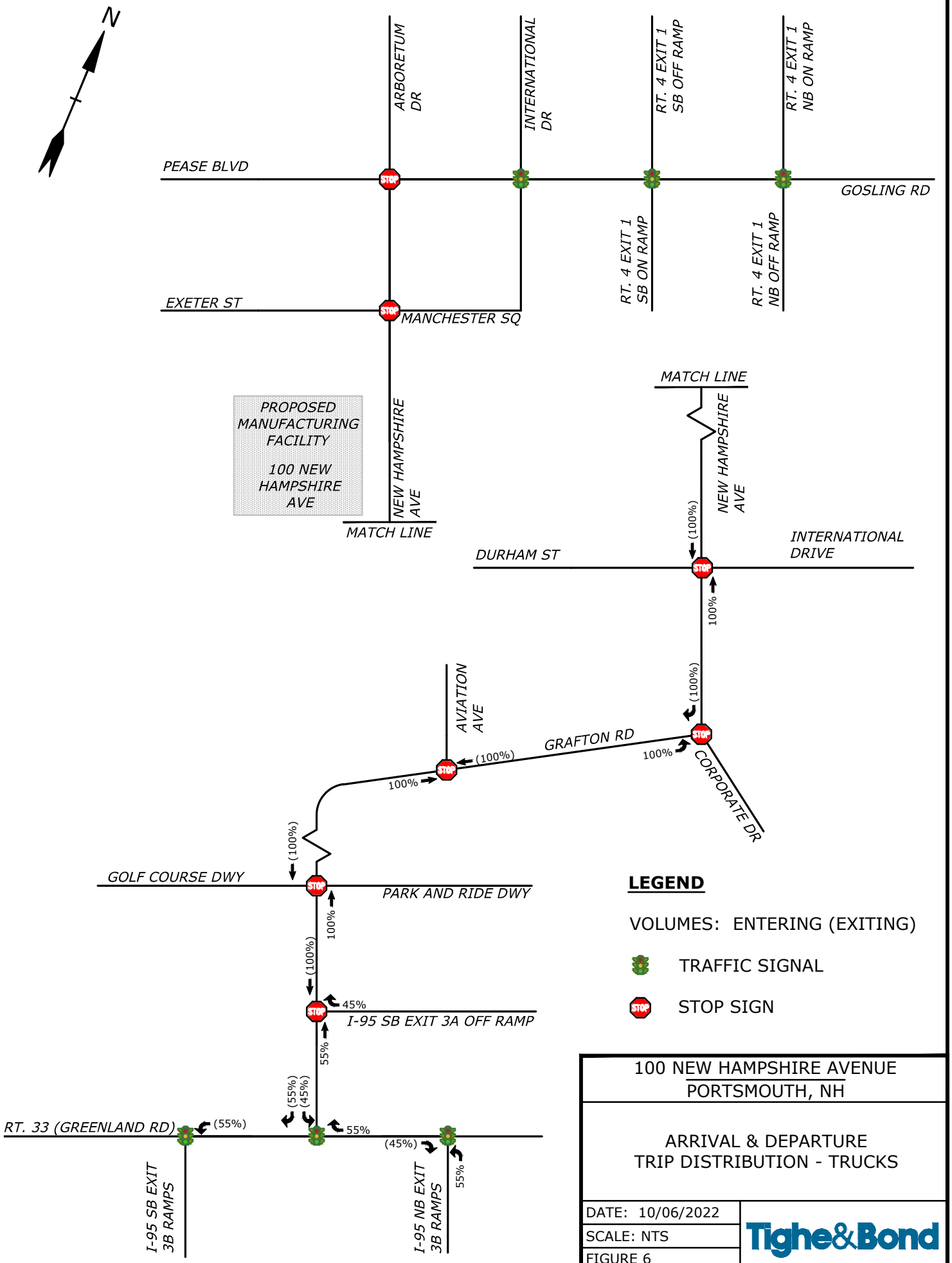
100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

ARRIVAL & DEPARTURE
TRIP DISTRIBUTION - PASSENGER CARS

DATE: 10/06/2022
SCALE: NTS
FIGURE 5

Tighe&Bond

Oct 06, 2022-3:58pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg



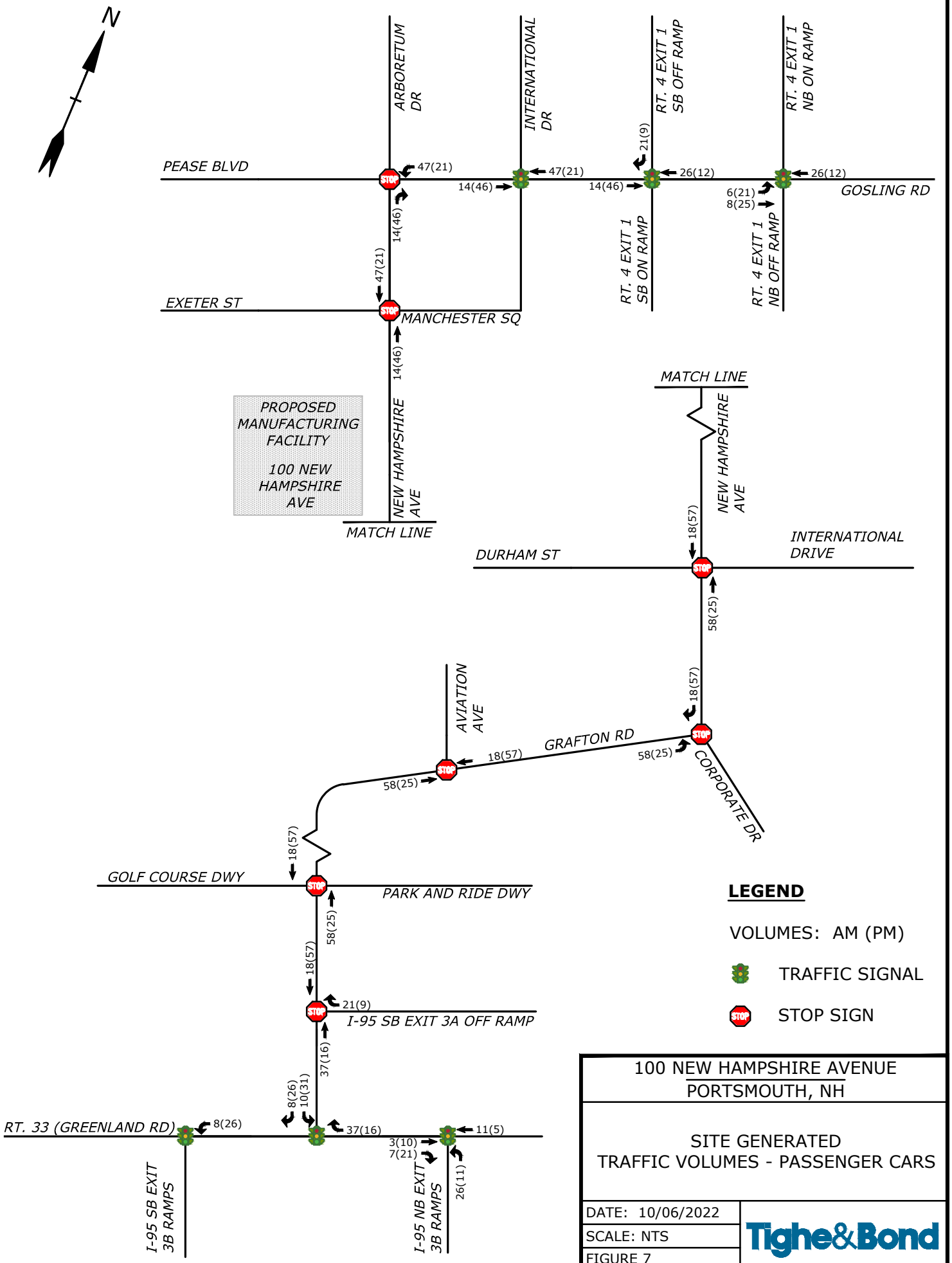
100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

ARRIVAL & DEPARTURE
TRIP DISTRIBUTION - TRUCKS

DATE: 10/06/2022
SCALE: NTS
FIGURE 6

Tighe&Bond

Oct 06, 2022-3:58pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg



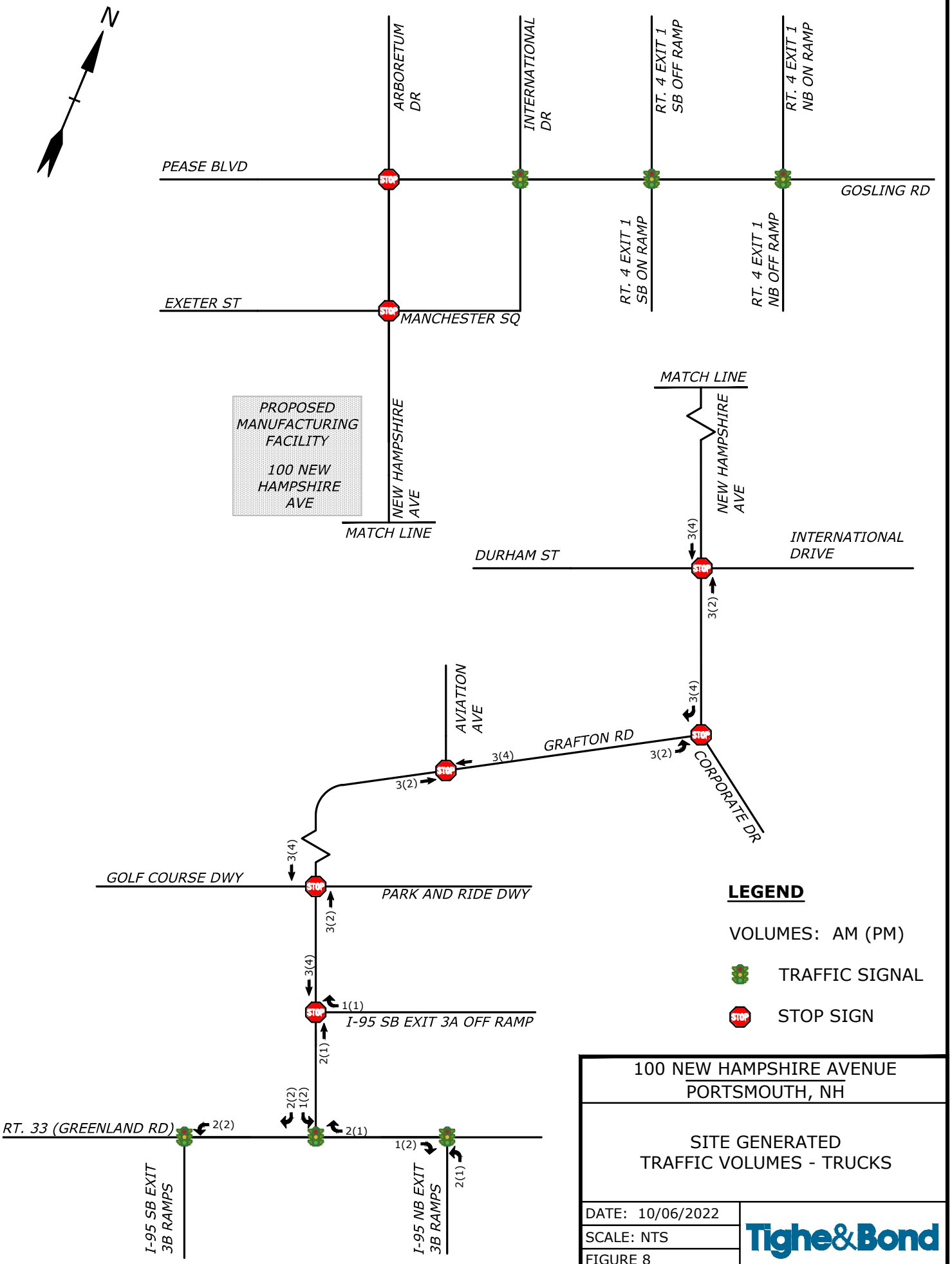
100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

SITE GENERATED
TRAFFIC VOLUMES - PASSENGER CARS

DATE: 10/06/2022
SCALE: NTS
FIGURE 7

Tighe&Bond

Oct 06, 2022-3:58pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg



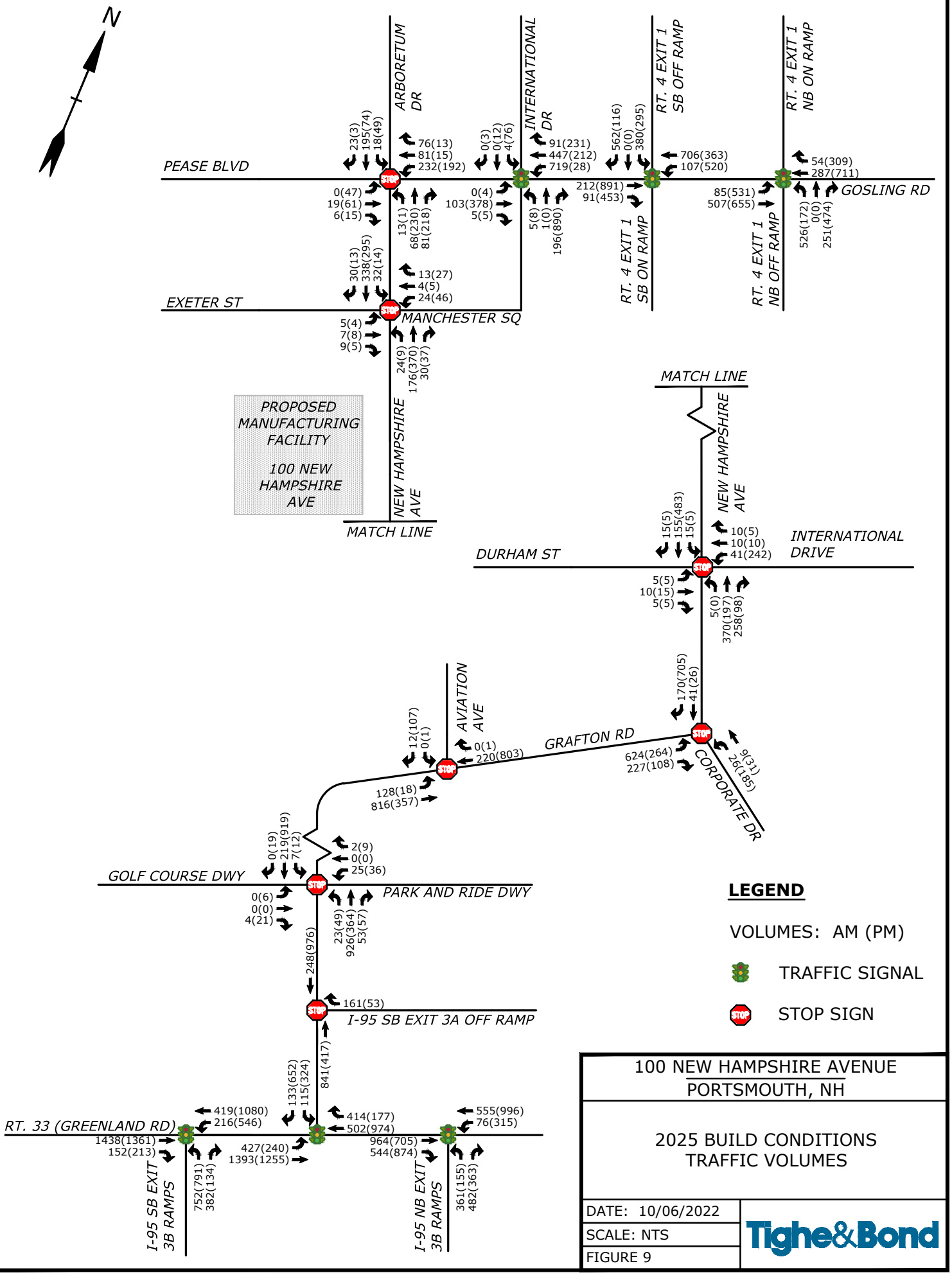
100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

SITE GENERATED
TRAFFIC VOLUMES - TRUCKS

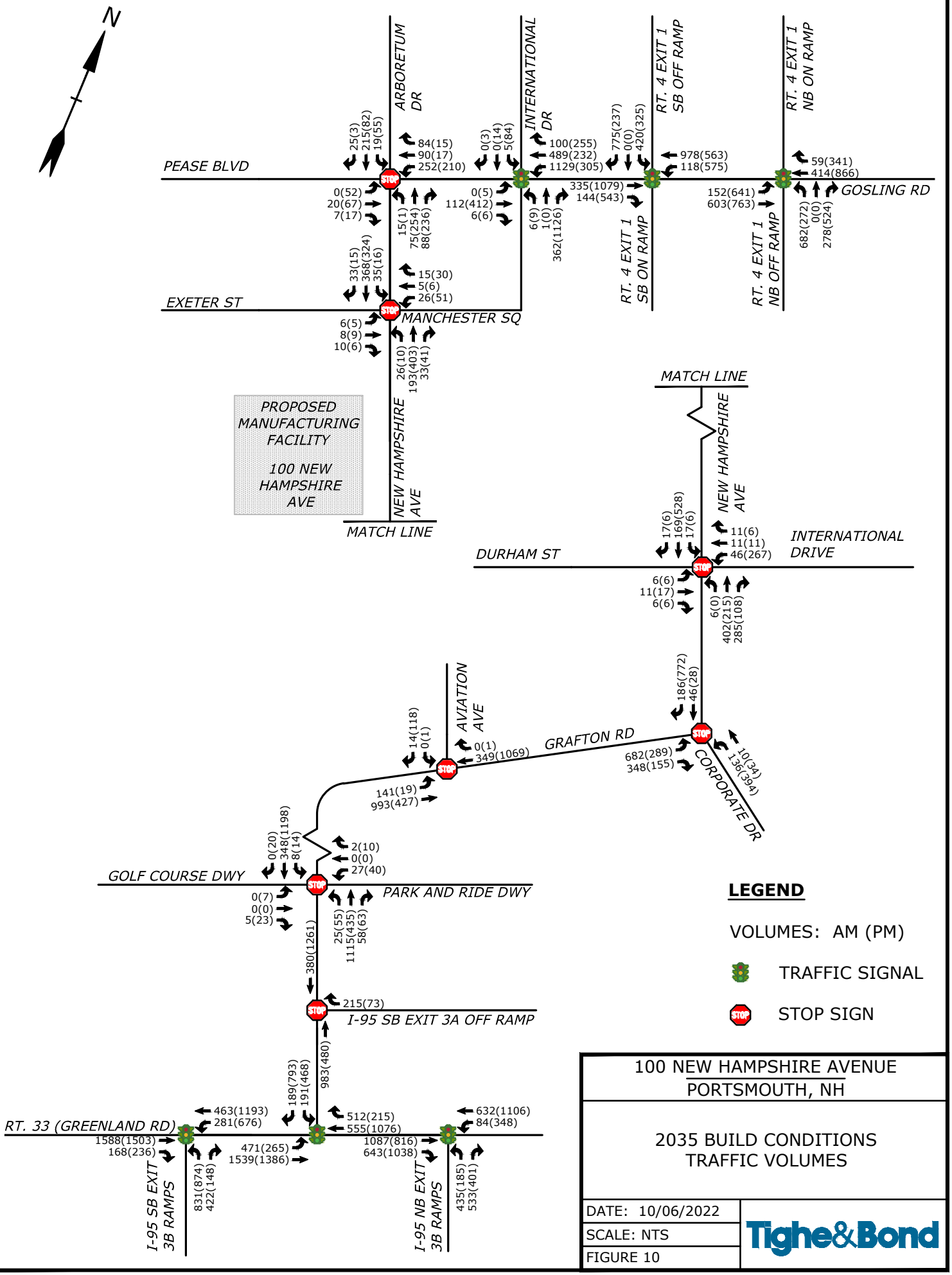
DATE: 10/06/2022
SCALE: NTS
FIGURE 8

Tighe&Bond

Oct 06, 2022-3:58pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg



Oct 06, 2022-3:58pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg



100 NEW HAMPSHIRE AVENUE
PORTSMOUTH, NH

2035 BUILD CONDITIONS
TRAFFIC VOLUMES

DATE: 10/06/2022
SCALE: NTS
FIGURE 10

Tighe&Bond

Oct 06, 2022-3:58pm Plotted By: KHuang
Tighe & Bond, Inc. C:\Users\KHuang\AppData\Local\Temp\AcPublish_12216\Traffic Volume Figures.dwg

APPENDIX A
Traffic Count Data

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Newington Street
Street 2:	International Drive
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	International Drive Northbound				International Drive 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	1	0	41	0	7	0	1	0	0	15	0	0	118	51	11
7:15 AM	0	2	1	27	0	4	0	1	0	0	8	1	0	125	54	15
7:30 AM	0	0	2	23	0	3	0	0	0	0	9	3	0	145	65	7
7:45 AM	0	1	0	33	0	0	0	0	0	0	18	1	0	196	115	16
8:00 AM	0	1	1	49	0	1	0	0	0	0	12	2	0	131	68	22
8:15 AM	0	0	0	35	0	1	0	0	0	0	15	0	0	125	63	15
8:30 AM	0	2	0	38	0	1	0	0	0	0	25	1	0	117	70	19
8:45 AM	0	1	0	43	0	0	0	0	0	1	20	0	0	104	72	8

	International Drive Northbound				International Drive 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	1	160	0	10	1	0	0	0	66	0	0	3	38	42
4:15 PM	0	1	0	155	0	11	4	0	0	1	59	0	0	3	30	44
4:30 PM	0	2	0	179	0	8	3	0	0	1	48	3	0	5	39	46
4:45 PM	0	1	0	164	0	18	1	2	0	0	51	0	0	6	37	53
5:00 PM	0	2	0	171	0	20	1	0	0	1	91	1	2	5	38	31
5:15 PM	0	1	0	115	0	9	1	0	0	0	53	0	1	1	34	43
5:30 PM	0	0	0	106	0	7	0	1	0	0	50	1	2	2	27	23
5:45 PM	0	0	0	83	0	7	0	0	0	0	44	1	0	1	32	40

AM PEAK HOUR 7:45 AM to 8:45 AM	International Drive Northbound				International Drive 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	**4**	**1**	**155**	**0**	**3**	**0**	**0**	**0**	**0**	**70**	**4**	**0**	**569**	**316**	**72**
PHF	**0.78**				**0.75**				**0.71**				**0.73**			
HV %	**0.0%**	**25.0%**	**0.0%**	**3.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**4.3%**	**50.0%**	**0.0%**	**0.9%**	**1.6%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	International Drive Northbound				International Drive 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	**6**	**0**	**669**	**0**	**57**	**9**	**2**	**0**	**3**	**249**	**4**	**2**	**19**	**144**	**174**
PHF	**0.93**				**0.81**				**0.69**				**0.88**			
HV %	**0.0%**	**16.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**33.3%**	**2.0%**	**0.0%**	**0.0%**	**10.5%**	**1.4%**	**0.0%**

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Newington Street
Street 2:	International Drive
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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HEAVY VEHICLES

	International Drive Northbound				International Drive 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	2	0	0	0	0	0	0	0	0	0	1	0	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	2	0	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	2	0	0	2	4	0
7:45 AM	0	0	0	3	0	0	0	0	0	0	1	1	0	1	2	0
8:00 AM	0	0	0	2	0	0	0	0	0	0	0	1	0	1	3	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	3	0	0
8:45 AM	0	0	0	3	0	0	0	0	0	0	4	0	0	1	2	0

	International Drive Northbound				International Drive 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	1	0	0	0	1	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	1	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
5:00 PM	0	0	0	0	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	1	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 7:15 AM to 8:15 AM	International Drive Northbound				International Drive 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**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**6**	**9**	**0**
PHF	**0.58**				**0.00**				**0.75**				**0.63**			

PM PEAK HOUR 4:00 PM to 5:00 PM	International Drive Northbound				International Drive 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	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**0**	**2**	**2**	**0**
PHF	**0.25**				**0.00**				**0.50**				**0.50**			

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Newington Street
Street 2:	International Drive
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PEDESTRIANS & BICYCLES

	International Drive Northbound				International Drive 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	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				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	1	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[1] 7:45 AM to 8:45 AM	International Drive Northbound				International Drive 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

PM PEAK HOUR[1] 4:15 PM to 5:15 PM	International Drive Northbound				International Drive 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 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 13
Location:	Portsmouth, NH
Street 1:	Greenland Road (Route 33)
Street 2:	I-95 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

	I-95 Southbound Off-Ramp Northbound				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	79	0	24	0	0	0	0	0	0	172	21	0	37	54	0
7:15 AM	0	112	0	35	0	0	0	0	0	0	236	34	0	27	57	0
7:30 AM	0	149	0	89	0	0	0	0	0	0	258	23	0	38	69	0
7:45 AM	0	151	0	101	0	0	0	0	0	0	293	30	0	33	67	0
8:00 AM	0	133	0	56	0	0	0	0	0	0	256	21	0	52	92	0
8:15 AM	0	162	0	40	0	0	0	0	0	0	270	47	0	31	86	0
8:30 AM	0	135	0	36	0	0	0	0	0	0	223	33	0	40	84	0
8:45 AM	0	123	0	36	0	0	0	0	0	0	220	29	0	35	73	0

	I-95 Southbound Off-Ramp Northbound				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	154	0	29	0	0	0	0	0	0	238	41	0	110	194	0
4:15 PM	0	170	0	25	0	0	0	0	0	0	254	39	0	85	180	0
4:30 PM	0	134	0	31	0	0	0	0	0	0	256	32	0	99	182	0
4:45 PM	0	147	0	23	0	0	0	0	0	0	212	37	0	81	182	0
5:00 PM	0	146	0	15	0	0	0	0	0	0	236	53	0	109	234	0
5:15 PM	0	139	0	17	0	0	0	0	0	0	223	30	0	105	146	0
5:30 PM	0	107	0	15	0	0	0	0	0	0	154	33	0	71	154	0
5:45 PM	0	107	0	12	0	0	0	0	0	0	155	34	0	43	128	0

AM PEAK HOUR 7:30 AM to 8:30 AM	I-95 Southbound Off-Ramp Northbound				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	**595**	**0**	**286**	**0**	**0**	**0**	**0**	**0**	**0**	**1077**	**121**	**0**	**154**	**314**	**0**
PHF	**0.87**				**0.00**				**0.93**				**0.81**			
HV %	**0.0%**	**5.9%**	**0.0%**	**1.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.8%**	**27.3%**	**0.0%**	**8.4%**	**7.3%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	I-95 Southbound Off-Ramp Northbound				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	**597**	**0**	**94**	**0**	**0**	**0**	**0**	**0**	**0**	**958**	**161**	**0**	**374**	**778**	**0**
PHF	**0.89**				**0.00**				**0.95**				**0.84**			
HV %	**0.0%**	**4.4%**	**0.0%**	**7.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.8%**	**18.0%**	**0.0%**	**1.9%**	**1.8%**	**0.0%**

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 13
Location:	Portsmouth, NH
Street 1:	Greenland Road (Route 33)
Street 2:	I-95 Southbound On/Off-Ramps
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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HEAVY VEHICLES

	I-95 Southbound Off-Ramp Northbound				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	7	0	0	0	0	0	0	0	0	7	10	0	4	4	0
7:15 AM	0	8	0	0	0	0	0	0	0	0	7	5	0	0	7	0
7:30 AM	0	6	0	1	0	0	0	0	0	0	11	5	0	2	2	0
7:45 AM	0	9	0	1	0	0	0	0	0	0	12	8	0	5	7	0
8:00 AM	0	12	0	0	0	0	0	0	0	0	9	6	0	5	4	0
8:15 AM	0	8	0	1	0	0	0	0	0	0	9	14	0	1	10	0
8:30 AM	0	12	0	1	0	0	0	0	0	0	15	6	0	2	4	0
8:45 AM	0	12	0	0	0	0	0	0	0	0	10	8	0	4	6	0

	I-95 Southbound Off-Ramp Northbound				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	10	0	3	0	0	0	0	0	0	2	2	0	3	10	0
4:15 PM	0	6	0	2	0	0	0	0	0	0	5	7	0	0	2	0
4:30 PM	0	7	0	2	0	0	0	0	0	0	6	10	0	3	5	0
4:45 PM	0	6	0	1	0	0	0	0	0	0	2	5	0	1	4	0
5:00 PM	0	7	0	2	0	0	0	0	0	0	4	7	0	3	3	0
5:15 PM	0	11	0	2	0	0	0	0	0	0	4	4	0	2	4	0
5:30 PM	0	8	0	0	0	0	0	0	0	0	4	3	0	2	6	0
5:45 PM	0	7	0	0	0	0	0	0	0	0	5	8	0	2	3	0

AM PEAK HOUR 7:45 AM to 8:45 AM	I-95 Southbound Off-Ramp Northbound				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	**41**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**45**	**34**	**0**	**13**	**25**	**0**
PHF	**0.85**				**0.00**				**0.86**				**0.79**			

PM PEAK HOUR 4:30 PM to 5:30 PM	I-95 Southbound Off-Ramp Northbound				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	**31**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**26**	**0**	**9**	**16**	**0**
PHF	**0.73**				**0.00**				**0.66**				**0.78**			

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 13
Location:	Portsmouth, NH
Street 1:	Greenland Road (Route 33)
Street 2:	I-95 Southbound On/Off-Ramps
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PEDESTRIANS & BICYCLES

	I-95 Southbound Off-Ramp Northbound				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

	I-95 Southbound Off-Ramp Northbound				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	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	I-95 Southbound Off-Ramp Northbound				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] 4:15 PM to 5:15 PM	I-95 Southbound Off-Ramp Northbound				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 #:	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								Greenland Road (Route 33)				Greenland Road (Route 33)			
	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	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								Greenland Road (Route 33)				Greenland Road (Route 33)			
	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	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]	Grafton Road								Greenland Road (Route 33)				Greenland Road (Route 33)			
7:30 AM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	Grafton Road								Greenland Road (Route 33)				Greenland Road (Route 33)			
4:30 PM	Northbound				Southbound				Eastbound				Westbound			
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:30 PM	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 14
Location:	Portsmouth, NH
Street 1:	Greenland Road (Route 33)
Street 2:	I-95 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

	I-95 Northbound Off-Ramp Northbound				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	23	0	54	0	0	0	0	0	0	79	73	0	12	69	0
7:15 AM	0	39	0	89	0	0	0	0	0	0	119	111	0	11	79	0
7:30 AM	0	64	0	87	0	0	0	0	0	0	171	120	0	10	88	0
7:45 AM	0	80	0	119	0	0	0	0	0	0	212	90	0	19	103	0
8:00 AM	0	54	0	83	0	0	0	0	0	0	184	107	0	20	113	0
8:15 AM	0	58	0	92	0	0	0	0	0	0	173	95	0	11	114	0
8:30 AM	0	45	0	78	0	0	0	0	0	0	114	97	0	9	106	0
8:45 AM	0	54	0	62	0	0	0	0	0	0	132	92	0	23	92	0

	I-95 Northbound Off-Ramp Northbound				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	24	0	58	0	0	0	0	0	0	120	185	0	47	222	0
4:15 PM	0	30	0	59	0	0	0	0	0	0	114	157	0	45	145	0
4:30 PM	0	29	0	64	0	0	0	0	0	0	147	175	0	58	181	0
4:45 PM	0	26	0	81	0	0	0	0	0	0	139	115	0	55	160	0
5:00 PM	0	25	0	55	0	0	0	0	0	0	115	166	0	75	201	0
5:15 PM	0	21	0	74	0	0	0	0	0	0	112	171	0	50	165	0
5:30 PM	0	30	0	45	0	0	0	0	0	0	81	100	0	39	145	0
5:45 PM	0	33	0	59	0	0	0	0	0	0	106	111	0	29	106	0

AM PEAK HOUR 7:30 AM to 8:30 AM	I-95 Northbound Off-Ramp Northbound				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	**256**	**0**	**381**	**0**	**0**	**0**	**0**	**0**	**0**	**740**	**412**	**0**	**60**	**418**	**0**
PHF	**0.80**				**0.00**				**0.95**				**0.90**			
HV %	**0.0%**	**10.9%**	**0.0%**	**4.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.8%**	**10.2%**	**0.0%**	**3.3%**	**4.5%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	I-95 Northbound Off-Ramp Northbound				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	**101**	**0**	**274**	**0**	**0**	**0**	**0**	**0**	**0**	**513**	**627**	**0**	**238**	**707**	**0**
PHF	**0.88**				**0.00**				**0.89**				**0.86**			
HV %	**0.0%**	**13.9%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.9%**	**3.0%**	**0.0%**	**0.8%**	**2.1%**	**0.0%**

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 14
Location:	Portsmouth, NH
Street 1:	Greenland Road (Route 33)
Street 2:	I-95 Northbound On/Off-Ramps
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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HEAVY VEHICLES

	I-95 Northbound Off-Ramp Northbound				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	5	0	1	0	0	0	0	0	0	5	5	0	1	2	0
7:15 AM	0	8	0	3	0	0	0	0	0	0	2	5	0	2	2	0
7:30 AM	0	5	0	4	0	0	0	0	0	0	3	12	0	1	2	0
7:45 AM	0	7	0	6	0	0	0	0	0	0	5	9	0	0	7	0
8:00 AM	0	6	0	4	0	0	0	0	0	0	2	11	0	1	5	0
8:15 AM	0	10	0	4	0	0	0	0	0	0	3	10	0	0	5	0
8:30 AM	0	4	0	7	0	0	0	0	0	0	4	11	0	0	5	0
8:45 AM	0	8	0	4	0	0	0	0	0	0	4	7	0	1	5	0

	I-95 Northbound Off-Ramp Northbound				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	5	0	1	0	0	0	0	0	0	2	7	0	0	6	0
4:15 PM	0	2	0	3	0	0	0	0	0	0	5	5	0	1	4	0
4:30 PM	0	4	0	0	0	0	0	0	0	0	3	5	0	0	3	0
4:45 PM	0	4	0	3	0	0	0	0	0	0	1	3	0	1	3	0
5:00 PM	0	3	0	2	0	0	0	0	0	0	3	5	0	1	4	0
5:15 PM	0	3	0	1	0	0	0	0	0	0	3	6	0	0	5	0
5:30 PM	0	6	0	0	0	0	0	0	0	0	1	3	0	0	4	0
5:45 PM	0	4	0	1	0	0	0	0	0	0	1	5	0	0	1	0

AM PEAK HOUR 7:45 AM to 8:45 AM	I-95 Northbound Off-Ramp Northbound				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	**27**	**0**	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**41**	**0**	**1**	**22**	**0**
PHF	**0.86**				**0.00**				**0.92**				**0.82**			

PM PEAK HOUR 4:00 PM to 5:00 PM	I-95 Northbound Off-Ramp Northbound				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	**15**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**20**	**0**	**2**	**16**	**0**
PHF	**0.79**				**0.00**				**0.78**				**0.75**			

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 14
Location:	Portsmouth, NH
Street 1:	Greenland Road (Route 33)
Street 2:	I-95 Northbound On/Off-Ramps
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PEDESTRIANS & BICYCLES

	I-95 Northbound Off-Ramp Northbound				Greenland Road (Route 33) 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

	I-95 Northbound Off-Ramp Northbound				Greenland Road (Route 33) 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	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	I-95 Northbound Off-Ramp Northbound				Greenland Road (Route 33) 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	I-95 Northbound Off-Ramp Northbound				Greenland Road (Route 33) 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 #:	856_010_TB
BTD #:	Location 4
Location:	Newington, NH
Street 1:	Newington Street
Street 2:	Arboretum Dr/New Hampshire Ave
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	New Hampshire Avenue Northbound				Arboretum Drive 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	4	12	10	0	0	17	8	0	2	7	1	0	18	24	9
7:15 AM	0	3	9	7	0	3	23	7	0	1	1	1	0	25	19	9
7:30 AM	0	6	8	6	0	6	35	5	0	0	3	1	0	32	14	9
7:45 AM	0	6	12	16	0	4	57	5	0	0	2	1	0	55	27	15
8:00 AM	0	3	15	13	0	3	33	7	0	0	0	0	0	35	14	13
8:15 AM	0	2	19	11	0	3	34	4	0	0	6	1	0	21	14	13
8:30 AM	0	0	8	13	0	4	30	2	0	0	7	3	0	36	9	19
8:45 AM	0	5	8	14	0	3	27	3	0	0	1	1	0	40	6	12

	New Hampshire Avenue Northbound				Arboretum Drive 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	49	27	0	5	22	1	0	7	24	4	0	29	2	4
4:15 PM	0	0	37	37	0	6	21	0	0	12	16	5	0	30	0	1
4:30 PM	0	1	43	28	0	7	11	1	0	12	10	4	0	31	4	2
4:45 PM	0	0	35	22	0	11	16	0	0	8	9	2	0	31	5	6
5:00 PM	0	0	58	43	0	13	8	1	0	4	11	1	0	37	3	1
5:15 PM	0	1	31	22	0	12	14	0	0	1	2	1	0	28	2	6
5:30 PM	0	1	25	21	0	6	17	1	0	5	9	4	0	21	3	1
5:45 PM	0	9	12	25	0	7	11	0	0	4	9	4	0	22	11	2

AM PEAK HOUR 7:45 AM to 8:45 AM	New Hampshire Avenue Northbound				Arboretum Drive 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	**11**	**54**	**53**	**0**	**14**	**154**	**18**	**0**	**0**	**15**	**5**	**0**	**147**	**64**	**60**
PHF	**0.87**				**0.70**				**0.50**				**0.70**			
HV %	**0.0%**	**0.0%**	**5.6%**	**7.5%**	**0.0%**	**14.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.0%**	**0.0%**	**5.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	New Hampshire Avenue Northbound				Arboretum Drive 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	**1**	**173**	**130**	**0**	**37**	**56**	**2**	**0**	**36**	**46**	**12**	**0**	**129**	**12**	**10**
PHF	**0.75**				**0.88**				**0.71**				**0.90**			
HV %	**0.0%**	**0.0%**	**1.2%**	**3.1%**	**0.0%**	**10.8%**	**3.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.6%**	**0.0%**	**10.0%**

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 4
Location:	Newington, NH
Street 1:	Newington Street
Street 2:	Arboretum Dr/New Hampshire Ave
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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HEAVY VEHICLES

	New Hampshire Avenue Northbound				Arboretum Drive 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	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	3
7:45 AM	0	0	1	1	0	1	0	0	0	0	0	0	0	2	0	0
8:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	2
8:15 AM	0	0	1	2	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	1
8:45 AM	0	0	0	1	0	2	0	0	0	0	0	0	0	2	0	0

	New Hampshire Avenue Northbound				Arboretum Drive 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	1	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	1	2	0	2	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	2	0	0	1	0	0	0	0	0	0	1	0	0
4:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
5:15 PM	0	0	0	0	0	1	1	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 7:30 AM to 8:30 AM	New Hampshire Avenue Northbound				Arboretum Drive 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**	**3**	**3**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**5**
PHF	**0.50**				**0.42**				**0.00**				**0.56**			

PM PEAK HOUR 4:00 PM to 5:00 PM	New Hampshire Avenue Northbound				Arboretum Drive 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**	**2**	**4**	**0**	**4**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**
PHF	**0.50**				**0.50**				**0.00**				**0.75**			

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 4
Location:	Newington, NH
Street 1:	Newington Street
Street 2:	Arboretum Dr/New Hampshire Ave
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PEDESTRIANS & BICYCLES

	New Hampshire Avenue Northbound				Arboretum Drive 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	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

	New Hampshire Avenue Northbound				Arboretum Drive 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	1	0	0	0	1	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	1
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]	New Hampshire Avenue Northbound				Arboretum Drive Southbound				Newington Street Eastbound				Newington Street Westbound			
7:45 AM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	New Hampshire Avenue Northbound				Arboretum Drive Southbound				Newington Street Eastbound				Newington Street Westbound			
4:15 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:15 PM	0	1	0	0	0	1	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 8
Location:	Portsmouth, NH
Street 1:	New Hampshire Avenue
Street 2:	Exeter Street & Manchester Square
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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	3	0	1	30	8	0	2	0	1	0	0	0	0
7:15 AM	0	1	27	5	0	3	42	1	0	1	0	1	0	1	1	1
7:30 AM	0	4	17	4	0	4	54	6	0	1	1	2	0	3	1	1
7:45 AM	0	6	39	9	0	9	91	5	0	0	2	1	0	5	1	4
8:00 AM	0	4	34	6	0	5	51	4	0	1	1	3	0	7	0	1
8:15 AM	0	5	29	4	0	4	38	5	0	1	0	2	0	3	1	3
8:30 AM	0	4	26	5	0	7	50	10	0	2	3	1	0	4	1	3
8:45 AM	0	11	25	5	0	4	52	8	0	2	3	3	0	3	9	3

	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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	3	78	15	0	4	58	1	0	1	3	1	0	10	1	4
4:15 PM	0	1	54	5	0	3	53	4	0	1	0	2	0	9	2	6
4:30 PM	0	2	67	5	0	1	49	2	0	0	3	1	0	8	0	5
4:45 PM	0	1	45	3	0	3	47	3	0	1	0	0	0	8	1	5
5:00 PM	0	4	84	5	0	0	44	7	0	2	0	0	0	7	2	9
5:15 PM	0	6	43	3	0	1	43	2	0	1	1	3	0	5	5	2
5:30 PM	0	3	43	4	0	1	36	4	0	3	1	0	0	8	6	2
5:45 PM	0	3	36	1	0	0	32	9	0	1	1	1	0	4	1	0

AM PEAK HOUR 7:45 AM to 8:45 AM	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**19**	**128**	**24**	**0**	**25**	**230**	**24**	**0**	**4**	**6**	**7**	**0**	**19**	**3**	**11**
PHF	**0.79**				**0.66**				**0.71**				**0.83**			
HV %	**0.0%**	**0.0%**	**3.9%**	**0.0%**	**0.0%**	**4.0%**	**0.9%**	**4.2%**	**0.0%**	**25.0%**	**0.0%**	**14.3%**	**0.0%**	**0.0%**	**33.3%**	**9.1%**

PM PEAK HOUR 4:00 PM to 5:00 PM	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**7**	**244**	**28**	**0**	**11**	**207**	**10**	**0**	**3**	**6**	**4**	**0**	**35**	**4**	**20**
PHF	**0.73**				**0.90**				**0.65**				**0.87**			
HV %	**0.0%**	**0.0%**	**2.5%**	**0.0%**	**0.0%**	**0.0%**	**1.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**25.0%**	**0.0%**	**2.9%**	**25.0%**	**0.0%**

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 8
Location:	Portsmouth, NH
Street 1:	New Hampshire Avenue
Street 2:	Exeter Street & Manchester Square
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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HEAVY VEHICLES

	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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	1	0	0	0	0	0	0	0	1	0	0	1	0
7:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1
8:30 AM	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0

	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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	1	0	0
4:15 PM	0	0	3	0	0	0	1	0	0	0	0	1	0	0	1	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	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	0	0	0	0	1	0	0	0	0	1	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 7:45 AM to 8:45 AM	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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**	**1**	**2**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**1**
PHF	**0.63**				**0.50**				**0.50**				**0.25**			

PM PEAK HOUR 4:00 PM to 5:00 PM	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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**	**3**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**
PHF	**0.50**				**0.38**				**0.25**				**0.50**			

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 8
Location:	Portsmouth, NH
Street 1:	New Hampshire Avenue
Street 2:	Exeter Street & Manchester Square
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PEDESTRIANS & BICYCLES

	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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

	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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	New Hampshire Avenue Northbound				New Hampshire Avenue Southbound				Exeter Street Eastbound				Manchester Square 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	4

[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 9
Location:	Portsmouth, NH
Street 1:	Grafton Road
Street 2:	Aviation Avenue
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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	3	0	7	81	0	0	0	23	0
7:15 AM	0	0	0	0	0	0	0	4	0	18	80	0	0	0	25	0
7:30 AM	0	0	0	0	0	0	0	2	0	16	108	0	0	0	24	0
7:45 AM	0	0	0	0	0	0	0	0	0	43	204	0	0	0	39	0
8:00 AM	0	0	0	0	0	0	0	4	0	21	127	0	0	0	52	0
8:15 AM	0	0	0	0	0	0	0	5	0	17	122	0	0	0	31	0
8:30 AM	0	0	0	0	0	0	0	1	0	20	108	0	0	0	35	0
8:45 AM	0	0	0	0	0	0	0	0	0	15	139	0	0	0	30	0

	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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	33	0	5	65	0	0	0	129	0
4:15 PM	0	0	0	0	0	0	0	9	0	2	63	0	0	0	123	0
4:30 PM	0	0	0	0	0	0	0	30	0	2	75	0	0	0	149	0
4:45 PM	0	0	0	0	0	1	0	13	0	4	67	0	0	0	131	0
5:00 PM	0	0	0	0	0	0	0	29	0	5	44	0	0	0	157	1
5:15 PM	0	0	0	0	0	0	0	20	0	4	42	0	0	0	116	0
5:30 PM	0	0	0	0	0	0	0	13	0	3	38	0	0	0	104	0
5:45 PM	0	0	0	0	0	0	0	5	0	1	43	0	0	0	64	0

AM PEAK HOUR 7:45 AM to 8:45 AM	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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**	**10**	**0**	**101**	**561**	**0**	**0**	**0**	**157**	**0**
PHF	**0.00**				**0.50**				**0.67**				**0.75**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.0%**	**1.8%**	**0.0%**	**0.0%**	**0.0%**	**1.9%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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**	**81**	**0**	**13**	**249**	**0**	**0**	**0**	**560**	**1**
PHF	**0.00**				**0.68**				**0.85**				**0.89**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**0.9%**	**0.0%**

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 9
Location:	Portsmouth, NH
Street 1:	Grafton Road
Street 2:	Aviation Avenue
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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HEAVY VEHICLES

	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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	1	2	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	2	0	1	0	0	0	0	2	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	1	3	0	0	0	1	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	2	0

	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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	2	0	0	0	1	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	1	0	0	2	0	0	0	3	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	1	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0

AM PEAK HOUR 8:00 AM to 9:00 AM	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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**	**2**	**11**	**0**	**0**	**0**	**5**	**0**
PHF	**0.00**				**0.00**				**0.65**				**0.63**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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**	**4**	**0**	**0**	**0**	**6**	**0**
PHF	**0.00**				**0.25**				**0.50**				**0.50**			

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 9
Location:	Portsmouth, NH
Street 1:	Grafton Road
Street 2:	Aviation Avenue
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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PEDESTRIANS & BICYCLES

	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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	2	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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	1	0	0	1	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	2	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	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	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road 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	0

PM PEAK HOUR[1] 4:15 PM to 5:15 PM	Aviation Avenue Northbound				Aviation Avenue Southbound				Grafton Road Eastbound				Grafton Road Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	1	2	0	1	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 10
Location:	Portsmouth, NH
Street 1:	Grafton Road
Street 2:	P. Golf Course Dr/Park & Ride Dr
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				Pease Golf Course Driveway Eastbound				Park & Ride Driveway 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	85	3	0	1	26	0	0	0	0	0	0	5	0	2
7:15 AM	0	3	96	13	0	2	24	2	0	1	0	0	0	6	0	2
7:30 AM	0	8	141	13	0	0	25	0	0	0	0	2	0	7	0	0
7:45 AM	0	5	241	9	0	1	31	0	0	0	0	0	0	3	0	1
8:00 AM	0	2	148	4	0	2	53	0	0	0	0	0	0	1	0	1
8:15 AM	0	2	140	15	0	3	38	0	0	0	0	1	0	7	0	0
8:30 AM	0	4	141	12	0	2	31	0	0	0	0	3	0	2	0	1
8:45 AM	0	5	148	8	0	0	35	0	0	0	0	2	0	4	0	0

	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway 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	15	66	8	0	1	163	5	0	2	0	6	0	7	0	3
4:15 PM	0	6	61	12	0	3	131	2	0	2	0	3	0	7	0	1
4:30 PM	0	11	63	12	0	1	174	5	0	1	0	1	0	5	0	2
4:45 PM	0	5	64	11	0	4	151	2	0	0	0	5	0	7	0	1
5:00 PM	0	2	46	11	0	0	183	2	0	1	0	2	0	14	0	5
5:15 PM	0	5	43	5	0	3	135	6	0	1	0	6	0	9	0	2
5:30 PM	0	4	42	15	0	0	127	0	0	1	0	5	0	2	0	1
5:45 PM	0	6	45	13	0	1	79	1	0	2	0	4	0	11	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**17**	**670**	**41**	**0**	**6**	**147**	**0**	**0**	**0**	**0**	**3**	**0**	**18**	**0**	**2**
PHF	**0.71**				**0.70**				**0.38**				**0.71**			
HV %	**0.0%**	**5.9%**	**1.2%**	**7.3%**	**0.0%**	**16.7%**	**3.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**33.3%**	**0.0%**	**16.7%**	**0.0%**	**50.0%**

PM PEAK HOUR 4:00 PM to 5:00 PM	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**37**	**254**	**43**	**0**	**9**	**619**	**14**	**0**	**5**	**0**	**15**	**0**	**26**	**0**	**7**
PHF	**0.94**				**0.89**				**0.63**				**0.83**			
HV %	**0.0%**	**0.0%**	**1.2%**	**11.6%**	**0.0%**	**22.2%**	**0.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**11.5%**	**0.0%**	**28.6%**

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 10
Location:	Portsmouth, NH
Street 1:	Grafton Road
Street 2:	P. Golf Course Dr/Park & Ride Dr
Count Date:	2/17/2022
Day of Week:	Thursday
Weather:	Cloudy, 55°F

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HEAVY VEHICLES

	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway 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	1	0	0	2	0	0	0	0	0	0	2	0	1
7:15 AM	0	0	3	2	0	2	0	0	0	0	0	0	0	2	0	0
7:30 AM	0	1	1	0	0	0	4	0	0	0	0	1	0	0	0	0
7:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	4	1	0	0	1	0	0	0	0	0	0	1	0	1
8:15 AM	0	0	2	2	0	1	0	0	0	0	0	0	0	2	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	1	0	0	1	0	0	0	0	0	0	0	0	0

	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway 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	1	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	2	0	1	0	0	0	0	0	0	0	2	0	0
4:30 PM	0	0	2	1	0	0	4	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	1
5:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	2	0	0
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	3	0	1	2	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 8:00 AM to 9:00 AM	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**14**	**4**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**
PHF	**0.90**				**1.00**				**0.00**				**0.50**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**3**	**5**	**0**	**2**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**
PHF	**0.67**				**0.44**				**0.00**				**0.63**			

Client:	Matthew Stoutz, PE, PTOE, RSP1
Project #:	856_010_TB
BTD #:	Location 10
Location:	Portsmouth, NH
Street 1:	Grafton Road
Street 2:	P. Golf Course Dr/Park & Ride Dr
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				Pease Golf Course Driveway Eastbound				Park & Ride Driveway 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	2	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	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

	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway 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	1	0	0	0	1	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	2	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	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[1] 7:30 AM to 8:30 AM	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway 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	3	0	0	0	0

PM PEAK HOUR[1] 4:00 PM to 5:00 PM	Grafton Road Northbound				Grafton Road Southbound				Pease Golf Course Driveway Eastbound				Park & Ride Driveway Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	1	0	0	0	1	0	1	0	0	0	2	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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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

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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

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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

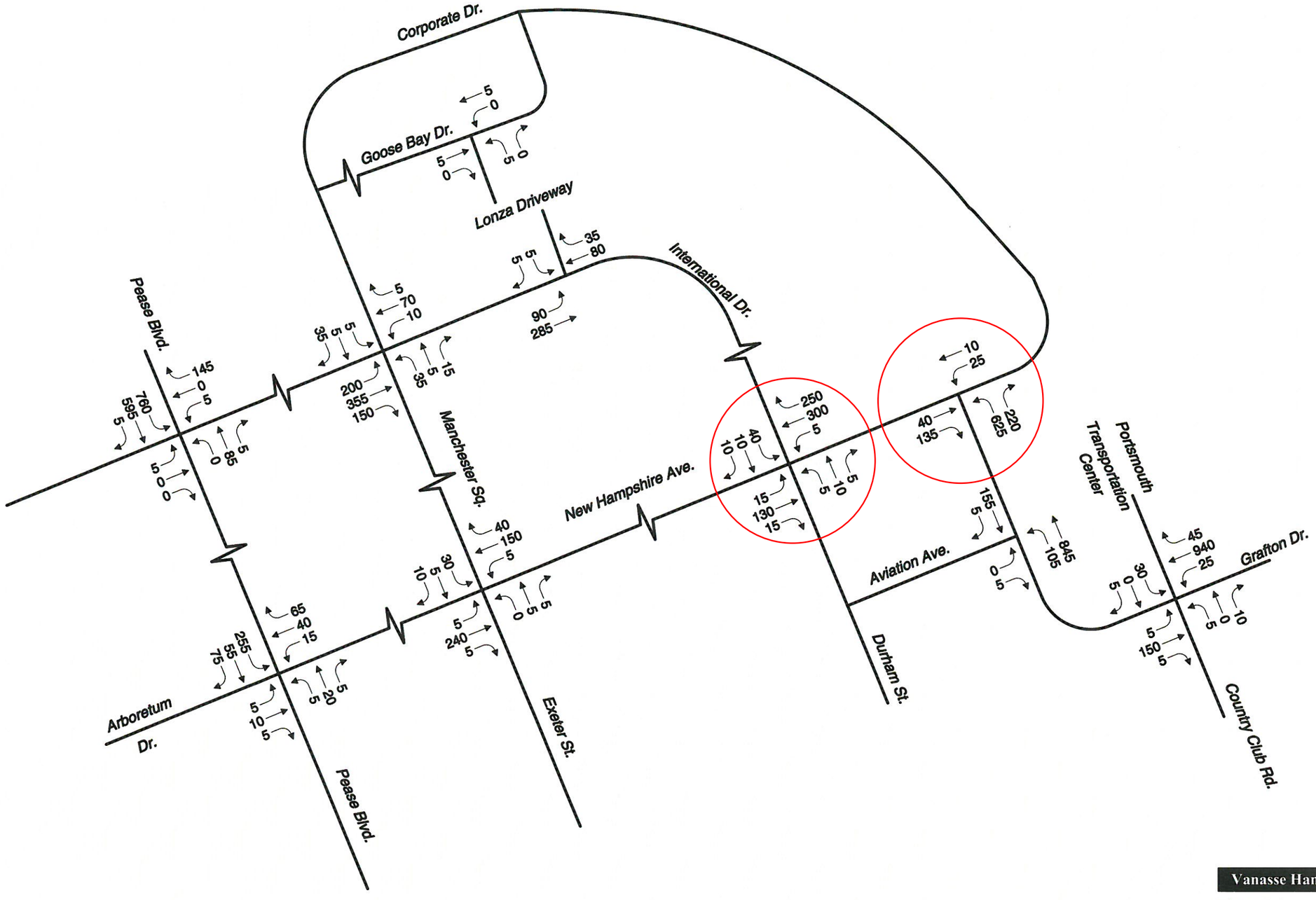
	Grafton Road Northbound				Grafton Road Southbound				Eastbound				I-95 Southbound Off-Ramp Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	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.*

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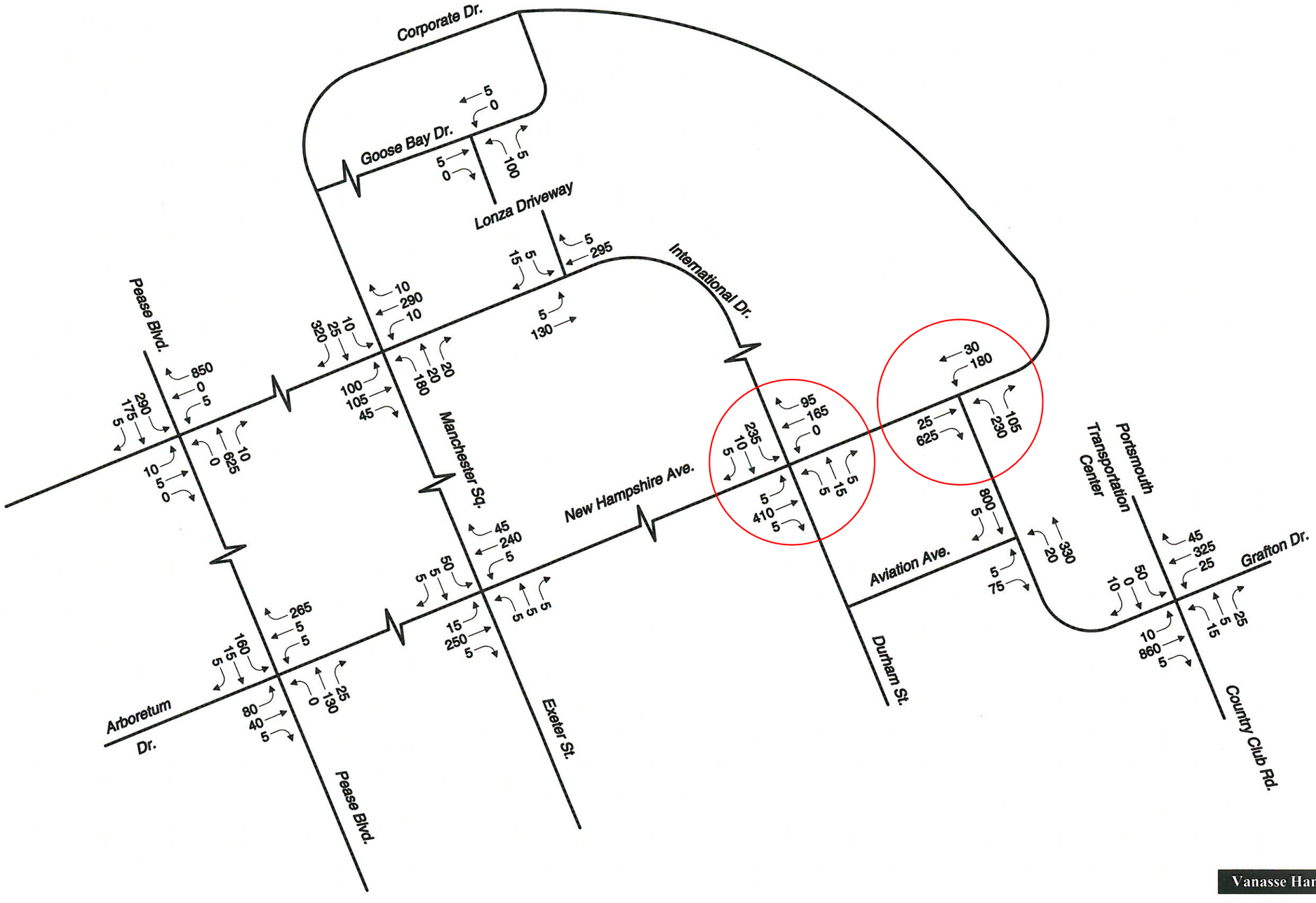
Not to Scale

Vanasse Hangen Brustlin, Inc.

Figure 1-9

2010 Existing
Weekday Morning (7:45 AM-8:45 AM)
Peak Hour Traffic Volume Network
Pease InternationalTradeport

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Not to Scale

Vanasse Hangen Brustlin, Inc.

Figure 1-10

2010 Existing
Weekday Evening (4:30 PM-5:30 PM)
Peak Hour Traffic Volume Network
Pease International Tradeport

Volume Report

Job 856_010_TB_ATR 6A
Area Portsmouth, NH
Location Newington Street EB, west of Route 4 Southbound On/Off-Ramps

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Wednesday, February 16, 2022

Time	Total		EB				Time	Total		EB			
0000	73		73		0		1200	178		178		0	
0015	18		18		0		1215	138		138		0	
0030	47		47		0		1230	115		115		0	
0045	9	147	9	147	0	0	1245	118	549	118	549	0	0
0100	9		9		0		1300	123		123		0	
0115	2		2		0		1315	113		113		0	
0130	3		3		0		1330	131		131		0	
0145	1	15	1	15	0	0	1345	111	478	111	478	0	0
0200	8		8		0		1400	134		134		0	
0215	4		4		0		1415	147		147		0	
0230	1		1		0		1430	184		184		0	
0245	6	19	6	19	0	0	1445	148	613	148	613	0	0
0300	5		5		0		1500	184		184		0	
0315	6		6		0		1515	133		133		0	
0330	6		6		0		1530	231		231		0	
0345	4	21	4	21	0	0	1545	166	714	166	714	0	0
0400	5		5		0		1600	230		230		0	
0415	9		9		0		1615	215		215		0	
0430	11		11		0		1630	251		251		0	
0445	7	32	7	32	0	0	1645	176	872	176	872	0	0
0500	13		13		0		1700	278		278		0	
0515	14		14		0		1715	193		193		0	
0530	6		6		0		1730	177		177		0	
0545	16	49	16	49	0	0	1745	133	781	133	781	0	0
0600	22		22		0		1800	127		127		0	
0615	27		27		0		1815	82		82		0	
0630	53		53		0		1830	82		82		0	
0645	56	158	56	158	0	0	1845	75	366	75	366	0	0
0700	49		49		0		1900	85		85		0	
0715	29		29		0		1915	72		72		0	
0730	52		52		0		1930	56		56		0	
0745	52	182	52	182	0	0	1945	26	239	26	239	0	0
0800	57		57		0		2000	50		50		0	
0815	50		50		0		2015	34		34		0	
0830	49		49		0		2030	19		19		0	
0845	56	212	56	212	0	0	2045	19	122	19	122	0	0
0900	63		63		0		2100	29		29		0	
0915	56		56		0		2115	17		17		0	
0930	69		69		0		2130	17		17		0	
0945	98	286	98	286	0	0	2145	25	88	25	88	0	0
1000	74		74		0		2200	23		23		0	
1015	88		88		0		2215	18		18		0	
1030	98		98		0		2230	56		56		0	
1045	99	359	99	359	0	0	2245	37	134	37	134	0	0
1100	130		130		0		2300	29		29		0	
1115	129		129		0		2315	15		15		0	
1130	134		134		0		2330	24		24		0	
1145	185	578	185	578	0	0	2345	13	81	13	81	0	0
							Total	**7095**		**7095**		**0**	

Volume Report

Job 856_010_TB_ATR 6A
Area Portsmouth, NH
Location Newington Street EB, west of Route 4 Southbound On/Off-Ramps

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Thursday, February 17, 2022

Time	Total		EB				Time	Total		EB			
0000	66		66		0		1200	197		197		0	
0015	17		17		0		1215	160		160		0	
0030	47		47		0		1230	132		132		0	
0045	12	142	12	142	0	0	1245	113	602	113	602	0	0
0100	9		9		0		1300	143		143		0	
0115	4		4		0		1315	94		94		0	
0130	8		8		0		1330	125		125		0	
0145	4	25	4	25	0	0	1345	114	476	114	476	0	0
0200	2		2		0		1400	142		142		0	
0215	10		10		0		1415	129		129		0	
0230	3		3		0		1430	211		211		0	
0245	7	22	7	22	0	0	1445	173	655	173	655	0	0
0300	4		4		0		1500	192		192		0	
0315	4		4		0		1515	144		144		0	
0330	6		6		0		1530	237		237		0	
0345	8	22	8	22	0	0	1545	177	750	177	750	0	0
0400	2		2		0		1600	217		217		0	
0415	12		12		0		1615	215		215		0	
0430	18		18		0		1630	218		218		0	
0445	7	39	7	39	0	0	1645	220	870	220	870	0	0
0500	14		14		0		1700	265		265		0	
0515	9		9		0		1715	174		174		0	
0530	6		6		0		1730	162		162		0	
0545	21	50	21	50	0	0	1745	134	735	134	735	0	0
0600	17		17		0		1800	127		127		0	
0615	21		21		0		1815	107		107		0	
0630	45		45		0		1830	84		84		0	
0645	62	145	62	145	0	0	1845	80	398	80	398	0	0
0700	64		64		0		1900	95		95		0	
0715	40		40		0		1915	90		90		0	
0730	34		34		0		1930	59		59		0	
0745	54	192	54	192	0	0	1945	29	273	29	273	0	0
0800	60		60		0		2000	53		53		0	
0815	49		49		0		2015	40		40		0	
0830	65		65		0		2030	27		27		0	
0845	60	234	60	234	0	0	2045	23	143	23	143	0	0
0900	91		91		0		2100	32		32		0	
0915	72		72		0		2115	24		24		0	
0930	85		85		0		2130	21		21		0	
0945	74	322	74	322	0	0	2145	32	109	32	109	0	0
1000	85		85		0		2200	28		28		0	
1015	76		76		0		2215	16		16		0	
1030	115		115		0		2230	64		64		0	
1045	116	392	116	392	0	0	2245	17	125	17	125	0	0
1100	122		122		0		2300	24		24		0	
1115	125		125		0		2315	7		7		0	
1130	141		141		0		2330	21		21		0	
1145	156	544	156	544	0	0	2345	16	68	16	68	0	0
							Total	**7333**		**7333**		**0**	

Volume Report

Job 856_010_TB_ATR 6A
Area Portsmouth, NH
Location Newington Street EB, west of Route 4 Southbound On/Off-Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Friday, February 18, 2022

Time	Total		EB				Time	Total		EB			
0000	75		75		0		1200	166		166		0	
0015	13		13		0		1215	139		139		0	
0030	53		53		0		1230	150		150		0	
0045	13	154	13	154	0	0	1245	93	548	93	548	0	0
0100	13		13		0		1300	130		130		0	
0115	3		3		0		1315	113		113		0	
0130	4		4		0		1330	133		133		0	
0145	2	22	2	22	0	0	1345	121	497	121	497	0	0
0200	6		6		0		1400	150		150		0	
0215	9		9		0		1415	133		133		0	
0230	4		4		0		1430	202		202		0	
0245	8	27	8	27	0	0	1445	161	646	161	646	0	0
0300	3		3		0		1500	172		172		0	
0315	4		4		0		1515	158		158		0	
0330	7		7		0		1530	211		211		0	
0345	2	16	2	16	0	0	1545	154	695	154	695	0	0
0400	8		8		0		1600	192		192		0	
0415	8		8		0		1615	141		141		0	
0430	11		11		0		1630	182		182		0	
0445	10	37	10	37	0	0	1645	169	684	169	684	0	0
0500	14		14		0		1700	191		191		0	
0515	7		7		0		1715	165		165		0	
0530	12		12		0		1730	116		116		0	
0545	20	53	20	53	0	0	1745	91	563	91	563	0	0
0600	15		15		0		1800	83		83		0	
0615	16		16		0		1815	74		74		0	
0630	45		45		0		1830	62		62		0	
0645	61	137	61	137	0	0	1845	74	293	74	293	0	0
0700	65		65		0		1900	84		84		0	
0715	31		31		0		1915	64		64		0	
0730	31		31		0		1930	43		43		0	
0745	52	179	52	179	0	0	1945	31	222	31	222	0	0
0800	45		45		0		2000	32		32		0	
0815	57		57		0		2015	30		30		0	
0830	51		51		0		2030	33		33		0	
0845	70	223	70	223	0	0	2045	25	120	25	120	0	0
0900	80		80		0		2100	22		22		0	
0915	76		76		0		2115	10		10		0	
0930	70		70		0		2130	22		22		0	
0945	61	287	61	287	0	0	2145	27	81	27	81	0	0
1000	100		100		0		2200	20		20		0	
1015	82		82		0		2215	19		19		0	
1030	88		88		0		2230	60		60		0	
1045	108	378	108	378	0	0	2245	23	122	23	122	0	0
1100	115		115		0		2300	16		16		0	
1115	117		117		0		2315	17		17		0	
1130	118		118		0		2330	18		18		0	
1145	134	484	134	484	0	0	2345	11	62	11	62	0	0
							Total	**6530**		**6530**		**0**	

Volume Report

Job 856_010_TB_ATR 6A
Area Portsmouth, NH
Location Newington Street EB, west of Route 4 Southbound On/Off-Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Saturday, February 19, 2022

Time	Total		EB				Time	Total		EB			
0000	60		60		0		1200	86		86		0	
0015	16		16		0		1215	69		69		0	
0030	34		34		0		1230	60		60		0	
0045	7	117	7	117	0	0	1245	73	288	73	288	0	0
0100	7		7		0		1300	62		62		0	
0115	6		6		0		1315	57		57		0	
0130	4		4		0		1330	68		68		0	
0145	5	22	5	22	0	0	1345	50	237	50	237	0	0
0200	6		6		0		1400	54		54		0	
0215	5		5		0		1415	61		61		0	
0230	4		4		0		1430	59		59		0	
0245	3	18	3	18	0	0	1445	48	222	48	222	0	0
0300	2		2		0		1500	70		70		0	
0315	1		1		0		1515	65		65		0	
0330	5		5		0		1530	52		52		0	
0345	3	11	3	11	0	0	1545	38	225	38	225	0	0
0400	3		3		0		1600	45		45		0	
0415	6		6		0		1615	44		44		0	
0430	6		6		0		1630	52		52		0	
0445	6	21	6	21	0	0	1645	44	185	44	185	0	0
0500	8		8		0		1700	66		66		0	
0515	6		6		0		1715	44		44		0	
0530	4		4		0		1730	55		55		0	
0545	12	30	12	30	0	0	1745	48	213	48	213	0	0
0600	11		11		0		1800	52		52		0	
0615	8		8		0		1815	44		44		0	
0630	19		19		0		1830	56		56		0	
0645	28	66	28	66	0	0	1845	57	209	57	209	0	0
0700	35		35		0		1900	54		54		0	
0715	14		14		0		1915	35		35		0	
0730	15		15		0		1930	18		18		0	
0745	18	82	18	82	0	0	1945	36	143	36	143	0	0
0800	15		15		0		2000	29		29		0	
0815	18		18		0		2015	21		21		0	
0830	29		29		0		2030	24		24		0	
0845	18	80	18	80	0	0	2045	19	93	19	93	0	0
0900	25		25		0		2100	14		14		0	
0915	49		49		0		2115	9		9		0	
0930	43		43		0		2130	17		17		0	
0945	33	150	33	150	0	0	2145	14	54	14	54	0	0
1000	38		38		0		2200	10		10		0	
1015	53		53		0		2215	18		18		0	
1030	48		48		0		2230	10		10		0	
1045	52	191	52	191	0	0	2245	8	46	8	46	0	0
1100	65		65		0		2300	8		8		0	
1115	65		65		0		2315	11		11		0	
1130	69		69		0		2330	6		6		0	
1145	70	269	70	269	0	0	2345	4	29	4	29	0	0
							Total	**3001**		**3001**		**0**	

Volume Report

Job 856_010_TB_ATR 6B
Area Portsmouth, NH
Location Newington Street WB, west of Route 4 Southbound On/Off-Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Wednesday, February 16, 2022

Time	Total		WB				Time	Total		WB			
0000	3		3		0		1200	130		130		0	
0015	3		3		0		1215	139		139		0	
0030	4		4		0		1230	146		146		0	
0045	0	10	0	10	0	0	1245	145	560	145	560	0	0
0100	3		3		0		1300	149		149		0	
0115	3		3		0		1315	126		126		0	
0130	5		5		0		1330	121		121		0	
0145	5	16	5	16	0	0	1345	140	536	140	536	0	0
0200	5		5		0		1400	116		116		0	
0215	5		5		0		1415	99		99		0	
0230	3		3		0		1430	94		94		0	
0245	2	15	2	15	0	0	1445	95	404	95	404	0	0
0300	1		1		0		1500	106		106		0	
0315	6		6		0		1515	108		108		0	
0330	5		5		0		1530	84		84		0	
0345	6	18	6	18	0	0	1545	97	395	97	395	0	0
0400	6		6		0		1600	58		58		0	
0415	4		4		0		1615	92		92		0	
0430	15		15		0		1630	85		85		0	
0445	35	60	35	60	0	0	1645	96	331	96	331	0	0
0500	43		43		0		1700	82		82		0	
0515	67		67		0		1715	56		56		0	
0530	102		102		0		1730	64		64		0	
0545	169	381	169	381	0	0	1745	64	266	64	266	0	0
0600	115		115		0		1800	70		70		0	
0615	164		164		0		1815	68		68		0	
0630	158		158		0		1830	48		48		0	
0645	257	694	257	694	0	0	1845	35	221	35	221	0	0
0700	137		137		0		1900	37		37		0	
0715	178		178		0		1915	23		23		0	
0730	214		214		0		1930	24		24		0	
0745	262	791	262	791	0	0	1945	35	119	35	119	0	0
0800	233		233		0		2000	24		24		0	
0815	202		202		0		2015	21		21		0	
0830	176		176		0		2030	29		29		0	
0845	164	775	164	775	0	0	2045	18	92	18	92	0	0
0900	102		102		0		2100	22		22		0	
0915	101		101		0		2115	13		13		0	
0930	91		91		0		2130	13		13		0	
0945	102	396	102	396	0	0	2145	16	64	16	64	0	0
1000	107		107		0		2200	24		24		0	
1015	85		85		0		2215	31		31		0	
1030	84		84		0		2230	12		12		0	
1045	112	388	112	388	0	0	2245	5	72	5	72	0	0
1100	92		92		0		2300	7		7		0	
1115	110		110		0		2315	8		8		0	
1130	125		125		0		2330	3		3		0	
1145	128	455	128	455	0	0	2345	4	22	4	22	0	0
							Total	**7081**		**7081**		**0**	

Volume Report

Job 856_010_TB_ATR 6B
Area Portsmouth, NH
Location Newington Street WB, west of Route 4 Southbound On/Off-Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Thursday, February 17, 2022

Time	Total		WB				Time	Total		WB			
0000	7		7		0		1200	117		117		0	
0015	3		3		0		1215	155		155		0	
0030	1		1		0		1230	140		140		0	
0045	3	14	3	14	0	0	1245	172	584	172	584	0	0
0100	5		5		0		1300	142		142		0	
0115	5		5		0		1315	122		122		0	
0130	4		4		0		1330	120		120		0	
0145	4	18	4	18	0	0	1345	155	539	155	539	0	0
0200	3		3		0		1400	131		131		0	
0215	4		4		0		1415	120		120		0	
0230	7		7		0		1430	93		93		0	
0245	2	16	2	16	0	0	1445	107	451	107	451	0	0
0300	5		5		0		1500	136		136		0	
0315	3		3		0		1515	118		118		0	
0330	8		8		0		1530	96		96		0	
0345	10	26	10	26	0	0	1545	96	446	96	446	0	0
0400	2		2		0		1600	77		77		0	
0415	6		6		0		1615	75		75		0	
0430	13		13		0		1630	96		96		0	
0445	32	53	32	53	0	0	1645	92	340	92	340	0	0
0500	40		40		0		1700	75		75		0	
0515	69		69		0		1715	74		74		0	
0530	97		97		0		1730	53		53		0	
0545	170	376	170	376	0	0	1745	75	277	75	277	0	0
0600	110		110		0		1800	49		49		0	
0615	153		153		0		1815	67		67		0	
0630	157		157		0		1830	57		57		0	
0645	242	662	242	662	0	0	1845	35	208	35	208	0	0
0700	164		164		0		1900	29		29		0	
0715	178		178		0		1915	34		34		0	
0730	207		207		0		1930	28		28		0	
0745	286	835	286	835	0	0	1945	26	117	26	117	0	0
0800	194		194		0		2000	25		25		0	
0815	190		190		0		2015	23		23		0	
0830	185		185		0		2030	18		18		0	
0845	181	750	181	750	0	0	2045	26	92	26	92	0	0
0900	113		113		0		2100	20		20		0	
0915	124		124		0		2115	12		12		0	
0930	115		115		0		2130	15		15		0	
0945	112	464	112	464	0	0	2145	16	63	16	63	0	0
1000	93		93		0		2200	23		23		0	
1015	71		71		0		2215	32		32		0	
1030	81		81		0		2230	14		14		0	
1045	99	344	99	344	0	0	2245	11	80	11	80	0	0
1100	81		81		0		2300	4		4		0	
1115	99		99		0		2315	4		4		0	
1130	124		124		0		2330	4		4		0	
1145	146	450	146	450	0	0	2345	5	17	5	17	0	0
							Total	**7222**		**7222**		**0**	

Volume Report

Job 856_010_TB_ATR 6B
Area Portsmouth, NH
Location Newington Street WB, west of Route 4 Southbound On/Off-Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Friday, February 18, 2022

Time	Total		WB				Time	Total		WB			
0000	3		3		0		1200	95		95		0	
0015	0		0		0		1215	107		107		0	
0030	5		5		0		1230	139		139		0	
0045	3	11	3	11	0	0	1245	145	486	145	486	0	0
0100	1		1		0		1300	112		112		0	
0115	5		5		0		1315	117		117		0	
0130	3		3		0		1330	115		115		0	
0145	1	10	1	10	0	0	1345	109	453	109	453	0	0
0200	4		4		0		1400	109		109		0	
0215	2		2		0		1415	105		105		0	
0230	4		4		0		1430	88		88		0	
0245	1	11	1	11	0	0	1445	102	404	102	404	0	0
0300	2		2		0		1500	84		84		0	
0315	1		1		0		1515	88		88		0	
0330	5		5		0		1530	80		80		0	
0345	7	15	7	15	0	0	1545	91	343	91	343	0	0
0400	3		3		0		1600	66		66		0	
0415	9		9		0		1615	66		66		0	
0430	10		10		0		1630	74		74		0	
0445	32	54	32	54	0	0	1645	52	258	52	258	0	0
0500	29		29		0		1700	61		61		0	
0515	64		64		0		1715	46		46		0	
0530	70		70		0		1730	46		46		0	
0545	102	265	102	265	0	0	1745	69	222	69	222	0	0
0600	103		103		0		1800	28		28		0	
0615	118		118		0		1815	45		45		0	
0630	126		126		0		1830	41		41		0	
0645	197	544	197	544	0	0	1845	34	148	34	148	0	0
0700	130		130		0		1900	35		35		0	
0715	122		122		0		1915	36		36		0	
0730	172		172		0		1930	31		31		0	
0745	218	642	218	642	0	0	1945	36	138	36	138	0	0
0800	171		171		0		2000	25		25		0	
0815	179		179		0		2015	41		41		0	
0830	139		139		0		2030	25		25		0	
0845	155	644	155	644	0	0	2045	17	108	17	108	0	0
0900	90		90		0		2100	14		14		0	
0915	89		89		0		2115	11		11		0	
0930	91		91		0		2130	7		7		0	
0945	82	352	82	352	0	0	2145	13	45	13	45	0	0
1000	79		79		0		2200	5		5		0	
1015	66		66		0		2215	8		8		0	
1030	90		90		0		2230	13		13		0	
1045	86	321	86	321	0	0	2245	7	33	7	33	0	0
1100	85		85		0		2300	6		6		0	
1115	86		86		0		2315	4		4		0	
1130	97		97		0		2330	5		5		0	
1145	109	377	109	377	0	0	2345	4	19	4	19	0	0
							Total	**5903**		**5903**		**0**	

Volume Report

Job 856_010_TB_ATR 6B
Area Portsmouth, NH
Location Newington Street WB, west of Route 4 Southbound On/Off-Ramps

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Saturday, February 19, 2022

Time	Total		WB				Time	Total		WB			
0000	4		4		0		1200	48		48		0	
0015	5		5		0		1215	65		65		0	
0030	1		1		0		1230	59		59		0	
0045	5	15	5	15	0	0	1245	59	231	59	231	0	0
0100	3		3		0		1300	55		55		0	
0115	0		0		0		1315	54		54		0	
0130	3		3		0		1330	59		59		0	
0145	9	15	9	15	0	0	1345	47	215	47	215	0	0
0200	1		1		0		1400	55		55		0	
0215	2		2		0		1415	66		66		0	
0230	6		6		0		1430	59		59		0	
0245	3	12	3	12	0	0	1445	55	235	55	235	0	0
0300	0		0		0		1500	56		56		0	
0315	3		3		0		1515	44		44		0	
0330	4		4		0		1530	49		49		0	
0345	3	10	3	10	0	0	1545	42	191	42	191	0	0
0400	2		2		0		1600	61		61		0	
0415	4		4		0		1615	41		41		0	
0430	8		8		0		1630	40		40		0	
0445	14	28	14	28	0	0	1645	39	181	39	181	0	0
0500	13		13		0		1700	51		51		0	
0515	20		20		0		1715	58		58		0	
0530	23		23		0		1730	64		64		0	
0545	31	87	31	87	0	0	1745	54	227	54	227	0	0
0600	32		32		0		1800	44		44		0	
0615	37		37		0		1815	57		57		0	
0630	50		50		0		1830	61		61		0	
0645	53	172	53	172	0	0	1845	46	208	46	208	0	0
0700	22		22		0		1900	34		34		0	
0715	15		15		0		1915	28		28		0	
0730	24		24		0		1930	22		22		0	
0745	31	92	31	92	0	0	1945	13	97	13	97	0	0
0800	28		28		0		2000	24		24		0	
0815	29		29		0		2015	15		15		0	
0830	39		39		0		2030	20		20		0	
0845	36	132	36	132	0	0	2045	14	73	14	73	0	0
0900	22		22		0		2100	15		15		0	
0915	23		23		0		2115	11		11		0	
0930	27		27		0		2130	10		10		0	
0945	25	97	25	97	0	0	2145	8	44	8	44	0	0
1000	32		32		0		2200	4		4		0	
1015	29		29		0		2215	7		7		0	
1030	46		46		0		2230	6		6		0	
1045	45	152	45	152	0	0	2245	3	20	3	20	0	0
1100	46		46		0		2300	11		11		0	
1115	38		38		0		2315	6		6		0	
1130	60		60		0		2330	3		3		0	
1145	61	205	61	205	0	0	2345	4	24	4	24	0	0
							Total	**2763**		**2763**		**0**	

APPENDIX B

NHDOT Historical Traffic Volumes,
Seasonal Adjustment Factors &
Historical Growth Rates

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	8/12/2021
End Date	8/13/2021
Start Time	12:00 AM
End Time	12:00 AM
Direction	2-WAY
Notes	nhdot
Count Source	8.2379E+11
File Name	823790247030.prn
Weather	
Study	
Owner	iwong
QC Status	Accepted

Interval: 60 mins	
Time	**Hourly Count**
00:00 - 01:00	225
01:00 - 02:00	87
02:00 - 03:00	74
03:00 - 04:00	67
04:00 - 05:00	125
05:00 - 06:00	455
06:00 - 07:00	1066
07:00 - 08:00	1232
08:00 - 09:00	1212
09:00 - 10:00	1036
10:00 - 11:00	1072
11:00 - 12:00	1355
12:00 - 13:00	1557
13:00 - 14:00	1369
14:00 - 15:00	1363
15:00 - 16:00	1628
16:00 - 17:00	1558
17:00 - 18:00	1206
18:00 - 19:00	742
19:00 - 20:00	520
20:00 - 21:00	409
21:00 - 22:00	233
22:00 - 23:00	202
23:00 - 24:00	149
TOTAL	18942

Year 2019 Monthly Data

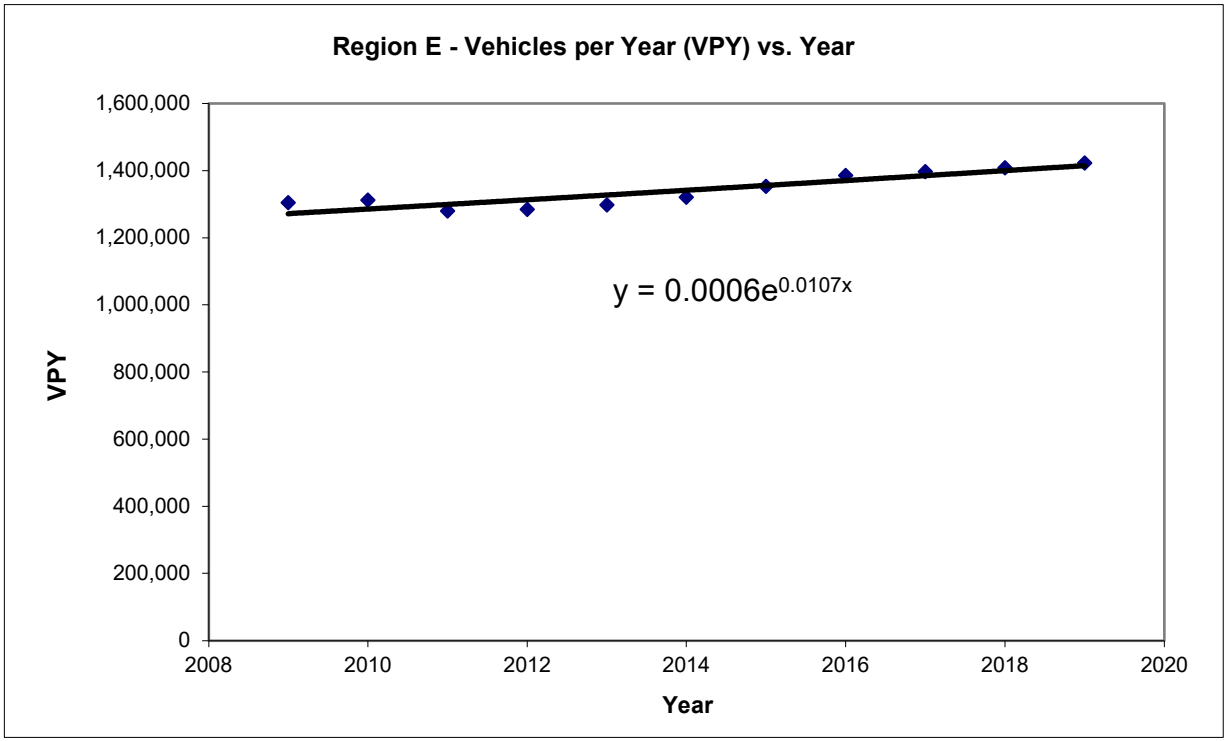
Group 4 Averages: Urban Highways

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

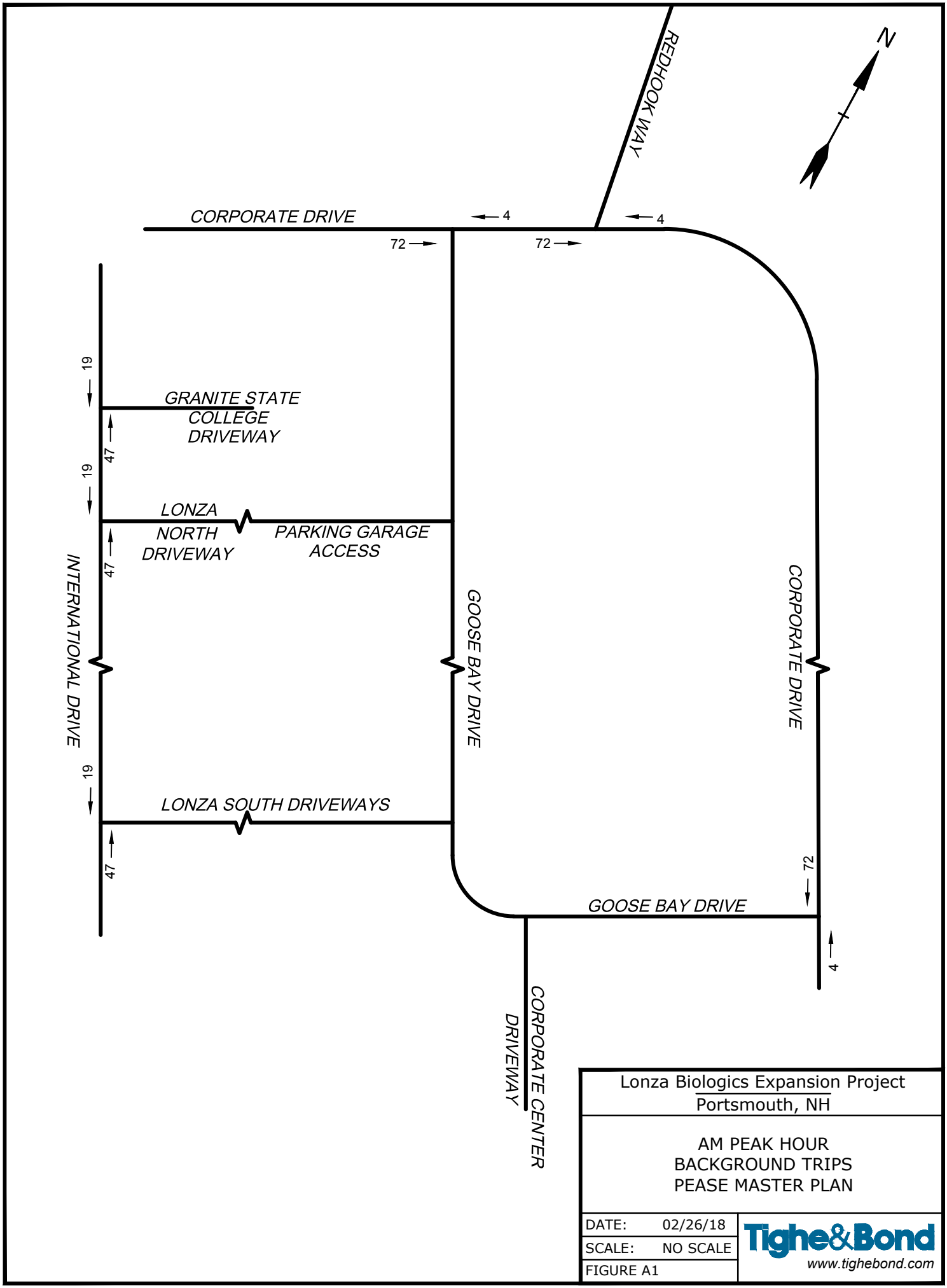
	February 2022 ATR Data		NHDOT Count Station Data (Loc ID 82379024) - Pease Blvd, West of Route 4 SB Ramps	
Peak Hour	**Feb 2022**	**2022 Seasonally Adjust to Peak[1]**	**August 2021[2]**	**Adjustment Factor (to 2021)**
AM Peak (7-8)	1027	**1212**	1232	**2%**
AM Peak (8-9)	984	**1161**	1212	**4%**
PM Peak (4-5)	1210	**1428**	1558	**9%**
PM Peak (5-6)	1012	**1194**	1206	**1%**

[1] 2019 Seasonal Adjustment Factor to Peak 1.18

[2] September 2019 Seasonal Adjustment Factor 1.0

APPENDIX D

Background Development
Traffic Volumes



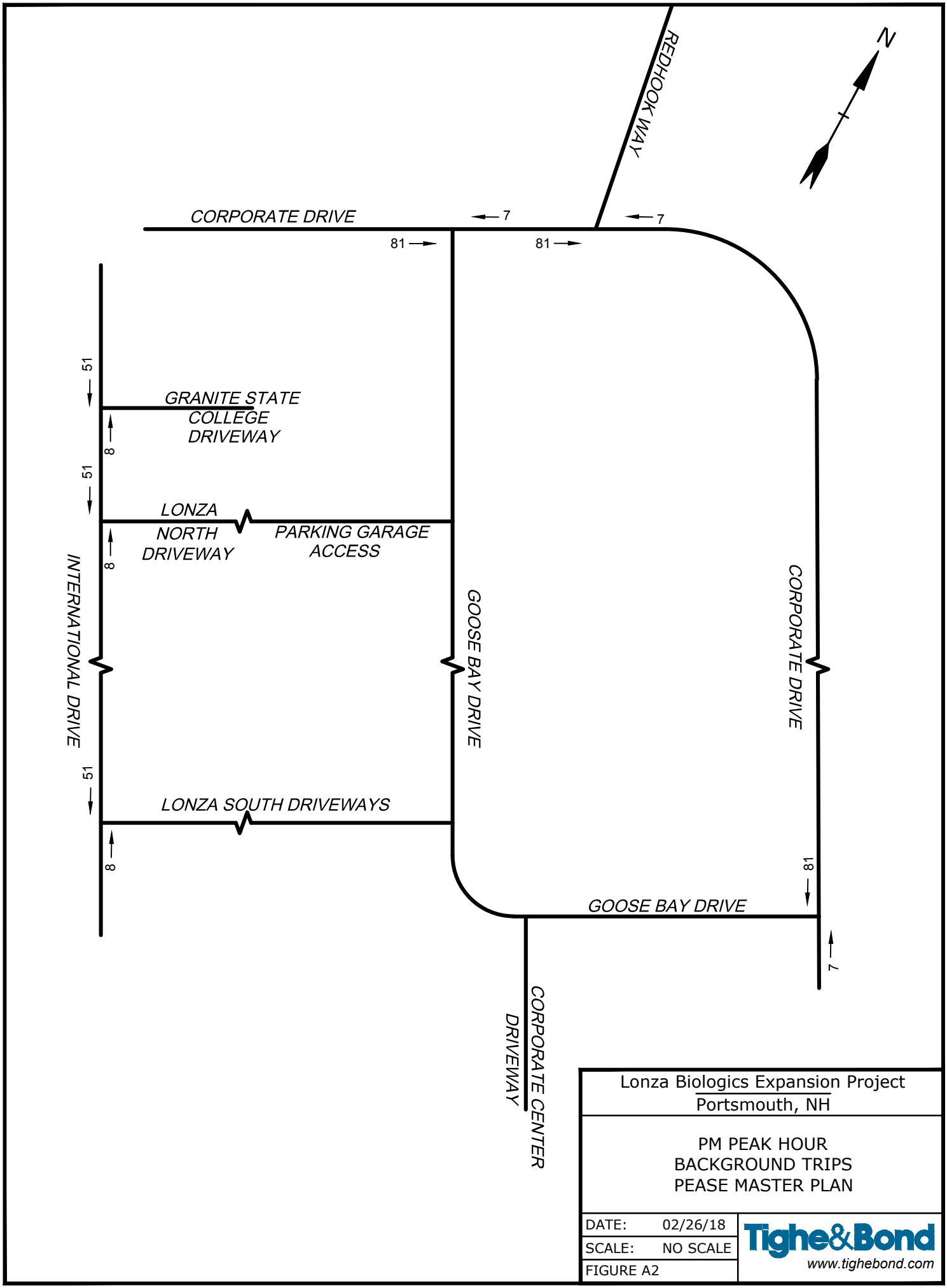
Lonza Biologics Expansion Project
Portsmouth, NH

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



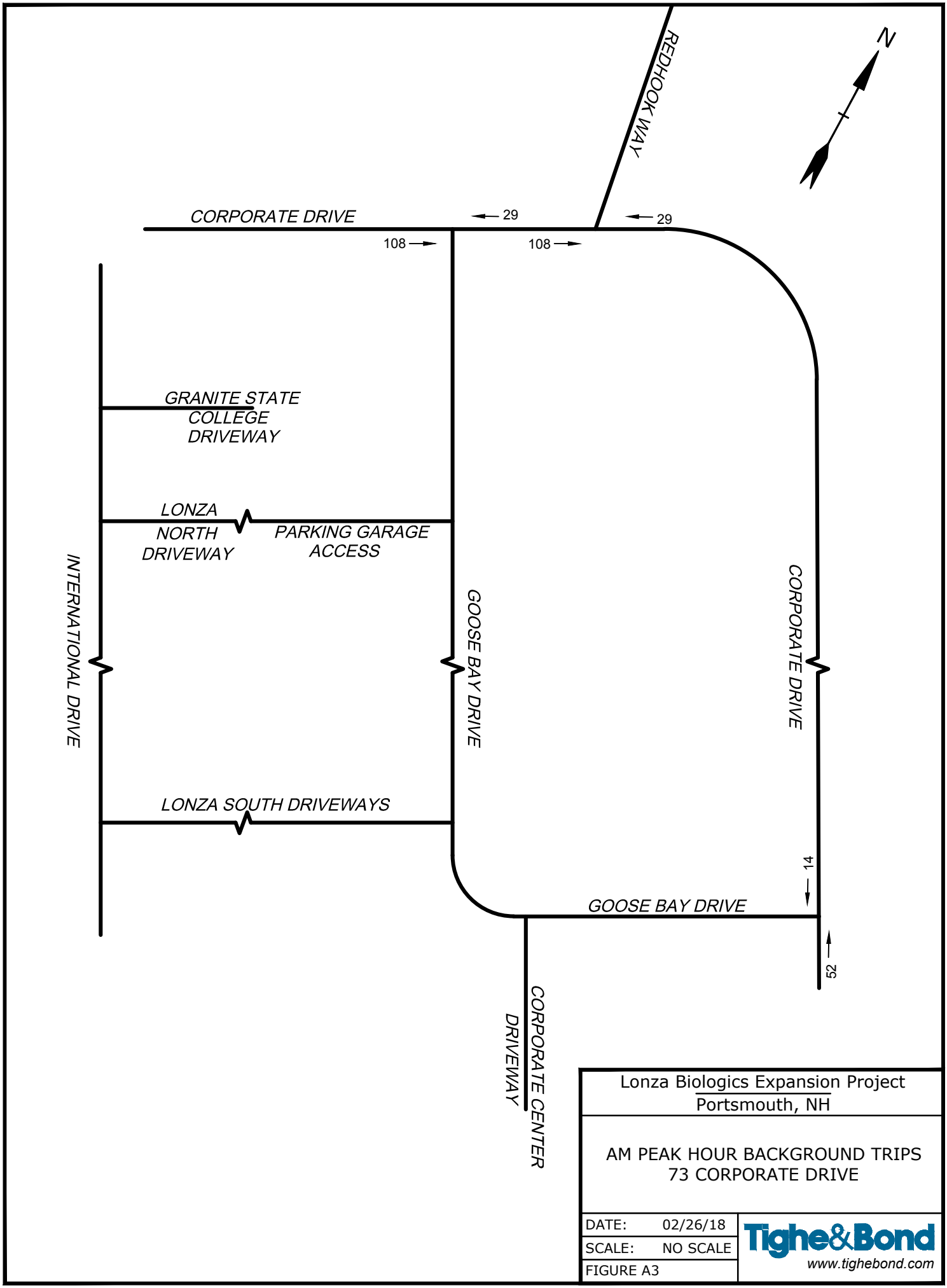
Lonza Biologics Expansion Project
Portsmouth, NH

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\L\L0700 Lonza Biologics Expansion was 1576F\013 Iron Parcel Redevelopment\Drawings_Figures\AutoCAD\Figures\Traffic Volumes_recover.dwg



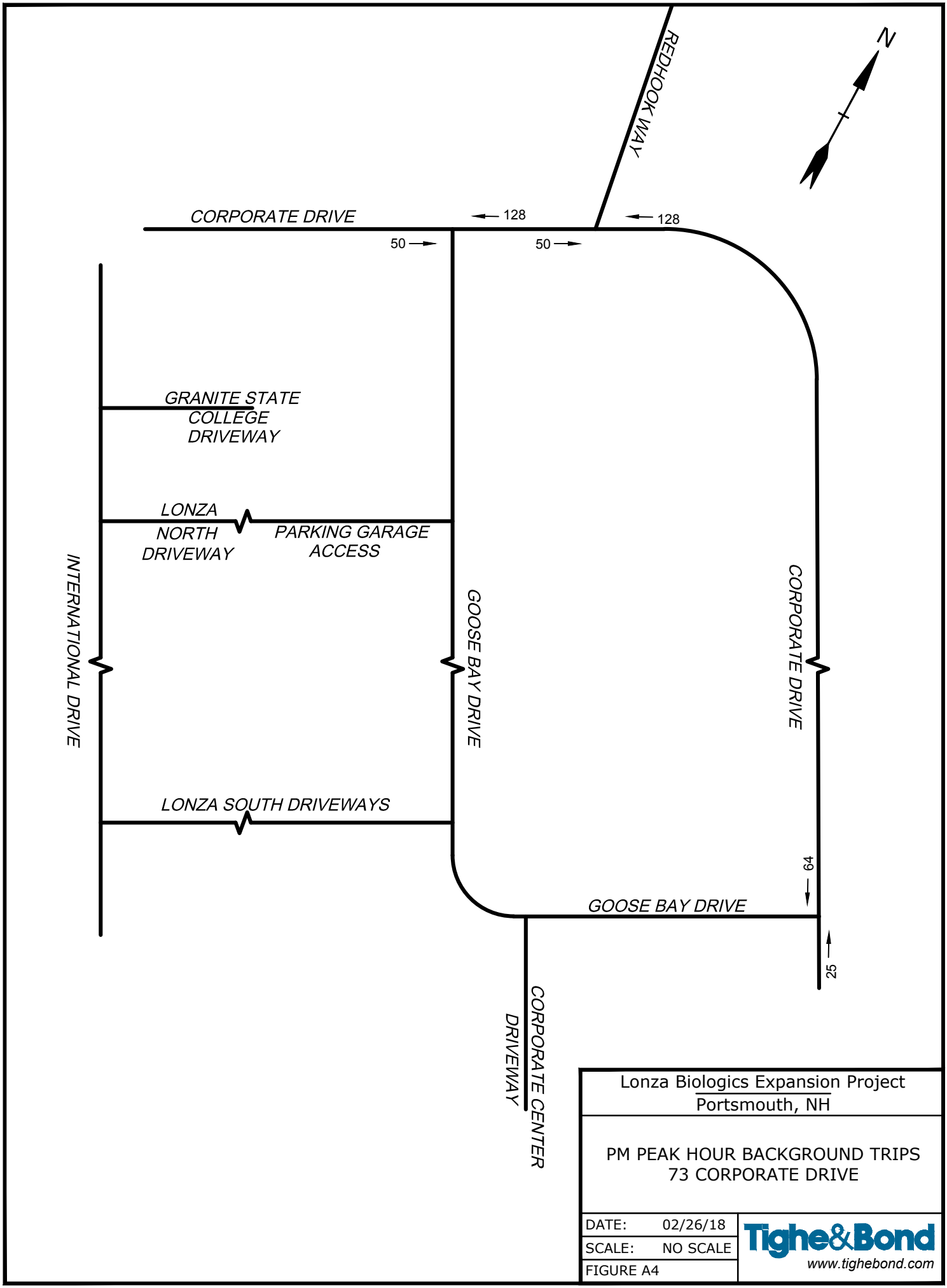
Lonza Biologics Expansion Project
Portsmouth, NH

AM PEAK HOUR BACKGROUND TRIPS
73 CORPORATE DRIVE

DATE:	02/26/18
SCALE:	NO SCALE
FIGURE A3	

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



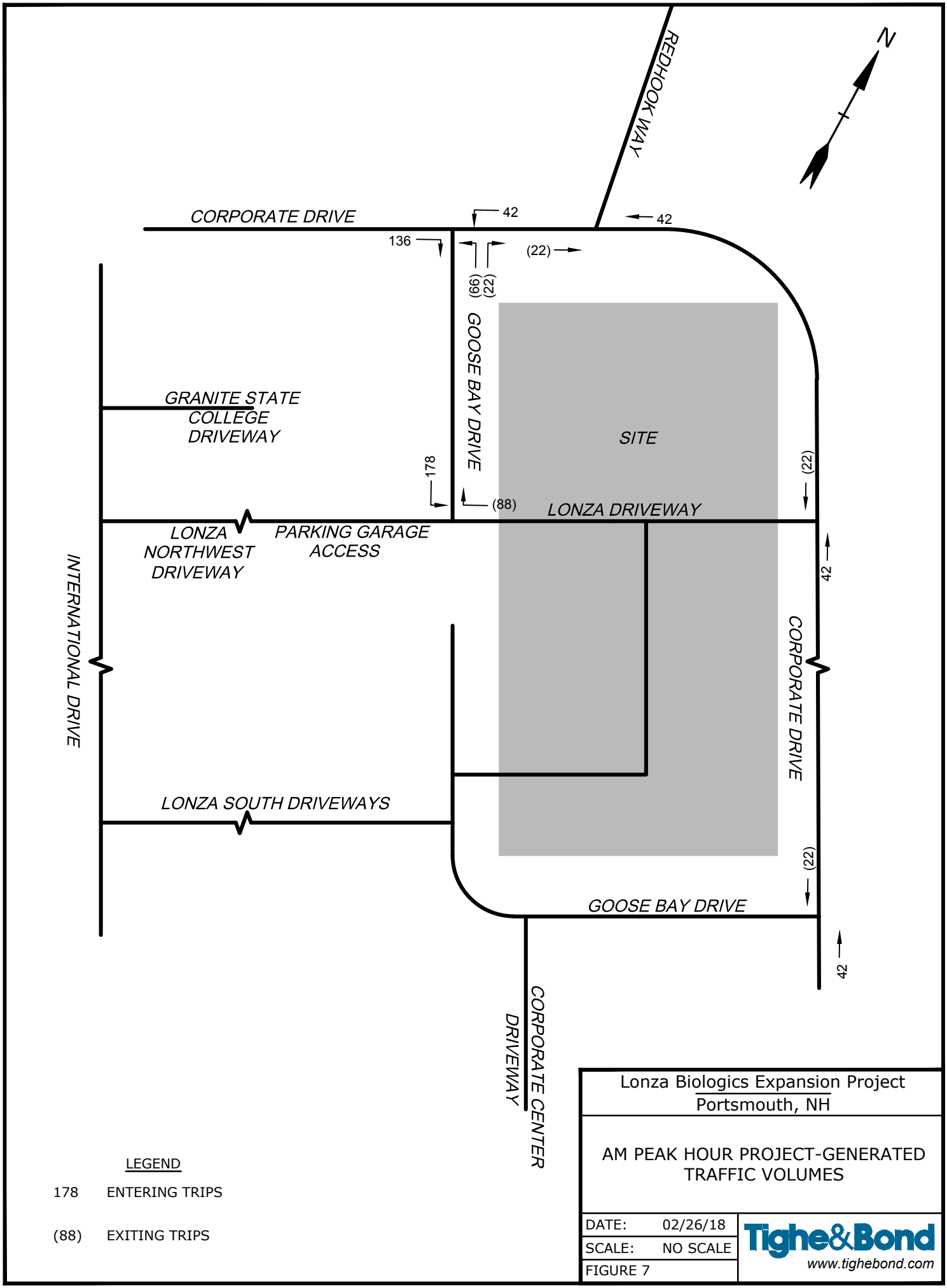
Lonza Biologics Expansion Project
Portsmouth, NH

PM PEAK HOUR BACKGROUND TRIPS
73 CORPORATE DRIVE

DATE:	02/26/18
SCALE:	NO SCALE
FIGURE A4	

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



LEGEND

178 ENTERING TRIPS

(88) EXITING TRIPS

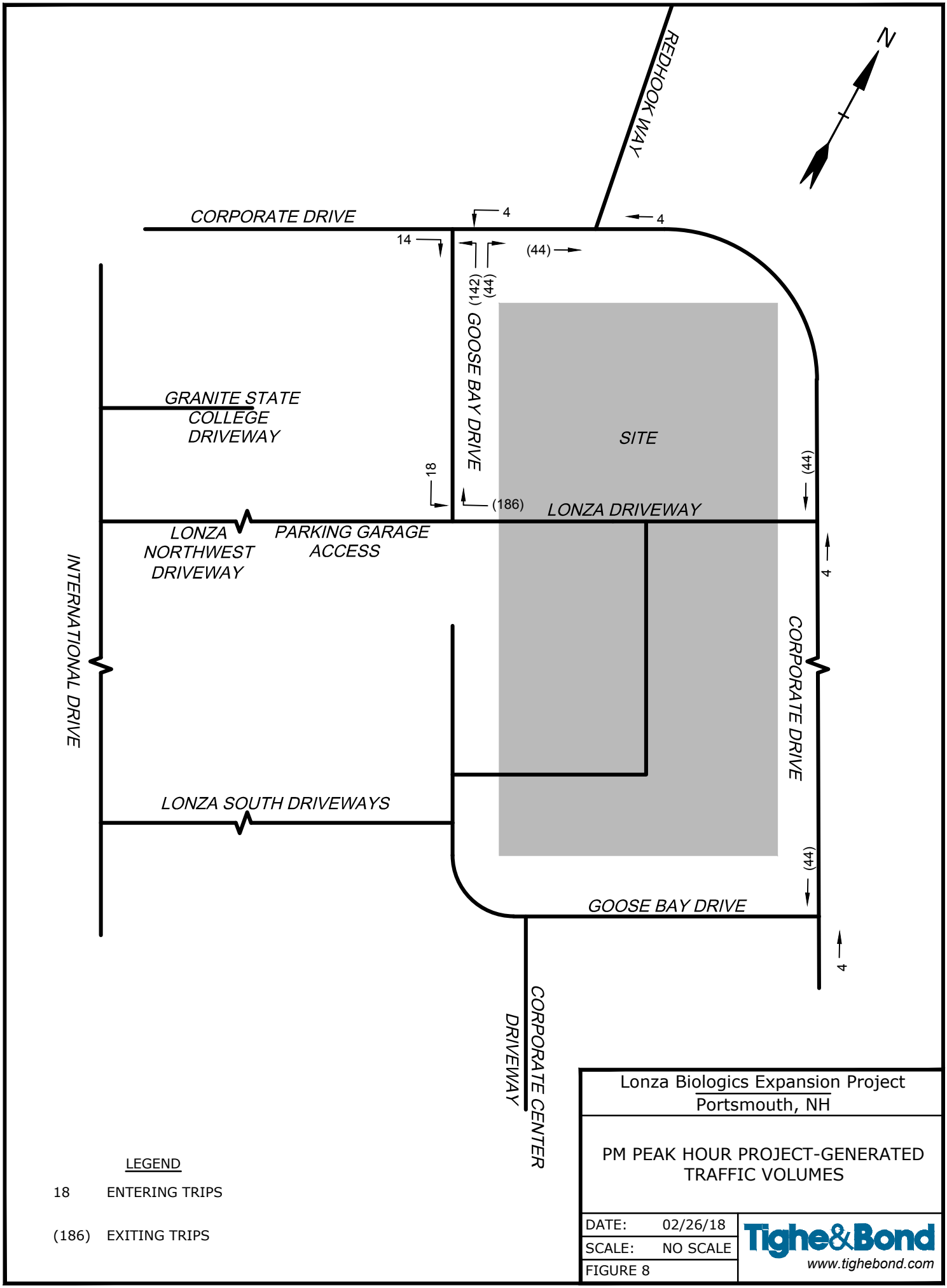
Lonza Biologics Expansion Project
Portsmouth, NH

AM PEAK HOUR PROJECT-GENERATED TRAFFIC VOLUMES

DATE:	02/26/18
SCALE:	NO SCALE
FIGURE 7	

Tighe&Bond
www.tighebond.com

Mar 09, 2018-3:34pm Plotted By: MSantos
Tighe & Bond, Inc. C:\Users\MSantos\appdata\local\temp\AcPublish_5532\Traffic Volumes.dwg



LEGEND

18 ENTERING TRIPS

(186) EXITING TRIPS

Lonza Biologics Expansion Project
Portsmouth, NH

PM PEAK HOUR PROJECT-GENERATED TRAFFIC VOLUMES

DATE:	02/26/18
SCALE:	NO SCALE
FIGURE 8	

Tighe&Bond
www.tighebond.com

Mar 09, 2018-3:34pm Plotted By: MSantos
Tighe & Bond, Inc. C:\Users\MSantos\appdata\local\temp\AcPublish_5532\Traffic Volumes.dwg

APPENDIX E
Collision History Summary

Study Area Collision History Summary

COLLISION TYPE

	2007	2008	2009	2019	2020	2021	Total	Percent
Angle	0	0	0	10	8	8	**26**	**39.4%**
Rear-End	0	0	0	9	3	4	**16**	**24.2%**
Sideswipe, Same Direction	0	0	0	0	1	2	**3**	**4.5%**
Animal	0	0	0	0	1	1	**2**	**3.0%**
Fixed Object	1	0	0	0	0	2	**3**	**4.5%**
Other/Unknown	3	7	4	0	0	1	**15**	**22.7%**
Overturn/Rollover	0	0	0	1	0	0	**1**	**1.5%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

CONTRIBUTING FACTOR

	2007	2008	2009	2019	2020	2021	Total	Percent
Other/Unknown	4	7	4	20	13	18	**66**	**100.0%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

COLLISION EVENT

	2007	2008	2009	2019	2020	2021	Total	Percent
Motor Vehicle	4	7	4	20	13	18	**66**	**100.0%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

SEVERITY

	2007	2008	2009	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	3	7	4	19	13	18	**64**	**97.0%**
Serious Injury	1	0	0	1	0	0	**2**	**3.0%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

DAY & TIME

	2007	2008	2009	2019	2020	2021	Total	Percent
Weekday 6-9 A.M.	1	0	1	1	4	1	**8**	**12.1%**
Weekday 3-6 P.M.	0	0	0	3	1	3	**7**	**10.6%**
Weekday Off-Peak	1	7	3	14	7	10	**42**	**63.6%**
Saturday 11 A.M. - 2 P.M.	0	0	0	1	0	1	**2**	**3.0%**
Weekend Off-Peak	2	0	0	1	1	3	**7**	**10.6%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

WEATHER

	2007	2008	2009	2019	2020	2021	Total	Percent
Clear	4	2	3	3	3	9	**24**	**36.4%**
Rain	0	1	0	1	0	0	**2**	**3.0%**
Snow	0	4	1	0	1	0	**6**	**9.1%**
Other/Unknown	0	0	0	16	9	9	**34**	**51.5%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

ROAD SURFACE CONDITION

	2007	2008	2009	2019	2020	2021	Total	Percent
Dry	4	2	2	3	3	8	**22**	**33.3%**
Wet	0	1	1	1	0	1	**4**	**6.1%**
Snow	0	4	1	0	1	0	**6**	**9.1%**
Other/Unknown	0	0	0	16	9	9	**34**	**51.5%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

LIGHT CONDITIONS

	2007	2008	2009	2019	2020	2021	Total	Percent
Other/Unknown	4	7	4	20	13	18	**66**	**100.0%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

COLLISIONS BY STUDY AREA INTERSECTION

	2007	2008	2009	2019	2020	2021	Total	Percent
Gosling Road/Pease Boulevard at US Route 4 NB Ramps				1	0	3	**4**	**6.1%**
Pease Boulevard at US Route 4 SB Ramps				1	3	3	**7**	**10.6%**
Pease Boulevard at International Drive				1	0	0	**1**	**1.5%**
Pease Boulevard at New Hampshire Avenue/Arboretum Drive				1	1	3	**5**	**7.6%**
New Hampshire Avenue at Exeter Street/Manchester Square				4	4	3	**11**	**16.7%**
Grafton Road at Aviation Avenue				2	2	0	**4**	**6.1%**
Grafton Road at Pease Golf Course/Park and Ride Driveway				4	1	4	**9**	**13.6%**
Route 33 (Greenland Road) at Graton Road				5	1	2	**8**	**12.1%**
Route 33 (Greenland Road) at I-95 NB Ramps				1	1	0	**2**	**3.0%**
New Hampshire Avenue at International Drive/Durham Street	1	2	4				**7**	**10.6%**
Coporate Drive at Graton Road	3	5	0				**8**	**12.1%**
TOTAL	**4**	**7**	**4**	**20**	**13**	**18**	**66**	**100%**

Intersection Collision History Summary

Intersection: Gosling Road/Pease Boulevard at US Route 4 NB Ramps

COLLISION TYPE

	2019	2020	2021	Total	Percent
Rear-End	1	0	1	**2**	**50.0%**
Angle	0	0	1	**1**	**25.0%**
Sideswipe, Same Direction	0	0	1	**1**	**25.0%**
TOTAL	**1**	**0**	**3**	**4**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	1	0	3	**4**	**100.0%**
TOTAL	**1**	**0**	**3**	**4**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday Off-Peak	1	0	3	**4**	**100.0%**
TOTAL	**1**	**0**	**3**	**4**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Clear	1	0	3	**4**	**100.0%**
TOTAL	**1**	**0**	**3**	**4**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Dry	1	0	3	**4**	**100.0%**
TOTAL	**1**	**0**	**3**	**4**	**100%**

Intersection Collision History Summary

Intersection: Pease Boulevard at US Route 4 SB Ramps

COLLISION TYPE

	2019	2020	2021	Total	Percent
Angle	0	2	2	**4**	**57.1%**
Rear-End	1	0	1	**2**	**28.6%**
Sideswipe, Same Direction	0	1	0	**1**	**14.3%**
TOTAL	**1**	**3**	**3**	**7**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	1	3	3	**7**	**100.0%**
TOTAL	**1**	**3**	**3**	**7**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday 6-9 A.M.	0	1	0	**1**	**14.3%**
Weekday Off-Peak	1	2	1	**4**	**57.1%**
Weekend Off-Peak	0	0	2	**2**	**28.6%**
TOTAL	**1**	**3**	**3**	**7**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Clear	1	2	3	**6**	**85.7%**
Snow	0	1	0	**1**	**14.3%**
TOTAL	**1**	**3**	**3**	**7**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Dry	1	2	3	**6**	**85.7%**
Snow	0	1	0	**1**	**14.3%**
TOTAL	**1**	**3**	**3**	**7**	**100%**

Intersection Collision History Summary

Intersection: Pease Boulevard at International Drive

COLLISION TYPE

	2019	2020	2021	Total	Percent
Overturn/Rollover	1	0	0	**1**	**100.0%**
TOTAL	**1**	**0**	**0**	**1**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	1	0	0	**1**	**100.0%**
TOTAL	**1**	**0**	**0**	**1**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday Off-Peak	1	0	0	**1**	**100.0%**
TOTAL	**1**	**0**	**0**	**1**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Clear	1	0	0	**1**	**100.0%**
TOTAL	**1**	**0**	**0**	**1**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Dry	1	0	0	**1**	**100.0%**
TOTAL	**1**	**0**	**0**	**1**	**100%**

Intersection Collision History Summary

Intersection: Pease Boulevard at New Hampshire Avenue/Arboretum Drive

COLLISION TYPE

	2019	2020	2021	Total	Percent
Angle	1	1	2	**4**	**80.0%**
Fixed Object	0	0	1	**1**	**20.0%**
TOTAL	**1**	**1**	**3**	**5**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	1	1	3	**5**	**100.0%**
TOTAL	**1**	**1**	**3**	**5**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday 6-9 A.M.	0	1	0	**1**	**20.0%**
Weekday 3-6 P.M.	1	0	2	**3**	**60.0%**
Weekday Off-Peak	0	0	1	**1**	**20.0%**
TOTAL	**1**	**1**	**3**	**5**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Clear	0	1	3	**4**	**80.0%**
Rain	1	0	0	**1**	**20.0%**
TOTAL	**1**	**1**	**3**	**5**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Dry	0	1	2	**3**	**60.0%**
Wet	1	0	1	**2**	**40.0%**
TOTAL	**1**	**1**	**3**	**5**	**100%**

Intersection Collision History Summary

Intersection: New Hampshire Avenue at Exeter Street/Manchester Square

COLLISION TYPE

	2019	2020	2021	Total	Percent
Angle	4	4	3	**11**	**100.0%**
TOTAL	**4**	**4**	**3**	**11**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Serious Injury	1	0	0	**1**	**9.1%**
Minor Injury / Property Damage Only (PDO)	3	4	3	**10**	**90.9%**
TOTAL	**4**	**4**	**3**	**11**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday 6-9 A.M.	0	2	1	**3**	**27.3%**
Weekday Off-Peak	4	2	2	**8**	**72.7%**
TOTAL	**4**	**4**	**3**	**11**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Other/Unknown	4	4	3	**11**	**100.0%**
TOTAL	**4**	**4**	**3**	**11**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Other/Unknown	4	4	3	**11**	**100.0%**
TOTAL	**4**	**4**	**3**	**11**	**100%**

Intersection Collision History Summary

Intersection: Grafton Road at Aviation Avenue

COLLISION TYPE

	2019	2020	2021	Total	Percent
Rear-End	1	1	0	**2**	**50.0%**
Angle	1	0	0	**1**	**25.0%**
Animal	0	1	0	**1**	**25.0%**
TOTAL	**2**	**2**	**0**	**4**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	2	2	0	**4**	**100.0%**
TOTAL	**2**	**2**	**0**	**4**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday 6-9 A.M.	1	0	0	**1**	**25.0%**
Weekday Off-Peak	1	1	0	**2**	**50.0%**
Weekend Off-Peak	0	1	0	**1**	**25.0%**
TOTAL	**2**	**2**	**0**	**4**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Other/Unknown	2	2	0	**4**	**100.0%**
TOTAL	**2**	**2**	**0**	**4**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Other/Unknown	2	2	0	**4**	**100.0%**
TOTAL	**2**	**2**	**0**	**4**	**100%**

Intersection Collision History Summary

Intersection: Grafton Road at Pease Golf Course/Park and Ride Driveway

COLLISION TYPE

	2019	2020	2021	Total	Percent
Angle	4	0	0	**4**	**44.4%**
Rear-End	0	1	0	**1**	**11.1%**
Animal	0	0	1	**1**	**11.1%**
Fixed Object	0	0	1	**1**	**11.1%**
Other/Unknown	0	0	1	**1**	**11.1%**
Sideswipe, Same Direction	0	0	1	**1**	**11.1%**
TOTAL	**4**	**1**	**4**	**9**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	4	1	4	**9**	**100.0%**
TOTAL	**4**	**1**	**4**	**9**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday 3-6 P.M.	0	0	1	**1**	**11.1%**
Weekday Off-Peak	4	1	2	**7**	**77.8%**
Weekend Off-Peak	0	0	1	**1**	**11.1%**
TOTAL	**4**	**1**	**4**	**9**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Other/Unknown	4	1	4	**9**	**100.0%**
TOTAL	**4**	**1**	**4**	**9**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Other/Unknown	4	1	4	**9**	**100.0%**
TOTAL	**4**	**1**	**4**	**9**	**100%**

Intersection Collision History Summary

Intersection: Route 33 (Greenland Road) at Grafton Road

COLLISION TYPE

	2019	2020	2021	Total	Percent
Rear-End	5	1	2	**8**	**100.0%**
TOTAL	**5**	**1**	**2**	**8**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	5	1	2	**8**	**100.0%**
TOTAL	**5**	**1**	**2**	**8**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday 3-6 P.M.	2	1	0	**3**	**37.5%**
Weekday Off-Peak	2	0	1	**3**	**37.5%**
Saturday 11 A.M. - 2 P.M.	0	0	1	**1**	**12.5%**
Weekend Off-Peak	1	0	0	**1**	**12.5%**
TOTAL	**5**	**1**	**2**	**8**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Other/Unknown	5	1	2	**8**	**100.0%**
TOTAL	**5**	**1**	**2**	**8**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Other/Unknown	5	1	2	**8**	**100.0%**
TOTAL	**5**	**1**	**2**	**8**	**100%**

Intersection Collision History Summary

Intersection: Route 33 (Greenland Road) at I-95 NB Ramps

COLLISION TYPE

	2019	2020	2021	Total	Percent
Angle	0	1	0	**1**	**50.0%**
Rear-End	1	0	0	**1**	**50.0%**
TOTAL	**1**	**1**	**0**	**2**	**100%**

SEVERITY

	2019	2020	2021	Total	Percent
Minor Injury / Property Damage Only (PDO)	1	1	0	**2**	**100.0%**
TOTAL	**1**	**1**	**0**	**2**	**100%**

DAY & TIME

	2019	2020	2021	Total	Percent
Weekday Off-Peak	0	1	0	**1**	**50.0%**
Saturday 11 A.M. - 2 P.M.	1	0	0	**1**	**50.0%**
TOTAL	**1**	**1**	**0**	**2**	**100%**

WEATHER

	2019	2020	2021	Total	Percent
Other/Unknown	1	1	0	**2**	**100.0%**
TOTAL	**1**	**1**	**0**	**2**	**100%**

ROAD SURFACE CONDITION

	2019	2020	2021	Total	Percent
Other/Unknown	1	1	0	**2**	**100.0%**
TOTAL	**1**	**1**	**0**	**2**	**100%**

Intersection Collision History Summary

Intersection: New Hampshire Avenue at International Drive/Durham Street

COLLISION TYPE

	2007	2008	2009	Total	Percent
Other/Unknown	0	2	4	**6**	**85.7%**
Fixed Object	1	0	0	**1**	**14.3%**
TOTAL	**1**	**2**	**4**	**7**	**100%**

SEVERITY

	2007	2008	2009	Total	Percent
Minor Injury / Property Damage Only (PDO)	1	2	4	**7**	**100.0%**
TOTAL	**1**	**2**	**4**	**7**	**100%**

WEATHER

	2007	2008	2009	Total	Percent
Clear	1	2	3	**6**	**85.7%**
Snow	0	0	1	**1**	**14.3%**
TOTAL	**1**	**2**	**4**	**7**	**100%**

ROAD SURFACE CONDITION

	2007	2008	2009	Total	Percent
Dry	1	2	2	**5**	**71.4%**
Wet	0	0	1	**1**	**14.3%**
Snow	0	0	1	**1**	**14.3%**
TOTAL	**1**	**2**	**4**	**7**	**100%**

Source: Pease Surface Transportation Master Plan 2010 Update, June 2011

Intersection Collision History Summary

Intersection: Corporate Drive at Grafton Road

COLLISION TYPE

	2007	2008	2009	Total	Percent
Other/Unknown	3	5	0	**8**	**100.0%**
TOTAL	**3**	**5**	**0**	**8**	**100%**

SEVERITY

	2007	2008	2009	Total	Percent
Minor Injury / Property Damage Only (PDO)	2	5	0	**7**	**87.5%**
Serious Injury	1	0	0	**1**	**12.5%**
TOTAL	**3**	**5**	**0**	**8**	**100%**

WEATHER

	2007	2008	2009	Total	Percent
Snow	0	4	0	**4**	**50.0%**
Clear	3	0	0	**3**	**37.5%**
TOTAL	**3**	**5**	**0**	**8**	**100%**

ROAD SURFACE CONDITION

	2007	2008	2009	Total	Percent
Snow	0	4	0	**4**	**50.0%**
Dry	3	0	0	**3**	**37.5%**
Wet	0	1	0	**1**	**12.5%**
TOTAL	**3**	**5**	**0**	**8**	**100%**

Source: Pease Surface Transportation Master Plan 2010 Update, June 2011

APPENDIX F

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.

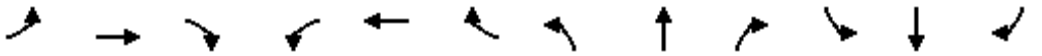
APPENDIX G

Capacity Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	86	5	698	388	88	5	1	190	4	0	0
Future Volume (vph)	0	86	5	698	388	88	5	1	190	4	0	0
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		0.99		1.00	0.97			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.96	1.00		0.95	
Satd. Flow (prot)		3361		3433	3441			1450	2760		2046	
Flt Permitted		1.00		0.95	1.00			0.83	1.00		0.75	
Satd. Flow (perm)		3361		3433	3441			1254	2760		1622	
Peak-hour factor, PHF	0.71	0.71	0.71	0.73	0.73	0.73	0.78	0.78	0.78	0.75	0.75	0.75
Adj. Flow (vph)	0	121	7	956	532	121	6	1	244	5	0	0
RTOR Reduction (vph)	0	4	0	0	8	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	124	0	956	645	0	0	7	244	0	5	0
Heavy Vehicles (%)	0%	4%	50%	2%	2%	2%	25%	0%	3%	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)		8.5		25.0	39.5			11.9	11.9		11.9	
Effective Green, g (s)		8.5		25.0	39.5			11.9	11.9		11.9	
Actuated g/C Ratio		0.13		0.39	0.62			0.19	0.19		0.19	
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)		450		1353	2143			235	518		304	
v/s Ratio Prot		0.04		c0.28	c0.19							
v/s Ratio Perm								0.01	c0.09		0.00	
v/c Ratio		0.27		0.71	0.30			0.03	0.47		0.02	
Uniform Delay, d1		24.7		16.1	5.5			21.0	22.9		21.0	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.3		1.7	0.1			0.1	0.7		0.0	
Delay (s)		25.0		17.8	5.6			21.1	23.6		21.0	
Level of Service		C		B	A			C	C		C	
Approach Delay (s)		25.0			12.9			23.6			21.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

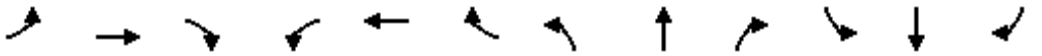
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	192	88	104	660	0	0	0	0	369	0	545
Future Volume (vph)	0	192	88	104	660	0	0	0	0	369	0	545
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					3502		2814
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5981	1419	2918	3455					3502		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	240	110	130	825	0	0	0	0	492	0	727
RTOR Reduction (vph)	0	0	79	0	0	0	0	0	0	0	0	260
Lane Group Flow (vph)	0	240	31	130	825	0	0	0	0	492	0	467
Heavy Vehicles (%)	0%	2%	10%	12%	1%	0%	2%	2%	2%	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)		26.6	26.6	23.2	55.8					25.2		25.2
Effective Green, g (s)		26.6	26.6	23.2	55.8					25.2		25.2
Actuated g/C Ratio		0.29	0.29	0.25	0.60					0.27		0.27
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)		1710	405	727	2073					948		762
v/s Ratio Prot		0.04	0.02	0.04	c0.24					0.14		c0.17
v/s Ratio Perm												
v/c Ratio		0.14	0.08	0.18	0.40					0.52		0.61
Uniform Delay, d1		24.7	24.2	27.4	9.8					28.8		29.6
Progression Factor		1.00	1.00	0.91	1.60					1.00		1.00
Incremental Delay, d2		0.1	0.2	0.1	0.2					1.0		2.1
Delay (s)		24.8	24.4	25.2	15.8					29.7		31.8
Level of Service		C	C	C	B					C		C
Approach Delay (s)		24.7			17.1			0.0			30.9	
Approach LOS		C			B			A			C	

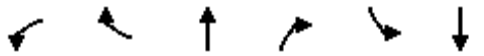
Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	484	0	0	253	52	511	0	244	0	0	0
Future Volume (vph)	77	484	0	0	253	52	511	0	244	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
Grade (%)		0%			11%			0%			0%	
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			4660		3433		2733			
Flt Permitted	0.53	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	1734	3421			4660		3433		2733			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.85	0.85	0.78	0.92	0.78	0.92	0.92	0.92
Adj. Flow (vph)	89	556	0	0	298	61	655	0	313	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	0	228	0	0	0
Lane Group Flow (vph)	89	556	0	0	332	0	655	0	85	0	0	0
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	2%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	40.0	26.6			36.4		25.2		25.2			
Effective Green, g (s)	40.0	26.6			36.4		25.2		25.2			
Actuated g/C Ratio	0.43	0.29			0.39		0.27		0.27			
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	978			1823		930		740			
v/s Ratio Prot	c0.01	c0.16			c0.07		c0.19		0.03			
v/s Ratio Perm	0.03											
v/c Ratio	0.09	0.57			0.18		0.70		0.11			
Uniform Delay, d1	15.5	28.3			18.5		30.5		25.5			
Progression Factor	1.31	1.26			1.00		1.00		1.00			
Incremental Delay, d2	0.1	1.2			0.1		3.1		0.1			
Delay (s)	20.4	36.7			18.6		33.6		25.7			
Level of Service	C	D			B		C		C			
Approach Delay (s)		34.5			18.6			31.0			0.0	
Approach LOS		C			B			C			A	

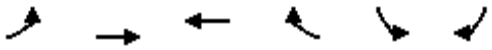
Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	730	371	1395	148	200	406
Future Volume (vph)	730	371	1395	148	200	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	1599	4988	1229	3242	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	1599	4988	1229	3242	3374
Peak-hour factor, PHF	0.87	0.87	0.93	0.93	0.81	0.81
Adj. Flow (vph)	839	426	1500	159	247	501
RTOR Reduction (vph)	0	311	0	96	0	0
Lane Group Flow (vph)	839	115	1500	63	247	501
Heavy Vehicles (%)	6%	1%	4%	27%	8%	7%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	36.7	36.7	13.3	56.0
Effective Green, g (s)	25.0	25.0	36.7	36.7	13.3	56.0
Actuated g/C Ratio	0.27	0.27	0.39	0.39	0.14	0.60
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)	887	429	1968	484	463	2031
v/s Ratio Prot	c0.25	0.07	c0.30	0.05	c0.08	0.15
v/s Ratio Perm						
v/c Ratio	0.95	0.27	0.76	0.13	0.53	0.25
Uniform Delay, d1	33.3	26.8	24.4	18.0	37.0	8.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.5	0.5	2.9	0.6	1.5	0.3
Delay (s)	51.8	27.2	27.2	18.5	38.5	8.9
Level of Service	D	C	C	B	D	A
Approach Delay (s)	43.5		26.4			18.7
Approach LOS	D		C			B

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.5%	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)	414	1352	487	364	101	119
Future Volume (vph)	414	1352	487	364	101	119
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)	481	1572	507	379	133	157
RTOR Reduction (vph)	0	0	0	263	0	128
Lane Group Flow (vph)	481	1572	507	116	133	29
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)	12.1	36.1	18.0	18.0	10.9	10.9
Effective Green, g (s)	12.1	36.1	18.0	18.0	10.9	10.9
Actuated g/C Ratio	0.21	0.61	0.31	0.31	0.18	0.18
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)	366	2123	1019	482	317	284
v/s Ratio Prot	c0.27	c0.45	0.15		c0.08	0.02
v/s Ratio Perm				0.07		
v/c Ratio	1.31	0.74	0.50	0.24	0.42	0.10
Uniform Delay, d1	23.4	8.1	16.8	15.4	21.3	20.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	159.6	2.4	1.7	1.2	1.2	0.2
Delay (s)	183.1	10.5	18.5	16.5	22.5	20.2
Level of Service	F	B	B	B	C	C
Approach Delay (s)		50.9	17.7		21.2	
Approach LOS		D	B		C	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	933	520	74	528	323	468
Future Volume (vph)	933	520	74	528	323	468
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1468	1752	3438	1680	1538
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1468	1752	3438	1680	1538
Peak-hour factor, PHF	0.95	0.95	0.90	0.90	0.80	0.80
Adj. Flow (vph)	982	547	82	587	404	585
RTOR Reduction (vph)	0	271	0	0	0	401
Lane Group Flow (vph)	982	276	82	587	404	184
Heavy Vehicles (%)	2%	10%	3%	5%	11%	5%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	69.7	69.7	12.8	88.5	37.5	37.5
Effective Green, g (s)	69.7	69.7	12.8	88.5	37.5	37.5
Actuated g/C Ratio	0.51	0.51	0.09	0.64	0.27	0.27
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)	1787	741	162	2204	456	417
v/s Ratio Prot	c0.28	0.19	c0.05	0.17	c0.24	0.12
v/s Ratio Perm						
v/c Ratio	0.55	0.37	0.51	0.27	0.89	0.44
Uniform Delay, d1	23.4	20.8	59.6	10.7	48.2	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	1.4	3.4	0.3	18.7	1.0
Delay (s)	24.6	22.3	63.0	11.0	66.9	42.6
Level of Service	C	C	E	B	E	D
Approach Delay (s)	23.8			17.4	52.5	
Approach LOS	C			B	D	

Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	138.0	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

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	18	6	180	79	74	13	66	65	17	189	22
Future Vol, veh/h	0	18	6	180	79	74	13	66	65	17	189	22
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.87	0.87	0.87	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	2	0	5	0	6	8	14	0	0
Mvmt Flow	0	36	12	257	113	106	15	76	75	24	270	31
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.7	13.2	10.6	14.9
HCM LOS	A	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	9%	0%	100%	0%	7%
Vol Thru, %	46%	75%	0%	52%	83%
Vol Right, %	45%	25%	0%	48%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	144	24	180	153	228
LT Vol	13	0	180	0	17
Through Vol	66	18	0	79	189
RT Vol	65	6	0	74	22
Lane Flow Rate	166	48	257	219	326
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.258	0.081	0.467	0.343	0.52
Departure Headway (Hd)	5.606	6.073	6.534	5.649	5.75
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	639	588	550	636	625
Service Time	3.656	4.135	4.273	3.388	3.792
HCM Lane V/C Ratio	0.26	0.082	0.467	0.344	0.522
HCM Control Delay	10.6	9.7	14.9	11.3	14.9
HCM Lane LOS	B	A	B	B	B
HCM 95th-tile Q	1	0.3	2.5	1.5	3

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	7	9	23	4	13	23	157	29	31	282	29
Future Vol, veh/h	5	7	9	23	4	13	23	157	29	31	282	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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	83	83	83	79	79	79	66	66	66
Heavy Vehicles, %	25	0	14	0	33	9	0	4	0	4	1	4
Mvmt Flow	7	10	13	28	5	16	29	199	37	47	427	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	829	837	449	831	841	218	471	0	0	236	0	0
Stage 1	543	543	-	276	276	-	-	-	-	-	-	-
Stage 2	286	294	-	555	565	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.34	7.1	6.83	6.29	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.426	3.5	4.297	3.381	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	265	305	586	291	269	805	1101	-	-	1319	-	-
Stage 1	485	523	-	735	629	-	-	-	-	-	-	-
Stage 2	674	673	-	520	461	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	244	286	586	264	253	805	1101	-	-	1319	-	-
Mov Cap-2 Maneuver	244	286	-	264	253	-	-	-	-	-	-	-
Stage 1	472	504	-	716	613	-	-	-	-	-	-	-
Stage 2	638	656	-	481	444	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	17.1	0.9	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1101	-	-	348	262	805	1319	-	-
HCM Lane V/C Ratio	0.026	-	-	0.085	0.124	0.019	0.036	-	-
HCM Control Delay (s)	8.4	-	-	16.3	20.7	9.6	7.8	-	-
HCM Lane LOS	A	-	-	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.4	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	40	10	10	5	300	250	15	130	15
Future Vol, veh/h	5	10	5	40	10	10	5	300	250	15	130	15
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	11	6	44	11	11	6	333	278	17	144	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	682	810	153	679	679	472	161	0	0	611	0	0
Stage 1	187	187	-	484	484	-	-	-	-	-	-	-
Stage 2	495	623	-	195	195	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	364	314	893	366	374	592	1418	-	-	968	-	-
Stage 1	815	745	-	564	552	-	-	-	-	-	-	-
Stage 2	556	478	-	807	739	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	342	306	893	347	364	592	1418	-	-	968	-	-
Mov Cap-2 Maneuver	342	306	-	347	364	-	-	-	-	-	-	-
Stage 1	809	731	-	560	548	-	-	-	-	-	-	-
Stage 2	531	475	-	775	725	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.1	16.6	0.1	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	378	376	968	-	-
HCM Lane V/C Ratio	0.004	-	-	0.059	0.177	0.017	-	-
HCM Control Delay (s)	7.5	0	-	15.1	16.6	8.8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	12.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	546	220	25	9	40	145
Future Vol, veh/h	546	220	25	9	40	145
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	607	244	28	10	44	161

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	110	44	205	0	-	0
Stage 1	44	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	887	1026	1366	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	869	1026	1366	-	-	-
Mov Cap-2 Maneuver	869	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	957	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	5.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1366	-	869	1026	-	-
HCM Lane V/C Ratio	0.02	-	0.698	0.238	-	-
HCM Control Delay (s)	7.7	-	18.1	9.6	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	5.9	0.9	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	124	733	193	0
Future Vol, veh/h	0	12	124	733	193	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	50	50	67	67	75	75
Heavy Vehicles, %	2	2	1	2	2	0
Mvmt Flow	0	24	185	1094	257	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1721	257	257	0	-	0
Stage 1	257	-	-	-	-	-
Stage 2	1464	-	-	-	-	-
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	98	782	1314	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	63	782	1314	-	-	-
Mov Cap-2 Maneuver	63	-	-	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	212	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1314	-	782	-	-
HCM Lane V/C Ratio	0.141	-	0.031	-	-
HCM Control Delay (s)	8.2	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	4	24	0	2	22	840	51	7	192	0
Future Vol, veh/h	0	0	4	24	0	2	22	840	51	7	192	0
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	38	38	38	71	71	71	71	71	71	70	70	70
Heavy Vehicles, %	0	0	33	17	0	50	6	1	7	17	3	0
Mvmt Flow	0	0	11	34	0	3	31	1183	72	10	274	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1577	1611	274	1581	1575	1219	274	0	0	1255	0	0
Stage 1	294	294	-	1281	1281	-	-	-	-	-	-	-
Stage 2	1283	1317	-	300	294	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.27	6.5	6.7	4.16	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.653	4	3.75	2.254	-	-	2.353	-	-
Pot Cap-1 Maneuver	90	105	696	81	111	175	1266	-	-	506	-	-
Stage 1	719	673	-	189	238	-	-	-	-	-	-	-
Stage 2	205	229	-	678	673	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	81	94	696	73	99	175	1266	-	-	506	-	-
Mov Cap-2 Maneuver	81	94	-	73	99	-	-	-	-	-	-	-
Stage 1	659	658	-	173	218	-	-	-	-	-	-	-
Stage 2	185	210	-	652	658	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	90.3	0.2	0.4
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1266	-	-	696	76	506	-	-
HCM Lane V/C Ratio	0.024	-	-	0.015	0.482	0.02	-	-
HCM Control Delay (s)	7.9	0	-	10.3	90.3	12.3	0	-
HCM Lane LOS	A	A	-	B	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	2	0.1	-	-

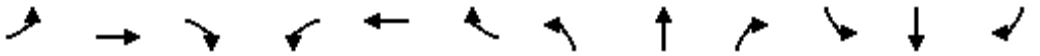
Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	135	778	0	0	220
Future Vol, veh/h	0	135	778	0	0	220
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	92	76	95	92	92	80
Heavy Vehicles, %	2	3	2	2	2	4
Mvmt Flow	0	178	819	0	0	275

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	819	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	373	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	373	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.1	0	0
HCM LOS	C		

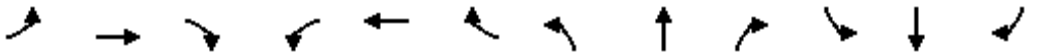
Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	373	-
HCM Lane V/C Ratio	-	0.476	-
HCM Control Delay (s)	-	23.1	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	2.5	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	322	5	27	185	224	8	0	864	74	12	3
Future Volume (vph)	4	322	5	27	185	224	8	0	864	74	12	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)	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	1.00		1.00	0.92			1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1357	3532		3155	3298			1491	2842		2058	
Flt Permitted	0.95	1.00		0.95	1.00			0.69	1.00		0.77	
Satd. Flow (perm)	1357	3532		3155	3298			1077	2842		1653	
Peak-hour factor, PHF	0.69	0.69	0.69	0.88	0.88	0.88	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	6	467	7	31	210	255	9	0	929	91	15	4
RTOR Reduction (vph)	0	1	0	0	182	0	0	0	0	0	1	0
Lane Group Flow (vph)	6	473	0	31	283	0	0	9	929	0	109	0
Heavy Vehicles (%)	33%	2%	0%	11%	1%	0%	17%	0%	0%	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)	2.3	12.6		3.2	14.5			20.8	20.8		20.8	
Effective Green, g (s)	2.3	12.6		3.2	14.5			20.8	20.8		20.8	
Actuated g/C Ratio	0.04	0.23		0.06	0.27			0.38	0.38		0.38	
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)	57	815		184	875			410	1082		629	
v/s Ratio Prot	0.00	c0.13		0.01	c0.09							
v/s Ratio Perm								0.01	c0.33		0.07	
v/c Ratio	0.11	0.58		0.17	0.32			0.02	0.86		0.17	
Uniform Delay, d1	25.2	18.7		24.4	16.1			10.6	15.5		11.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	1.1		0.4	0.2			0.0	6.9		0.1	
Delay (s)	25.5	19.7		24.9	16.3			10.6	22.5		11.3	
Level of Service	C	B		C	B			B	C		B	
Approach Delay (s)		19.8			16.9			22.4			11.3	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



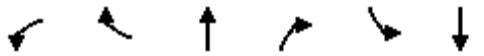
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	820	440	505	340	0	0	0	0	286	0	104
Future Volume (vph)	0	820	440	505	340	0	0	0	0	286	0	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	11	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	0.92	0.85	0.85	0.94	0.94	0.92	0.92	0.92	0.92	0.75	0.25	0.75
Adj. Flow (vph)	0	965	518	537	362	0	0	0	0	381	0	139
RTOR Reduction (vph)	0	0	332	0	0	0	0	0	0	0	0	107
Lane Group Flow (vph)	0	965	186	537	362	0	0	0	0	381	0	32
Heavy Vehicles (%)	0%	1%	1%	1%	1%	0%	2%	2%	2%	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)		35.2	35.2	22.4	61.0					22.2		22.2
Effective Green, g (s)		35.2	35.2	22.4	61.0					22.2		22.2
Actuated g/C Ratio		0.36	0.36	0.23	0.62					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)		2173	556	741	2154					794		638
v/s Ratio Prot		c0.16	0.12	c0.17	c0.10					c0.11		0.01
v/s Ratio Perm												
v/c Ratio		0.44	0.34	0.72	0.17					0.48		0.05
Uniform Delay, d1		23.8	22.8	34.8	7.7					32.8		29.6
Progression Factor		1.00	1.00	1.43	0.85					1.00		1.00
Incremental Delay, d2		0.3	0.7	3.3	0.1					1.0		0.1
Delay (s)		24.1	23.5	53.3	6.7					33.7		29.6
Level of Service		C	C	D	A					C		C
Approach Delay (s)		23.9			34.5			0.0			32.6	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	97.8	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)	495	611	0	0	678	300	167	0	460	0	0	0
Future Volume (vph)	495	611	0	0	678	300	167	0	460	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
Grade (%)		0%			11%			0%			0%	
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			4644		3433		2814			
Flt Permitted	0.20	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	675	3455			4644		3433		2814			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.90	0.90	0.94	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	569	702	0	0	753	333	178	0	489	0	0	0
RTOR Reduction (vph)	0	0	0	0	71	0	0	0	378	0	0	0
Lane Group Flow (vph)	569	702	0	0	1015	0	178	0	111	0	0	0
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	1%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	54.2	35.2			38.6		22.2		22.2			
Effective Green, g (s)	54.2	35.2			38.6		22.2		22.2			
Actuated g/C Ratio	0.55	0.36			0.39		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)	871	1243			1832		779		638			
v/s Ratio Prot	c0.13	0.20			c0.22		c0.05		0.04			
v/s Ratio Perm	c0.24											
v/c Ratio	0.65	0.56			0.55		0.23		0.17			
Uniform Delay, d1	12.6	25.1			22.9		30.8		30.4			
Progression Factor	2.29	0.65			1.00		1.00		1.00			
Incremental Delay, d2	1.8	0.9			0.6		0.3		0.3			
Delay (s)	30.7	17.3			23.5		31.1		30.7			
Level of Service	C	B			C		C		C			
Approach Delay (s)		23.3			23.5			30.8			0.0	
Approach LOS		C			C			C			A	

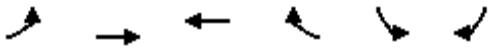
Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	97.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	768	130	1321	207	503	1048
Future Volume (vph)	768	130	1321	207	503	1048
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3367	1509	5085	1323	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3367	1509	5085	1323	3433	3539
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.84	0.84
Adj. Flow (vph)	863	146	1391	218	599	1248
RTOR Reduction (vph)	0	107	0	147	0	0
Lane Group Flow (vph)	863	39	1391	71	599	1248
Heavy Vehicles (%)	4%	7%	2%	18%	2%	2%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	30.5	30.5	19.5	56.0
Effective Green, g (s)	25.0	25.0	30.5	30.5	19.5	56.0
Actuated g/C Ratio	0.27	0.27	0.33	0.33	0.21	0.60
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)	905	405	1667	433	719	2131
v/s Ratio Prot	c0.26	0.03	c0.27	0.05	c0.17	0.35
v/s Ratio Perm						
v/c Ratio	0.95	0.10	0.83	0.17	0.83	0.59
Uniform Delay, d1	33.4	25.5	28.9	22.2	35.2	11.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.6	0.1	5.1	0.8	8.5	1.2
Delay (s)	53.0	25.7	34.0	23.0	43.7	12.6
Level of Service	D	C	C	C	D	B
Approach Delay (s)	49.1		32.5			22.7
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.8%	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)	233	1218	945	155	282	606
Future Volume (vph)	233	1218	945	155	282	606
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)	265	1384	1016	167	324	697
RTOR Reduction (vph)	0	0	0	116	0	171
Lane Group Flow (vph)	265	1384	1016	51	324	526
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	c0.15	0.39	c0.29		0.18	c0.33
v/s Ratio Perm				0.03		
v/c Ratio	1.75	0.80	0.94	0.11	0.59	1.08
Uniform Delay, d1	27.0	12.5	20.0	14.7	17.4	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	365.5	3.9	16.5	0.4	2.0	64.1
Delay (s)	392.5	16.4	36.5	15.2	19.4	84.6
Level of Service	F	B	D	B	B	F
Approach Delay (s)		76.8	33.5		63.9	
Approach LOS		E	C		E	

Intersection Summary			
HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	675	825	306	961	139	352
Future Volume (vph)	675	825	306	961	139	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1568	1787	3539	1636	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1568	1787	3539	1636	1583
Peak-hour factor, PHF	0.89	0.89	0.86	0.86	0.88	0.88
Adj. Flow (vph)	758	927	356	1117	158	400
RTOR Reduction (vph)	0	340	0	0	0	341
Lane Group Flow (vph)	758	587	356	1117	158	59
Heavy Vehicles (%)	2%	3%	1%	2%	14%	2%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	66.3	66.3	33.4	105.7	20.3	20.3
Effective Green, g (s)	66.3	66.3	33.4	105.7	20.3	20.3
Actuated g/C Ratio	0.48	0.48	0.24	0.77	0.15	0.15
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)	1700	753	432	2710	240	232
v/s Ratio Prot	0.21	c0.37	c0.20	0.32	c0.10	0.04
v/s Ratio Perm						
v/c Ratio	0.45	0.78	0.82	0.41	0.66	0.25
Uniform Delay, d1	23.7	29.8	49.5	5.5	55.6	52.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	7.8	12.6	0.5	7.0	0.8
Delay (s)	24.6	37.6	62.1	6.0	62.6	52.9
Level of Service	C	D	E	A	E	D
Approach Delay (s)	31.7			19.6	55.7	
Approach LOS	C			B	E	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	59	15	166	15	13	1	223	167	48	72	3
Future Vol, veh/h	46	59	15	166	15	13	1	223	167	48	72	3
Peak Hour Factor	0.71	0.71	0.71	0.90	0.90	0.90	0.75	0.75	0.75	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	0	10	0	1	3	11	4	0
Mvmt Flow	65	83	21	184	17	14	1	297	223	55	82	3
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	12.1	13.4	22	11.4
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	38%	100%	0%	39%
Vol Thru, %	57%	49%	0%	54%	59%
Vol Right, %	43%	12%	0%	46%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	391	120	166	28	123
LT Vol	1	46	166	0	48
Through Vol	223	59	0	15	72
RT Vol	167	15	0	13	3
Lane Flow Rate	521	169	184	31	140
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.747	0.297	0.368	0.054	0.244
Departure Headway (Hd)	5.161	6.324	7.176	6.3	6.284
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	699	565	498	565	566
Service Time	3.225	4.412	4.957	4.08	4.376
HCM Lane V/C Ratio	0.745	0.299	0.369	0.055	0.247
HCM Control Delay	22	12.1	14.1	9.4	11.4
HCM Lane LOS	C	B	B	A	B
HCM 95th-tile Q	6.8	1.2	1.7	0.2	1

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	8	5	45	5	26	9	314	36	14	266	13
Future Vol, veh/h	4	8	5	45	5	26	9	314	36	14	266	13
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	87	87	87	73	73	73	90	90	90
Heavy Vehicles, %	0	0	25	3	25	0	0	3	0	0	1	0
Mvmt Flow	6	12	8	52	6	30	12	430	49	16	296	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	832	838	303	824	821	455	310	0	0	479	0	0
Stage 1	335	335	-	479	479	-	-	-	-	-	-	-
Stage 2	497	503	-	345	342	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.45	7.13	6.75	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.525	3.527	4.225	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	291	305	686	291	285	609	1262	-	-	1094	-	-
Stage 1	683	646	-	566	518	-	-	-	-	-	-	-
Stage 2	559	545	-	668	599	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	267	297	686	274	278	609	1262	-	-	1094	-	-
Mov Cap-2 Maneuver	267	297	-	274	278	-	-	-	-	-	-	-
Stage 1	676	636	-	560	513	-	-	-	-	-	-	-
Stage 2	521	540	-	638	590	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	18	0.2	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1262	-	-	345	274	609	1094	-	-
HCM Lane V/C Ratio	0.01	-	-	0.076	0.21	0.049	0.014	-	-
HCM Control Delay (s)	7.9	-	-	16.3	21.6	11.2	8.3	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	0.2	0	-	-

Intersection	
Int Delay, s/veh	14.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	15	5	235	10	5	0	165	95	5	410	5
Future Vol, veh/h	5	15	5	235	10	5	0	165	95	5	410	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	17	6	261	11	6	0	183	106	6	456	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	716	760	459	719	710	236	462	0	0	289	0	0
Stage 1	471	471	-	236	236	-	-	-	-	-	-	-
Stage 2	245	289	-	483	474	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	345	336	602	344	359	803	1099	-	-	1273	-	-
Stage 1	573	560	-	767	710	-	-	-	-	-	-	-
Stage 2	759	673	-	565	558	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	333	334	602	326	357	803	1099	-	-	1273	-	-
Mov Cap-2 Maneuver	333	334	-	326	357	-	-	-	-	-	-	-
Stage 1	573	557	-	767	710	-	-	-	-	-	-	-
Stage 2	742	673	-	540	555	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	53.3	0	0.1
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1099	-	-	366	331	1273	-	-
HCM Lane V/C Ratio	-	-	-	0.076	0.839	0.004	-	-
HCM Control Delay (s)	0	-	-	15.6	53.3	7.8	0	-
HCM Lane LOS	A	-	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	7.4	0	-	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	230	105	180	30	25	625
Future Vol, veh/h	230	105	180	30	25	625
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	117	200	33	28	694

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	461	28	722	0	-	0
Stage 1	28	-	-	-	-	-
Stage 2	433	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	559	1047	880	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	432	1047	880	-	-	-
Mov Cap-2 Maneuver	432	-	-	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.7	8.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	880	-	432	1047	-	-
HCM Lane V/C Ratio	0.227	-	0.592	0.111	-	-
HCM Control Delay (s)	10.3	-	24.7	8.9	-	-
HCM Lane LOS	B	-	C	A	-	-
HCM 95th %tile Q(veh)	0.9	-	3.7	0.4	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	104	17	320	720	1
Future Vol, veh/h	1	104	17	320	720	1
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	68	68	85	85	89	89
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	1	153	20	376	809	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1226	810	810	0	-	0
Stage 1	810	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	199	381	825	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	193	381	825	-	-	-
Mov Cap-2 Maneuver	193	-	-	-	-	-
Stage 1	427	-	-	-	-	-
Stage 2	670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	825	-	377	-	-
HCM Lane V/C Ratio	0.024	-	0.41	-	-
HCM Control Delay (s)	9.5	0	21	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.9	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	20	35	0	9	48	327	55	12	833	18
Future Vol, veh/h	6	0	20	35	0	9	48	327	55	12	833	18
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	63	63	63	83	83	83	94	94	94	89	89	89
Heavy Vehicles, %	0	0	0	12	0	29	0	1	12	22	1	0
Mvmt Flow	10	0	32	42	0	11	51	348	59	13	936	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1457	1481	946	1468	1462	378	956	0	0	407	0	0
Stage 1	972	972	-	480	480	-	-	-	-	-	-	-
Stage 2	485	509	-	988	982	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.49	4.1	-	-	4.32	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.561	2.2	-	-	2.398	-	-
Pot Cap-1 Maneuver	109	127	320	100	130	613	727	-	-	1052	-	-
Stage 1	306	333	-	548	558	-	-	-	-	-	-	-
Stage 2	567	541	-	285	330	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	98	112	320	82	115	613	727	-	-	1052	-	-
Mov Cap-2 Maneuver	98	112	-	82	115	-	-	-	-	-	-	-
Stage 1	278	324	-	498	507	-	-	-	-	-	-	-
Stage 2	506	492	-	250	321	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.3	75.9	1.2	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	727	-	-	210	100	1052	-	-
HCM Lane V/C Ratio	0.07	-	-	0.197	0.53	0.013	-	-
HCM Control Delay (s)	10.3	0	-	26.3	75.9	8.5	0	-
HCM Lane LOS	B	A	-	D	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	2.4	0	-	-

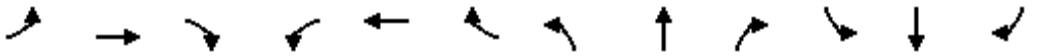
Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	42	388	0	0	888
Future Vol, veh/h	0	42	388	0	0	888
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	92	100	100	92	92	100
Heavy Vehicles, %	2	13	1	2	2	1
Mvmt Flow	0	42	388	0	0	888

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	388	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	631	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	631	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

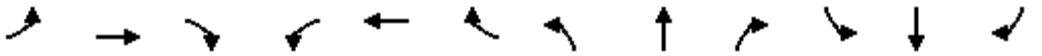
Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	631	-
HCM Lane V/C Ratio	-	0.067	-
HCM Control Delay (s)	-	11.1	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	89	5	719	400	91	5	1	196	4	0	0
Future Volume (vph)	0	89	5	719	400	91	5	1	196	4	0	0
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		0.99		1.00	0.97			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.96	1.00		0.95	
Satd. Flow (prot)		3365		3433	3441			1450	2760		2046	
Flt Permitted		1.00		0.95	1.00			0.83	1.00		0.75	
Satd. Flow (perm)		3365		3433	3441			1257	2760		1622	
Peak-hour factor, PHF	0.71	0.71	0.71	0.73	0.73	0.73	0.78	0.78	0.78	0.75	0.75	0.75
Adj. Flow (vph)	0	125	7	985	548	125	6	1	251	5	0	0
RTOR Reduction (vph)	0	4	0	0	8	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	128	0	985	665	0	0	7	251	0	5	0
Heavy Vehicles (%)	0%	4%	50%	2%	2%	2%	25%	0%	3%	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)		8.7		26.1	40.8			12.2	12.2		12.2	
Effective Green, g (s)		8.7		26.1	40.8			12.2	12.2		12.2	
Actuated g/C Ratio		0.13		0.40	0.63			0.19	0.19		0.19	
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)		450		1378	2159			235	518		304	
v/s Ratio Prot		0.04		c0.29	c0.19							
v/s Ratio Perm								0.01	c0.09		0.00	
v/c Ratio		0.28		0.71	0.31			0.03	0.48		0.02	
Uniform Delay, d1		25.3		16.3	5.6			21.6	23.6		21.5	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.3		1.8	0.1			0.1	0.7		0.0	
Delay (s)		25.7		18.1	5.7			21.6	24.3		21.5	
Level of Service		C		B	A			C	C		C	
Approach Delay (s)		25.7			13.1			24.2			21.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

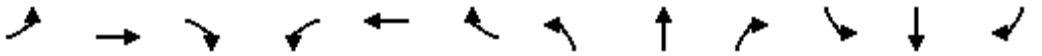
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	198	91	107	680	0	0	0	0	380	0	562
Future Volume (vph)	0	198	91	107	680	0	0	0	0	380	0	562
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					3502		2814
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5981	1419	2918	3455					3502		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	248	114	134	850	0	0	0	0	507	0	749
RTOR Reduction (vph)	0	0	81	0	0	0	0	0	0	0	0	248
Lane Group Flow (vph)	0	248	33	134	850	0	0	0	0	507	0	501
Heavy Vehicles (%)	0%	2%	10%	12%	1%	0%	2%	2%	2%	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)		27.2	27.2	23.8	57.0					25.2		25.2
Effective Green, g (s)		27.2	27.2	23.8	57.0					25.2		25.2
Actuated g/C Ratio		0.29	0.29	0.25	0.61					0.27		0.27
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)		1726	409	737	2090					936		752
v/s Ratio Prot		0.04	0.02	0.05	c0.25					0.14		c0.18
v/s Ratio Perm												
v/c Ratio		0.14	0.08	0.18	0.41					0.54		0.67
Uniform Delay, d1		24.9	24.4	27.6	9.7					29.6		30.8
Progression Factor		1.00	1.00	0.90	1.61					1.00		1.00
Incremental Delay, d2		0.1	0.2	0.1	0.2					1.1		3.0
Delay (s)		24.9	24.6	25.1	15.9					30.7		33.7
Level of Service		C	C	C	B					C		C
Approach Delay (s)		24.8			17.1			0.0			32.5	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
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)	79	499	0	0	261	54	526	0	251	0	0	0
Future Volume (vph)	79	499	0	0	261	54	526	0	251	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
Grade (%)		0%			11%			0%			0%	
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			4658		3433		2733			
Flt Permitted	0.52	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	1713	3421			4658		3433		2733			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.85	0.85	0.78	0.92	0.78	0.92	0.92	0.92
Adj. Flow (vph)	91	574	0	0	307	64	674	0	322	0	0	0
RTOR Reduction (vph)	0	0	0	0	28	0	0	0	236	0	0	0
Lane Group Flow (vph)	91	574	0	0	343	0	674	0	86	0	0	0
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	2%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	40.7	27.2			37.5		25.2		25.2			
Effective Green, g (s)	40.7	27.2			37.5		25.2		25.2			
Actuated g/C Ratio	0.43	0.29			0.40		0.27		0.27			
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)	940	987			1854		918		731			
v/s Ratio Prot	c0.01	c0.17			c0.07		c0.20		0.03			
v/s Ratio Perm	0.03											
v/c Ratio	0.10	0.58			0.18		0.73		0.12			
Uniform Delay, d1	15.6	28.6			18.4		31.4		26.1			
Progression Factor	1.30	1.26			1.00		1.00		1.00			
Incremental Delay, d2	0.1	1.3			0.1		3.7		0.2			
Delay (s)	20.4	37.3			18.5		35.2		26.2			
Level of Service	C	D			B		D		C			
Approach Delay (s)		35.0			18.5			32.3			0.0	
Approach LOS		D			B			C			A	

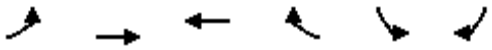
Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	752	382	1438	152	206	419
Future Volume (vph)	752	382	1438	152	206	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	1599	4988	1229	3242	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	1599	4988	1229	3242	3374
Peak-hour factor, PHF	0.87	0.87	0.93	0.93	0.81	0.81
Adj. Flow (vph)	864	439	1546	163	254	517
RTOR Reduction (vph)	0	320	0	99	0	0
Lane Group Flow (vph)	864	119	1546	64	254	517
Heavy Vehicles (%)	6%	1%	4%	27%	8%	7%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	36.5	36.5	13.5	56.0
Effective Green, g (s)	25.0	25.0	36.5	36.5	13.5	56.0
Actuated g/C Ratio	0.27	0.27	0.39	0.39	0.15	0.60
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)	887	429	1957	482	470	2031
v/s Ratio Prot	c0.26	0.07	c0.31	0.05	c0.08	0.15
v/s Ratio Perm						
v/c Ratio	0.97	0.28	0.79	0.13	0.54	0.25
Uniform Delay, d1	33.7	26.9	24.9	18.1	36.9	8.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.9	0.5	3.3	0.6	1.6	0.3
Delay (s)	57.6	27.4	28.2	18.7	38.5	9.0
Level of Service	E	C	C	B	D	A
Approach Delay (s)	47.4		27.3			18.7
Approach LOS	D		C			B

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.1%	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)	427	1393	502	375	104	123
Future Volume (vph)	427	1393	502	375	104	123
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)	497	1620	523	391	137	162
RTOR Reduction (vph)	0	0	0	272	0	132
Lane Group Flow (vph)	497	1620	523	119	137	30
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)	11.9	35.9	18.0	18.0	11.1	11.1
Effective Green, g (s)	11.9	35.9	18.0	18.0	11.1	11.1
Actuated g/C Ratio	0.20	0.61	0.31	0.31	0.19	0.19
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)	360	2112	1019	482	323	289
v/s Ratio Prot	c0.28	c0.47	0.16		c0.08	0.02
v/s Ratio Perm				0.08		
v/c Ratio	1.38	0.77	0.51	0.25	0.42	0.11
Uniform Delay, d1	23.6	8.5	16.9	15.4	21.1	19.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	187.8	2.7	1.8	1.2	1.2	0.2
Delay (s)	211.3	11.2	18.7	16.6	22.4	20.1
Level of Service	F	B	B	B	C	C
Approach Delay (s)		58.2	17.8		21.1	
Approach LOS		E	B		C	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	961	536	76	544	333	482
Future Volume (vph)	961	536	76	544	333	482
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1468	1752	3438	1680	1538
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1468	1752	3438	1680	1538
Peak-hour factor, PHF	0.95	0.95	0.90	0.90	0.80	0.80
Adj. Flow (vph)	1012	564	84	604	416	602
RTOR Reduction (vph)	0	282	0	0	0	399
Lane Group Flow (vph)	1012	282	84	604	416	204
Heavy Vehicles (%)	2%	10%	3%	5%	11%	5%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	69.1	69.1	12.9	88.0	38.0	38.0
Effective Green, g (s)	69.1	69.1	12.9	88.0	38.0	38.0
Actuated g/C Ratio	0.50	0.50	0.09	0.64	0.28	0.28
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)	1772	735	163	2192	462	423
v/s Ratio Prot	c0.29	0.19	c0.05	0.18	c0.25	0.13
v/s Ratio Perm						
v/c Ratio	0.57	0.38	0.52	0.28	0.90	0.48
Uniform Delay, d1	24.1	21.3	59.6	11.0	48.2	41.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	1.5	3.6	0.3	20.7	1.2
Delay (s)	25.4	22.8	63.2	11.3	68.9	43.0
Level of Service	C	C	E	B	E	D
Approach Delay (s)	24.5			17.6	53.6	
Approach LOS	C			B	D	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	13.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	19	6	185	81	76	13	68	67	18	195	23
Future Vol, veh/h	0	19	6	185	81	76	13	68	67	18	195	23
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.87	0.87	0.87	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	2	0	5	0	6	8	14	0	0
Mvmt Flow	0	38	12	264	116	109	15	78	77	26	279	33
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9.8	13.7	10.8	15.6
HCM LOS	A	B	B	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	9%	0%	100%	0%	8%
Vol Thru, %	46%	76%	0%	52%	83%
Vol Right, %	45%	24%	0%	48%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	148	25	185	157	236
LT Vol	13	0	185	0	18
Through Vol	68	19	0	81	195
RT Vol	67	6	0	76	23
Lane Flow Rate	170	50	264	224	337
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.268	0.086	0.484	0.356	0.544
Departure Headway (Hd)	5.678	6.173	6.596	5.711	5.805
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	631	578	547	628	620
Service Time	3.733	4.241	4.341	3.455	3.849
HCM Lane V/C Ratio	0.269	0.087	0.483	0.357	0.544
HCM Control Delay	10.8	9.8	15.4	11.6	15.6
HCM Lane LOS	B	A	C	B	C
HCM 95th-tile Q	1.1	0.3	2.6	1.6	3.3

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	7	9	24	4	13	24	162	30	32	291	30
Future Vol, veh/h	5	7	9	24	4	13	24	162	30	32	291	30
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	83	83	83	79	79	79	66	66	66
Heavy Vehicles, %	25	0	14	0	33	9	0	4	0	4	1	4
Mvmt Flow	7	10	13	29	5	16	30	205	38	48	441	45

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	855	863	464	855	866	224	486	0	0	243	0	0
Stage 1	560	560	-	284	284	-	-	-	-	-	-	-
Stage 2	295	303	-	571	582	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.34	7.1	6.83	6.29	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.426	3.5	4.297	3.381	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	254	295	574	281	260	798	1087	-	-	1312	-	-
Stage 1	474	514	-	727	624	-	-	-	-	-	-	-
Stage 2	666	667	-	509	453	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	233	276	574	255	243	798	1087	-	-	1312	-	-
Mov Cap-2 Maneuver	233	276	-	255	243	-	-	-	-	-	-	-
Stage 1	461	495	-	707	607	-	-	-	-	-	-	-
Stage 2	630	648	-	470	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	17.7	0.9	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1087	-	-	336	253	798	1312	-	-
HCM Lane V/C Ratio	0.028	-	-	0.088	0.133	0.02	0.037	-	-
HCM Control Delay (s)	8.4	-	-	16.7	21.4	9.6	7.8	-	-
HCM Lane LOS	A	-	-	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.5	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	41	10	10	5	309	258	15	134	15
Future Vol, veh/h	5	10	5	41	10	10	5	309	258	15	134	15
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	11	6	46	11	11	6	343	287	17	149	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	702	834	158	699	699	487	166	0	0	630	0	0
Stage 1	192	192	-	499	499	-	-	-	-	-	-	-
Stage 2	510	642	-	200	200	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	353	304	887	354	364	581	1412	-	-	952	-	-
Stage 1	810	742	-	554	544	-	-	-	-	-	-	-
Stage 2	546	469	-	802	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	331	296	887	335	354	581	1412	-	-	952	-	-
Mov Cap-2 Maneuver	331	296	-	335	354	-	-	-	-	-	-	-
Stage 1	804	727	-	550	540	-	-	-	-	-	-	-
Stage 2	521	466	-	769	721	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	17.2	0.1	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	367	363	952	-	-
HCM Lane V/C Ratio	0.004	-	-	0.061	0.187	0.018	-	-
HCM Control Delay (s)	7.6	0	-	15.4	17.2	8.8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	13

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	563	227	26	9	41	149
Future Vol, veh/h	563	227	26	9	41	149
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	626	252	29	10	46	166

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	114	46	212	0	-	0
Stage 1	46	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	882	1023	1358	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	863	1023	1358	-	-	-
Mov Cap-2 Maneuver	863	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	955	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.5	5.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1358	-	863	1023	-	-
HCM Lane V/C Ratio	0.021	-	0.725	0.247	-	-
HCM Control Delay (s)	7.7	-	19.3	9.7	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	6.5	1	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	128	755	199	0
Future Vol, veh/h	0	12	128	755	199	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	50	50	67	67	75	75
Heavy Vehicles, %	2	2	1	2	2	0
Mvmt Flow	0	24	191	1127	265	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1774	265	265	0	-	0
Stage 1	265	-	-	-	-	-
Stage 2	1509	-	-	-	-	-
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	91	774	1305	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	55	774	1305	-	-	-
Mov Cap-2 Maneuver	55	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	202	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1305	-	774	-	-
HCM Lane V/C Ratio	0.146	-	0.031	-	-
HCM Control Delay (s)	8.2	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.5	-	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	4	25	0	2	23	865	53	7	198	0
Future Vol, veh/h	0	0	4	25	0	2	23	865	53	7	198	0
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	38	38	38	71	71	71	71	71	71	70	70	70
Heavy Vehicles, %	0	0	33	17	0	50	6	1	7	17	3	0
Mvmt Flow	0	0	11	35	0	3	32	1218	75	10	283	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1624	1660	283	1629	1623	1256	283	0	0	1293	0	0
Stage 1	303	303	-	1320	1320	-	-	-	-	-	-	-
Stage 2	1321	1357	-	309	303	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.27	6.5	6.7	4.16	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.653	4	3.75	2.254	-	-	2.353	-	-
Pot Cap-1 Maneuver	83	98	688	75	104	166	1257	-	-	489	-	-
Stage 1	711	667	-	180	228	-	-	-	-	-	-	-
Stage 2	195	219	-	670	667	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	87	688	67	92	166	1257	-	-	489	-	-
Mov Cap-2 Maneuver	74	87	-	67	92	-	-	-	-	-	-	-
Stage 1	645	651	-	163	207	-	-	-	-	-	-	-
Stage 2	174	199	-	644	651	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	105.8	0.2	0.4
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1257	-	-	688	70	489	-	-
HCM Lane V/C Ratio	0.026	-	-	0.015	0.543	0.02	-	-
HCM Control Delay (s)	7.9	0	-	10.3	105.8	12.5	0	-
HCM Lane LOS	A	A	-	B	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	2.3	0.1	-	-

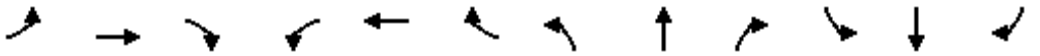
Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	139	802	0	0	227
Future Vol, veh/h	0	139	802	0	0	227
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	92	76	95	92	92	80
Heavy Vehicles, %	2	3	2	2	2	4
Mvmt Flow	0	183	844	0	0	284

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	844	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	360	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	360	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.9	0	0
HCM LOS	C		

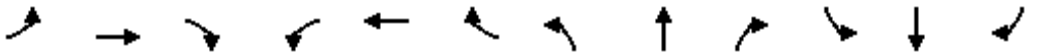
Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	360	-
HCM Lane V/C Ratio	-	0.508	-
HCM Control Delay (s)	-	24.9	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	2.8	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	332	5	28	191	231	8	0	890	76	12	3
Future Volume (vph)	4	332	5	28	191	231	8	0	890	76	12	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)	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	1.00		1.00	0.92			1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1357	3533		3155	3298			1491	2842		2057	
Flt Permitted	0.95	1.00		0.95	1.00			0.68	1.00		0.77	
Satd. Flow (perm)	1357	3533		3155	3298			1074	2842		1647	
Peak-hour factor, PHF	0.69	0.69	0.69	0.88	0.88	0.88	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	6	481	7	32	217	262	9	0	957	94	15	4
RTOR Reduction (vph)	0	1	0	0	182	0	0	0	0	0	1	0
Lane Group Flow (vph)	6	487	0	32	298	0	0	9	957	0	112	0
Heavy Vehicles (%)	33%	2%	0%	11%	1%	0%	17%	0%	0%	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)	2.2	12.8		3.2	14.8			20.8	20.8		20.8	
Effective Green, g (s)	2.2	12.8		3.2	14.8			20.8	20.8		20.8	
Actuated g/C Ratio	0.04	0.23		0.06	0.27			0.38	0.38		0.38	
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)	54	825		184	890			407	1078		625	
v/s Ratio Prot	0.00	c0.14		0.01	c0.09							
v/s Ratio Perm								0.01	c0.34		0.07	
v/c Ratio	0.11	0.59		0.17	0.33			0.02	0.89		0.18	
Uniform Delay, d1	25.4	18.7		24.5	16.0			10.6	15.9		11.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	1.1		0.5	0.2			0.0	9.0		0.1	
Delay (s)	25.7	19.8		25.0	16.3			10.7	25.0		11.5	
Level of Service	C	B		C	B			B	C		B	
Approach Delay (s)		19.9			16.8			24.8			11.5	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.5%	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	845	453	520	351	0	0	0	0	295	0	107
Future Volume (vph)	0	845	453	520	351	0	0	0	0	295	0	107
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	0.92	0.85	0.85	0.94	0.94	0.92	0.92	0.92	0.92	0.75	0.25	0.75
Adj. Flow (vph)	0	994	533	553	373	0	0	0	0	393	0	143
RTOR Reduction (vph)	0	0	343	0	0	0	0	0	0	0	0	110
Lane Group Flow (vph)	0	994	190	553	373	0	0	0	0	393	0	33
Heavy Vehicles (%)	0%	1%	1%	1%	1%	0%	2%	2%	2%	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)		35.2	35.2	22.7	60.8					22.6		22.6
Effective Green, g (s)		35.2	35.2	22.7	60.8					22.6		22.6
Actuated g/C Ratio		0.36	0.36	0.23	0.62					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)		2158	552	745	2132					803		645
v/s Ratio Prot		c0.16	0.12	c0.17	c0.11					c0.11		0.01
v/s Ratio Perm												
v/c Ratio		0.46	0.35	0.74	0.17					0.49		0.05
Uniform Delay, d1		24.3	23.2	35.2	8.1					32.9		29.6
Progression Factor		1.00	1.00	1.42	0.86					1.00		1.00
Incremental Delay, d2		0.3	0.8	3.7	0.1					1.0		0.1
Delay (s)		24.7	24.0	53.8	7.1					33.9		29.7
Level of Service		C	C	D	A					C		C
Approach Delay (s)		24.4			35.0			0.0			32.8	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.3%	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)	510	630	0	0	699	309	172	0	474	0	0	0
Future Volume (vph)	510	630	0	0	699	309	172	0	474	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
Grade (%)		0%			11%			0%			0%	
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			4644		3433		2814			
Flt Permitted	0.18	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	615	3455			4644		3433		2814			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.90	0.90	0.94	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	586	724	0	0	777	343	183	0	504	0	0	0
RTOR Reduction (vph)	0	0	0	0	72	0	0	0	388	0	0	0
Lane Group Flow (vph)	586	724	0	0	1048	0	183	0	116	0	0	0
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	1%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	55.0	35.2			38.1		22.6		22.6			
Effective Green, g (s)	55.0	35.2			38.1		22.6		22.6			
Actuated g/C Ratio	0.56	0.36			0.39		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)	870	1234			1796		787		645			
v/s Ratio Prot	c0.14	0.21			c0.23		c0.05		0.04			
v/s Ratio Perm	c0.24											
v/c Ratio	0.67	0.59			0.58		0.23		0.18			
Uniform Delay, d1	13.1	25.7			23.9		30.9		30.5			
Progression Factor	2.15	0.65			1.00		1.00		1.00			
Incremental Delay, d2	2.0	1.0			0.8		0.3		0.3			
Delay (s)	30.2	17.7			24.7		31.2		30.8			
Level of Service	C	B			C		C		C			
Approach Delay (s)		23.3			24.7			30.9			0.0	
Approach LOS		C			C			C			A	

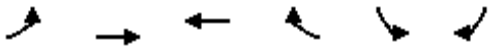
Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	791	134	1361	213	518	1080
Future Volume (vph)	791	134	1361	213	518	1080
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3367	1509	5085	1323	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3367	1509	5085	1323	3433	3539
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.84	0.84
Adj. Flow (vph)	889	151	1433	224	617	1286
RTOR Reduction (vph)	0	110	0	151	0	0
Lane Group Flow (vph)	889	41	1433	73	617	1286
Heavy Vehicles (%)	4%	7%	2%	18%	2%	2%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	30.4	30.4	19.6	56.0
Effective Green, g (s)	25.0	25.0	30.4	30.4	19.6	56.0
Actuated g/C Ratio	0.27	0.27	0.33	0.33	0.21	0.60
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)	905	405	1662	432	723	2131
v/s Ratio Prot	c0.26	0.03	c0.28	0.06	c0.18	0.36
v/s Ratio Perm						
v/c Ratio	0.98	0.10	0.86	0.17	0.85	0.60
Uniform Delay, d1	33.8	25.5	29.3	22.3	35.3	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.5	0.1	6.2	0.8	9.9	1.3
Delay (s)	59.3	25.7	35.5	23.2	45.3	12.8
Level of Service	E	C	D	C	D	B
Approach Delay (s)	54.4		33.8			23.4
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.6%	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)	240	1255	974	160	291	624
Future Volume (vph)	240	1255	974	160	291	624
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)	273	1426	1047	172	334	717
RTOR Reduction (vph)	0	0	0	120	0	170
Lane Group Flow (vph)	273	1426	1047	52	334	547
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	c0.15	0.40	c0.30		0.19	c0.34
v/s Ratio Perm				0.03		
v/c Ratio	1.81	0.82	0.97	0.11	0.61	1.12
Uniform Delay, d1	27.0	12.8	20.2	14.7	17.5	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	388.5	4.5	21.1	0.5	2.3	78.9
Delay (s)	415.5	17.2	41.4	15.2	19.9	99.4
Level of Service	F	B	D	B	B	F
Approach Delay (s)		81.2	37.7		74.1	
Approach LOS		F	D		E	

Intersection Summary			
HCM 2000 Control Delay	66.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	695	851	315	991	143	363
Future Volume (vph)	695	851	315	991	143	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1568	1787	3539	1636	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1568	1787	3539	1636	1583
Peak-hour factor, PHF	0.89	0.89	0.86	0.86	0.88	0.88
Adj. Flow (vph)	781	956	366	1152	162	412
RTOR Reduction (vph)	0	343	0	0	0	351
Lane Group Flow (vph)	781	613	366	1152	163	62
Heavy Vehicles (%)	2%	3%	1%	2%	14%	2%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	65.2	65.2	34.1	105.3	20.7	20.7
Effective Green, g (s)	65.2	65.2	34.1	105.3	20.7	20.7
Actuated g/C Ratio	0.47	0.47	0.25	0.76	0.15	0.15
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)	1672	740	441	2700	245	237
v/s Ratio Prot	0.22	c0.39	c0.20	0.33	c0.10	0.04
v/s Ratio Perm						
v/c Ratio	0.47	0.83	0.83	0.43	0.67	0.26
Uniform Delay, d1	24.6	31.6	49.2	5.7	55.4	51.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	10.4	12.8	0.5	7.3	0.8
Delay (s)	25.6	41.9	62.0	6.2	62.7	52.7
Level of Service	C	D	E	A	E	D
Approach Delay (s)	34.6			19.7	55.5	
Approach LOS	C			B	E	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	18.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	61	15	171	15	13	1	230	172	49	74	3
Future Vol, veh/h	47	61	15	171	15	13	1	230	172	49	74	3
Peak Hour Factor	0.71	0.71	0.71	0.90	0.90	0.90	0.75	0.75	0.75	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	0	10	0	1	3	11	4	0
Mvmt Flow	66	86	21	190	17	14	1	307	229	56	84	3
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	12.5	13.9	24.4	11.7
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	38%	100%	0%	39%
Vol Thru, %	57%	50%	0%	54%	59%
Vol Right, %	43%	12%	0%	46%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	403	123	171	28	126
LT Vol	1	47	171	0	49
Through Vol	230	61	0	15	74
RT Vol	172	15	0	13	3
Lane Flow Rate	537	173	190	31	143
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.779	0.314	0.383	0.055	0.258
Departure Headway (Hd)	5.217	6.529	7.369	6.491	6.479
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	688	554	492	555	557
Service Time	3.304	4.529	5.069	4.191	4.491
HCM Lane V/C Ratio	0.781	0.312	0.386	0.056	0.257
HCM Control Delay	24.4	12.5	14.6	9.6	11.7
HCM Lane LOS	C	B	B	A	B
HCM 95th-tile Q	7.5	1.3	1.8	0.2	1

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	8	5	46	5	27	9	324	37	14	274	13
Future Vol, veh/h	4	8	5	46	5	27	9	324	37	14	274	13
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	87	87	87	73	73	73	90	90	90
Heavy Vehicles, %	0	0	25	3	25	0	0	3	0	0	1	0
Mvmt Flow	6	12	8	53	6	31	12	444	51	16	304	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	855	862	311	847	844	470	318	0	0	495	0	0
Stage 1	343	343	-	494	494	-	-	-	-	-	-	-
Stage 2	512	519	-	353	350	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.45	7.13	6.75	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.525	3.527	4.225	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	281	295	679	281	276	598	1253	-	-	1079	-	-
Stage 1	676	641	-	555	510	-	-	-	-	-	-	-
Stage 2	548	536	-	662	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	257	288	679	264	269	598	1253	-	-	1079	-	-
Mov Cap-2 Maneuver	257	288	-	264	269	-	-	-	-	-	-	-
Stage 1	669	631	-	549	505	-	-	-	-	-	-	-
Stage 2	509	531	-	632	585	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	18.6	0.2	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	335	264	598	1079	-	-
HCM Lane V/C Ratio	0.01	-	-	0.078	0.222	0.052	0.014	-	-
HCM Control Delay (s)	7.9	-	-	16.7	22.5	11.3	8.4	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.8	0.2	0	-	-

Intersection	
Int Delay, s/veh	17.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	15	5	242	10	5	0	170	98	5	422	5
Future Vol, veh/h	5	15	5	242	10	5	0	170	98	5	422	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	17	6	269	11	6	0	189	109	6	469	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	736	782	472	740	731	244	475	0	0	298	0	0
Stage 1	484	484	-	244	244	-	-	-	-	-	-	-
Stage 2	252	298	-	496	487	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	335	326	592	333	349	795	1087	-	-	1263	-	-
Stage 1	564	552	-	760	704	-	-	-	-	-	-	-
Stage 2	752	667	-	556	550	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	323	324	592	315	347	795	1087	-	-	1263	-	-
Mov Cap-2 Maneuver	323	324	-	315	347	-	-	-	-	-	-	-
Stage 1	564	549	-	760	704	-	-	-	-	-	-	-
Stage 2	735	667	-	531	547	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16	63.5	0	0.1
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1087	-	-	356	320	1263	-	-
HCM Lane V/C Ratio	-	-	-	0.078	0.892	0.004	-	-
HCM Control Delay (s)	0	-	-	16	63.5	7.9	0	-
HCM Lane LOS	A	-	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	8.4	0	-	-

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	237	108	185	31	26	644
Future Vol, veh/h	237	108	185	31	26	644
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	263	120	206	34	29	716

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	475	29	745	0	-	0
Stage 1	29	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	548	1046	863	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	417	1046	863	-	-	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	645	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.5	9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	863	-	417	1046	-	-
HCM Lane V/C Ratio	0.238	-	0.631	0.115	-	-
HCM Control Delay (s)	10.5	-	27.3	8.9	-	-
HCM Lane LOS	B	-	D	A	-	-
HCM 95th %tile Q(veh)	0.9	-	4.2	0.4	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	107	18	330	742	1
Future Vol, veh/h	1	107	18	330	742	1
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	68	68	85	85	89	89
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	1	157	21	388	834	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1265	835	835	0	-	0
Stage 1	835	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	189	369	807	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	183	369	807	-	-	-
Mov Cap-2 Maneuver	183	-	-	-	-	-
Stage 1	415	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.2	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	807	-	366	-	-
HCM Lane V/C Ratio	0.026	-	0.434	-	-
HCM Control Delay (s)	9.6	0	22.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	2.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	21	36	0	9	49	337	57	12	858	19
Future Vol, veh/h	6	0	21	36	0	9	49	337	57	12	858	19
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	63	63	63	83	83	83	94	94	94	89	89	89
Heavy Vehicles, %	0	0	0	12	0	29	0	1	12	22	1	0
Mvmt Flow	10	0	33	43	0	11	52	359	61	13	964	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1500	1525	975	1511	1505	390	985	0	0	420	0	0
Stage 1	1001	1001	-	494	494	-	-	-	-	-	-	-
Stage 2	499	524	-	1017	1011	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.49	4.1	-	-	4.32	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.561	2.2	-	-	2.398	-	-
Pot Cap-1 Maneuver	101	119	308	94	122	603	709	-	-	1040	-	-
Stage 1	295	323	-	539	550	-	-	-	-	-	-	-
Stage 2	557	533	-	275	320	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	90	105	308	76	107	603	709	-	-	1040	-	-
Mov Cap-2 Maneuver	90	105	-	76	107	-	-	-	-	-	-	-
Stage 1	267	314	-	487	497	-	-	-	-	-	-	-
Stage 2	494	482	-	238	311	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.8	89.3	1.2	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	709	-	-	200	92	1040	-	-
HCM Lane V/C Ratio	0.074	-	-	0.214	0.589	0.013	-	-
HCM Control Delay (s)	10.5	0	-	27.8	89.3	8.5	0	-
HCM Lane LOS	B	A	-	D	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8	2.7	0	-	-

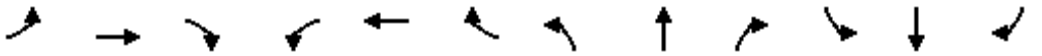
Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	43	400	0	0	915
Future Vol, veh/h	0	43	400	0	0	915
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	92	100	100	92	92	100
Heavy Vehicles, %	2	13	1	2	2	1
Mvmt Flow	0	43	400	0	0	915

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	400	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	621	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	621	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

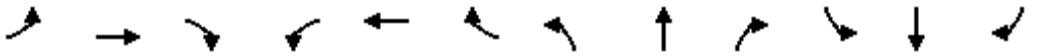
Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	621	-
HCM Lane V/C Ratio	-	0.069	-
HCM Control Delay (s)	-	11.2	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	103	5	719	447	91	5	1	196	4	0	0
Future Volume (vph)	0	103	5	719	447	91	5	1	196	4	0	0
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		0.99		1.00	0.97			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.96	1.00		0.95	
Satd. Flow (prot)		3378		3433	3449			1450	2760		2046	
Flt Permitted		1.00		0.95	1.00			0.83	1.00		0.75	
Satd. Flow (perm)		3378		3433	3449			1258	2760		1622	
Peak-hour factor, PHF	0.71	0.71	0.71	0.73	0.73	0.73	0.78	0.78	0.78	0.75	0.75	0.75
Adj. Flow (vph)	0	145	7	985	612	125	6	1	251	5	0	0
RTOR Reduction (vph)	0	3	0	0	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	149	0	985	730	0	0	7	251	0	5	0
Heavy Vehicles (%)	0%	4%	50%	2%	2%	2%	25%	0%	3%	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)		9.1		26.3	41.4			12.3	12.3		12.3	
Effective Green, g (s)		9.1		26.3	41.4			12.3	12.3		12.3	
Actuated g/C Ratio		0.14		0.40	0.63			0.19	0.19		0.19	
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)		467		1374	2173			235	516		303	
v/s Ratio Prot		0.04		c0.29	c0.21							
v/s Ratio Perm								0.01	c0.09		0.00	
v/c Ratio		0.32		0.72	0.34			0.03	0.49		0.02	
Uniform Delay, d1		25.5		16.6	5.7			21.8	23.9		21.8	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.4		1.8	0.1			0.1	0.7		0.0	
Delay (s)		25.9		18.4	5.8			21.9	24.6		21.8	
Level of Service		C		B	A			C	C		C	
Approach Delay (s)		25.9			13.0			24.5			21.8	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



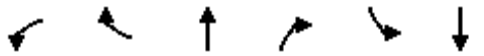
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	212	91	107	706	0	0	0	0	380	0	583
Future Volume (vph)	0	212	91	107	706	0	0	0	0	380	0	583
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	11	10	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					3502		2814
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5981	1419	2918	3455					3502		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	265	114	134	882	0	0	0	0	507	0	777
RTOR Reduction (vph)	0	0	80	0	0	0	0	0	0	0	0	232
Lane Group Flow (vph)	0	265	34	134	883	0	0	0	0	507	0	545
Heavy Vehicles (%)	0%	2%	10%	12%	1%	0%	2%	2%	2%	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)		28.1	28.1	24.1	58.2					25.2		25.2
Effective Green, g (s)		28.1	28.1	24.1	58.2					25.2		25.2
Actuated g/C Ratio		0.29	0.29	0.25	0.61					0.26		0.26
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)		1761	417	737	2107					925		743
v/s Ratio Prot		0.04	0.02	0.05	c0.26					0.14		c0.19
v/s Ratio Perm												
v/c Ratio		0.15	0.08	0.18	0.42					0.55		0.73
Uniform Delay, d1		24.8	24.3	27.9	9.7					30.2		32.0
Progression Factor		1.00	1.00	0.94	1.57					1.00		1.00
Incremental Delay, d2		0.1	0.2	0.1	0.2					1.2		4.6
Delay (s)		24.9	24.5	26.3	15.5					31.4		36.6
Level of Service		C	C	C	B					C		D
Approach Delay (s)		24.8			17.0			0.0			34.5	
Approach LOS		C			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
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)	85	507	0	0	287	54	526	0	251	0	0	0
Future Volume (vph)	85	507	0	0	287	54	526	0	251	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
Grade (%)		0%			11%			0%			0%	
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			4669		3433		2733			
Flt Permitted	0.51	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	1660	3421			4669		3433		2733			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.85	0.85	0.78	0.92	0.78	0.92	0.92	0.92
Adj. Flow (vph)	98	583	0	0	338	64	674	0	322	0	0	0
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	237	0	0	0
Lane Group Flow (vph)	98	583	0	0	378	0	674	0	85	0	0	0
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	2%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	41.6	28.1			38.7		25.2		25.2			
Effective Green, g (s)	41.6	28.1			38.7		25.2		25.2			
Actuated g/C Ratio	0.44	0.29			0.41		0.26		0.26			
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)	929	1007			1894		906		721			
v/s Ratio Prot	c0.01	c0.17			c0.08		c0.20		0.03			
v/s Ratio Perm	0.03											
v/c Ratio	0.11	0.58			0.20		0.74		0.12			
Uniform Delay, d1	15.7	28.6			18.3		32.1		26.7			
Progression Factor	1.29	1.24			1.00		1.00		1.00			
Incremental Delay, d2	0.1	1.2			0.1		4.0		0.2			
Delay (s)	20.2	36.8			18.4		36.2		26.8			
Level of Service	C	D			B		D		C			
Approach Delay (s)		34.4			18.4			33.1			0.0	
Approach LOS		C			B			C			A	

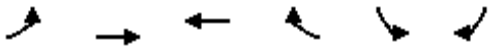
Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	752	382	1438	152	216	419
Future Volume (vph)	752	382	1438	152	216	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	1599	4988	1229	3242	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	1599	4988	1229	3242	3374
Peak-hour factor, PHF	0.87	0.87	0.93	0.93	0.81	0.81
Adj. Flow (vph)	864	439	1546	163	267	517
RTOR Reduction (vph)	0	320	0	100	0	0
Lane Group Flow (vph)	864	119	1546	63	267	517
Heavy Vehicles (%)	6%	1%	4%	27%	8%	7%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	36.2	36.2	13.8	56.0
Effective Green, g (s)	25.0	25.0	36.2	36.2	13.8	56.0
Actuated g/C Ratio	0.27	0.27	0.39	0.39	0.15	0.60
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)	887	429	1941	478	481	2031
v/s Ratio Prot	c0.26	0.07	c0.31	0.05	c0.08	0.15
v/s Ratio Perm						
v/c Ratio	0.97	0.28	0.80	0.13	0.56	0.25
Uniform Delay, d1	33.7	26.9	25.1	18.3	36.8	8.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.9	0.5	3.5	0.6	1.7	0.3
Delay (s)	57.6	27.4	28.6	18.9	38.5	9.0
Level of Service	E	C	C	B	D	A
Approach Delay (s)	47.4		27.7			19.0
Approach LOS	D		C			B

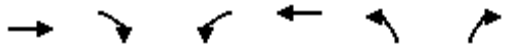
Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	427	1393	502	414	115	133
Future Volume (vph)	427	1393	502	414	115	133
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)	497	1620	523	431	151	175
RTOR Reduction (vph)	0	0	0	300	0	141
Lane Group Flow (vph)	497	1620	523	131	151	34
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)	11.5	35.5	18.0	18.0	11.5	11.5
Effective Green, g (s)	11.5	35.5	18.0	18.0	11.5	11.5
Actuated g/C Ratio	0.19	0.60	0.31	0.31	0.19	0.19
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)	348	2088	1019	482	335	299
v/s Ratio Prot	c0.28	c0.47	0.16		c0.09	0.02
v/s Ratio Perm				0.08		
v/c Ratio	1.43	0.78	0.51	0.27	0.45	0.11
Uniform Delay, d1	23.8	8.8	16.9	15.5	21.0	19.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	208.6	2.9	1.8	1.4	1.3	0.2
Delay (s)	232.4	11.7	18.7	16.9	22.3	19.8
Level of Service	F	B	B	B	C	B
Approach Delay (s)		63.5	17.9		20.9	
Approach LOS		E	B		C	

Intersection Summary			
HCM 2000 Control Delay	46.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	964	544	76	555	361	482
Future Volume (vph)	964	544	76	555	361	482
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1468	1752	3438	1680	1538
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1468	1752	3438	1680	1538
Peak-hour factor, PHF	0.95	0.95	0.90	0.90	0.80	0.80
Adj. Flow (vph)	1015	573	84	617	451	602
RTOR Reduction (vph)	0	292	0	0	0	386
Lane Group Flow (vph)	1015	281	84	617	451	217
Heavy Vehicles (%)	2%	10%	3%	5%	11%	5%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	67.7	67.7	12.9	86.6	39.4	39.4
Effective Green, g (s)	67.7	67.7	12.9	86.6	39.4	39.4
Actuated g/C Ratio	0.49	0.49	0.09	0.63	0.29	0.29
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)	1736	720	163	2157	479	439
v/s Ratio Prot	c0.29	0.19	c0.05	0.18	c0.27	0.14
v/s Ratio Perm						
v/c Ratio	0.58	0.39	0.52	0.29	0.94	0.49
Uniform Delay, d1	25.1	22.1	59.6	11.7	48.2	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	1.6	3.6	0.3	27.2	1.2
Delay (s)	26.6	23.7	63.2	12.0	75.4	42.2
Level of Service	C	C	E	B	E	D
Approach Delay (s)	25.5			18.1	56.4	
Approach LOS	C			B	E	

Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	19	6	232	81	76	13	68	81	18	195	23
Future Vol, veh/h	0	19	6	232	81	76	13	68	81	18	195	23
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.87	0.87	0.87	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	2	0	5	0	6	8	14	0	0
Mvmt Flow	0	38	12	331	116	109	15	78	93	26	279	33
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	10.1	16.5	11.5	16.6
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	8%	0%	100%	0%	8%
Vol Thru, %	42%	76%	0%	52%	83%
Vol Right, %	50%	24%	0%	48%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	162	25	232	157	236
LT Vol	13	0	232	0	18
Through Vol	68	19	0	81	195
RT Vol	81	6	0	76	23
Lane Flow Rate	186	50	331	224	337
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.303	0.089	0.616	0.361	0.564
Departure Headway (Hd)	5.857	6.4	6.689	5.802	6.021
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	611	556	540	619	597
Service Time	3.923	4.484	4.44	3.553	4.076
HCM Lane V/C Ratio	0.304	0.09	0.613	0.362	0.564
HCM Control Delay	11.5	10.1	19.6	11.8	16.6
HCM Lane LOS	B	B	C	B	C
HCM 95th-tile Q	1.3	0.3	4.1	1.6	3.5

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	7	9	24	4	13	24	176	30	32	338	30
Future Vol, veh/h	5	7	9	24	4	13	24	176	30	32	338	30
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	83	83	83	79	79	79	66	66	66
Heavy Vehicles, %	25	0	14	0	33	9	0	4	0	4	1	4
Mvmt Flow	7	10	13	29	5	16	30	223	38	48	512	45

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	944	952	535	944	955	242	557	0	0	261	0	0
Stage 1	631	631	-	302	302	-	-	-	-	-	-	-
Stage 2	313	321	-	642	653	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.34	7.1	6.83	6.29	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.426	3.5	4.297	3.381	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	220	261	523	244	229	780	1024	-	-	1292	-	-
Stage 1	432	477	-	712	612	-	-	-	-	-	-	-
Stage 2	651	655	-	466	419	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	201	244	523	219	214	780	1024	-	-	1292	-	-
Mov Cap-2 Maneuver	201	244	-	219	214	-	-	-	-	-	-	-
Stage 1	419	459	-	691	594	-	-	-	-	-	-	-
Stage 2	614	636	-	428	403	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.5	19.8	0.9	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1024	-	-	297	218	780	1292	-	-
HCM Lane V/C Ratio	0.03	-	-	0.1	0.155	0.02	0.038	-	-
HCM Control Delay (s)	8.6	-	-	18.5	24.5	9.7	7.9	-	-
HCM Lane LOS	A	-	-	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.5	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	41	10	10	5	370	258	15	155	15
Future Vol, veh/h	5	10	5	41	10	10	5	370	258	15	155	15
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	11	6	46	11	11	6	411	287	17	172	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	793	925	181	790	790	555	189	0	0	698	0	0
Stage 1	215	215	-	567	567	-	-	-	-	-	-	-
Stage 2	578	710	-	223	223	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	306	269	862	308	322	531	1385	-	-	898	-	-
Stage 1	787	725	-	508	507	-	-	-	-	-	-	-
Stage 2	501	437	-	780	719	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	285	261	862	290	313	531	1385	-	-	898	-	-
Mov Cap-2 Maneuver	285	261	-	290	313	-	-	-	-	-	-	-
Stage 1	781	710	-	504	503	-	-	-	-	-	-	-
Stage 2	476	434	-	747	704	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.9	19.4	0.1	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1385	-	-	324	317	898	-	-
HCM Lane V/C Ratio	0.004	-	-	0.069	0.214	0.019	-	-
HCM Control Delay (s)	7.6	0	-	16.9	19.4	9.1	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	0.1	-	-

Intersection	
Int Delay, s/veh	15.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	624	227	26	9	41	170
Future Vol, veh/h	624	227	26	9	41	170
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	693	252	29	10	46	189

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	114	46	235	0	-	0
Stage 1	46	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	882	1023	1332	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	863	1023	1332	-	-	-
Mov Cap-2 Maneuver	863	-	-	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	955	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20	5.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1332	-	863	1023	-	-
HCM Lane V/C Ratio	0.022	-	0.803	0.247	-	-
HCM Control Delay (s)	7.8	-	23.8	9.7	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	8.7	1	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	128	816	220	0
Future Vol, veh/h	0	12	128	816	220	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	50	50	67	67	75	75
Heavy Vehicles, %	2	2	1	2	2	0
Mvmt Flow	0	24	191	1218	293	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1893	293	293	0	-	0
Stage 1	293	-	-	-	-	-
Stage 2	1600	-	-	-	-	-
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	77	746	1274	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	182	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	41	746	1274	-	-	-
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	406	-	-	-	-	-
Stage 2	182	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1274	-	746	-	-
HCM Lane V/C Ratio	0.15	-	0.032	-	-
HCM Control Delay (s)	8.3	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	4	25	0	2	23	926	53	7	219	0
Future Vol, veh/h	0	0	4	25	0	2	23	926	53	7	219	0
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	38	38	38	71	71	71	71	71	71	70	70	70
Heavy Vehicles, %	0	0	33	17	0	50	6	1	7	17	3	0
Mvmt Flow	0	0	11	35	0	3	32	1304	75	10	313	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1740	1776	313	1745	1739	1342	313	0	0	1379	0	0
Stage 1	333	333	-	1406	1406	-	-	-	-	-	-	-
Stage 2	1407	1443	-	339	333	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.27	6.5	6.7	4.16	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.653	4	3.75	2.254	-	-	2.353	-	-
Pot Cap-1 Maneuver	69	84	661	62	88	147	1225	-	-	452	-	-
Stage 1	685	647	-	160	208	-	-	-	-	-	-	-
Stage 2	174	199	-	645	647	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	60	72	661	54	76	147	1225	-	-	452	-	-
Mov Cap-2 Maneuver	60	72	-	54	76	-	-	-	-	-	-	-
Stage 1	606	630	-	141	184	-	-	-	-	-	-	-
Stage 2	151	176	-	618	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	150	0.2	0.4
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1225	-	-	661	57	452	-	-
HCM Lane V/C Ratio	0.026	-	-	0.016	0.667	0.022	-	-
HCM Control Delay (s)	8	0	-	10.5	150	13.1	0	-
HCM Lane LOS	A	A	-	B	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	2.8	0.1	-	-

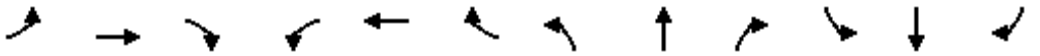
Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	161	841	0	0	248
Future Vol, veh/h	0	161	841	0	0	248
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	92	76	95	92	92	80
Heavy Vehicles, %	2	3	2	2	2	4
Mvmt Flow	0	212	885	0	0	310

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	885	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	341	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	341	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.4	0	0
HCM LOS	D		

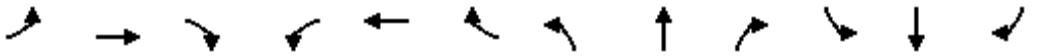
Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	341	-
HCM Lane V/C Ratio	-	0.621	-
HCM Control Delay (s)	-	31.4	-
HCM Lane LOS	-	D	-
HCM 95th %tile Q(veh)	-	4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	378	5	28	212	231	8	0	890	76	12	3
Future Volume (vph)	4	378	5	28	212	231	8	0	890	76	12	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)	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	1.00		1.00	0.92			1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1357	3533		3155	3312			1491	2842		2057	
Flt Permitted	0.95	1.00		0.95	1.00			0.68	1.00		0.77	
Satd. Flow (perm)	1357	3533		3155	3312			1074	2842		1645	
Peak-hour factor, PHF	0.69	0.69	0.69	0.88	0.88	0.88	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	6	548	7	32	241	262	9	0	957	94	15	4
RTOR Reduction (vph)	0	1	0	0	161	0	0	0	0	0	1	0
Lane Group Flow (vph)	6	554	0	32	343	0	0	9	957	0	112	0
Heavy Vehicles (%)	33%	2%	0%	11%	1%	0%	17%	0%	0%	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)	2.2	13.8		3.2	15.8			20.9	20.9		20.9	
Effective Green, g (s)	2.2	13.8		3.2	15.8			20.9	20.9		20.9	
Actuated g/C Ratio	0.04	0.25		0.06	0.28			0.37	0.37		0.37	
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)	53	872		180	936			401	1062		615	
v/s Ratio Prot	0.00	c0.16		0.01	c0.10							
v/s Ratio Perm								0.01	c0.34		0.07	
v/c Ratio	0.11	0.64		0.18	0.37			0.02	0.90		0.18	
Uniform Delay, d1	25.9	18.8		25.1	16.0			11.0	16.5		11.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	1.5		0.5	0.2			0.0	10.5		0.1	
Delay (s)	26.3	20.3		25.6	16.3			11.1	27.0		11.9	
Level of Service	C	C		C	B			B	C		B	
Approach Delay (s)		20.4			16.8			26.9			11.9	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

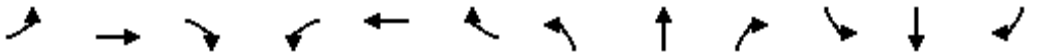
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	891	453	520	363	0	0	0	0	295	0	116
Future Volume (vph)	0	891	453	520	363	0	0	0	0	295	0	116
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	0.92	0.85	0.85	0.94	0.94	0.92	0.92	0.92	0.92	0.75	0.25	0.75
Adj. Flow (vph)	0	1048	533	553	386	0	0	0	0	393	0	155
RTOR Reduction (vph)	0	0	343	0	0	0	0	0	0	0	0	119
Lane Group Flow (vph)	0	1048	190	553	386	0	0	0	0	393	0	36
Heavy Vehicles (%)	0%	1%	1%	1%	1%	0%	2%	2%	2%	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)		35.2	35.2	22.7	60.2					22.6		22.6
Effective Green, g (s)		35.2	35.2	22.7	60.2					22.6		22.6
Actuated g/C Ratio		0.36	0.36	0.23	0.61					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)		2158	552	745	2111					803		645
v/s Ratio Prot		c0.17	0.12	c0.17	0.11					c0.11		0.01
v/s Ratio Perm												
v/c Ratio		0.49	0.35	0.74	0.18					0.49		0.06
Uniform Delay, d1		24.6	23.2	35.2	8.4					32.9		29.6
Progression Factor		1.00	1.00	1.41	0.87					1.00		1.00
Incremental Delay, d2		0.4	0.8	3.6	0.1					1.0		0.1
Delay (s)		25.0	24.0	53.4	7.3					33.9		29.7
Level of Service		C	C	D	A					C		C
Approach Delay (s)		24.6			34.5			0.0			32.7	
Approach LOS		C			C			A			C	

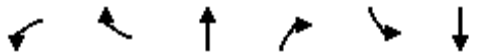
Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	531	655	0	0	711	309	172	0	474	0	0	0
Future Volume (vph)	531	655	0	0	711	309	172	0	474	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
Grade (%)		0%			11%			0%			0%	
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			4647		3433		2814			
Flt Permitted	0.17	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	583	3455			4647		3433		2814			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.90	0.90	0.94	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	610	753	0	0	790	343	183	0	504	0	0	0
RTOR Reduction (vph)	0	0	0	0	71	0	0	0	388	0	0	0
Lane Group Flow (vph)	610	753	0	0	1062	0	183	0	116	0	0	0
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	1%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	55.6	35.2			37.5		22.6		22.6			
Effective Green, g (s)	55.6	35.2			37.5		22.6		22.6			
Actuated g/C Ratio	0.56	0.36			0.38		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)	878	1234			1769		787		645			
v/s Ratio Prot	c0.14	0.22			0.23		c0.05		0.04			
v/s Ratio Perm	c0.25											
v/c Ratio	0.69	0.61			0.60		0.23		0.18			
Uniform Delay, d1	14.3	26.0			24.5		30.9		30.5			
Progression Factor	2.10	0.63			1.00		1.00		1.00			
Incremental Delay, d2	2.3	1.2			0.9		0.3		0.3			
Delay (s)	32.4	17.4			25.3		31.2		30.8			
Level of Service	C	B			C		C		C			
Approach Delay (s)		24.1			25.3			30.9			0.0	
Approach LOS		C			C			C			A	

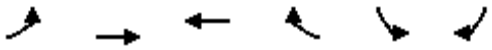
Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	791	134	1361	213	546	1080
Future Volume (vph)	791	134	1361	213	546	1080
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3367	1509	5085	1323	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3367	1509	5085	1323	3433	3539
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.84	0.84
Adj. Flow (vph)	889	151	1433	224	650	1286
RTOR Reduction (vph)	0	110	0	151	0	0
Lane Group Flow (vph)	889	41	1433	73	650	1286
Heavy Vehicles (%)	4%	7%	2%	18%	2%	2%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	30.2	30.2	19.8	56.0
Effective Green, g (s)	25.0	25.0	30.2	30.2	19.8	56.0
Actuated g/C Ratio	0.27	0.27	0.32	0.32	0.21	0.60
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)	905	405	1651	429	730	2131
v/s Ratio Prot	c0.26	0.03	c0.28	0.05	c0.19	0.36
v/s Ratio Perm						
v/c Ratio	0.98	0.10	0.87	0.17	0.89	0.60
Uniform Delay, d1	33.8	25.5	29.5	22.4	35.5	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.5	0.1	6.5	0.9	13.3	1.3
Delay (s)	59.3	25.7	36.0	23.3	48.9	12.8
Level of Service	E	C	D	C	D	B
Approach Delay (s)	54.4		34.3			24.9
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.4%	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)	240	1255	974	177	324	652
Future Volume (vph)	240	1255	974	177	324	652
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)	273	1426	1047	190	372	749
RTOR Reduction (vph)	0	0	0	132	0	170
Lane Group Flow (vph)	273	1426	1047	58	372	579
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	c0.15	0.40	c0.30		0.21	c0.36
v/s Ratio Perm				0.04		
v/c Ratio	1.81	0.82	0.97	0.12	0.68	1.19
Uniform Delay, d1	27.0	12.8	20.2	14.8	18.0	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	388.5	4.5	21.1	0.5	3.8	103.8
Delay (s)	415.5	17.2	41.4	15.3	21.8	124.3
Level of Service	F	B	D	B	C	F
Approach Delay (s)		81.2	37.4		90.3	
Approach LOS		F	D		F	

Intersection Summary			
HCM 2000 Control Delay	70.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	705	874	315	996	155	363
Future Volume (vph)	705	874	315	996	155	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1568	1787	3539	1636	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1568	1787	3539	1636	1583
Peak-hour factor, PHF	0.89	0.89	0.86	0.86	0.88	0.88
Adj. Flow (vph)	792	982	366	1158	176	412
RTOR Reduction (vph)	0	348	0	0	0	348
Lane Group Flow (vph)	792	634	366	1158	176	65
Heavy Vehicles (%)	2%	3%	1%	2%	14%	2%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	64.1	64.1	34.1	104.2	21.8	21.8
Effective Green, g (s)	64.1	64.1	34.1	104.2	21.8	21.8
Actuated g/C Ratio	0.46	0.46	0.25	0.76	0.16	0.16
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)	1643	728	441	2672	258	250
v/s Ratio Prot	0.22	c0.40	c0.20	0.33	c0.11	0.04
v/s Ratio Perm						
v/c Ratio	0.48	0.87	0.83	0.43	0.68	0.26
Uniform Delay, d1	25.5	33.2	49.2	6.2	54.8	51.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	13.5	12.8	0.5	7.8	0.8
Delay (s)	26.5	46.7	62.0	6.7	62.7	51.8
Level of Service	C	D	E	A	E	D
Approach Delay (s)	37.7			19.9	55.0	
Approach LOS	D			B	E	

Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	26.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	61	15	192	15	13	1	230	218	49	74	3
Future Vol, veh/h	47	61	15	192	15	13	1	230	218	49	74	3
Peak Hour Factor	0.71	0.71	0.71	0.90	0.90	0.90	0.75	0.75	0.75	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	0	10	0	1	3	11	4	0
Mvmt Flow	66	86	21	213	17	14	1	307	291	56	84	3
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	13.3	15.7	38.8	12.4
HCM LOS	B	C	E	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	38%	100%	0%	39%
Vol Thru, %	51%	50%	0%	54%	59%
Vol Right, %	49%	12%	0%	46%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	449	123	192	28	126
LT Vol	1	47	192	0	49
Through Vol	230	61	0	15	74
RT Vol	218	15	0	13	3
Lane Flow Rate	599	173	213	31	143
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.905	0.33	0.451	0.058	0.27
Departure Headway (Hd)	5.44	6.851	7.607	6.727	6.789
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	671	523	474	531	527
Service Time	3.44	4.919	5.37	4.49	4.852
HCM Lane V/C Ratio	0.893	0.331	0.449	0.058	0.271
HCM Control Delay	38.8	13.3	16.5	9.9	12.4
HCM Lane LOS	E	B	C	A	B
HCM 95th-tile Q	11.6	1.4	2.3	0.2	1.1

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	8	5	46	5	27	9	370	37	14	295	13
Future Vol, veh/h	4	8	5	46	5	27	9	370	37	14	295	13
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	87	87	87	73	73	73	90	90	90
Heavy Vehicles, %	0	0	25	3	25	0	0	3	0	0	1	0
Mvmt Flow	6	12	8	53	6	31	12	507	51	16	328	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	942	949	335	934	931	533	342	0	0	558	0	0
Stage 1	367	367	-	557	557	-	-	-	-	-	-	-
Stage 2	575	582	-	377	374	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.45	7.13	6.75	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.525	3.527	4.225	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	245	262	657	245	244	551	1228	-	-	1023	-	-
Stage 1	657	626	-	513	477	-	-	-	-	-	-	-
Stage 2	507	502	-	642	579	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	222	255	657	229	238	551	1228	-	-	1023	-	-
Mov Cap-2 Maneuver	222	255	-	229	238	-	-	-	-	-	-	-
Stage 1	650	616	-	508	472	-	-	-	-	-	-	-
Stage 2	468	497	-	612	570	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.2	21.1	0.2	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1228	-	-	298	230	551	1023	-	-
HCM Lane V/C Ratio	0.01	-	-	0.088	0.255	0.056	0.015	-	-
HCM Control Delay (s)	8	-	-	18.2	25.9	11.9	8.6	-	-
HCM Lane LOS	A	-	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1	0.2	0	-	-

Intersection	
Int Delay, s/veh	26.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	15	5	242	10	5	0	197	98	5	483	5
Future Vol, veh/h	5	15	5	242	10	5	0	197	98	5	483	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	17	6	269	11	6	0	219	109	6	537	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	834	880	540	838	829	274	543	0	0	328	0	0
Stage 1	552	552	-	274	274	-	-	-	-	-	-	-
Stage 2	282	328	-	564	555	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	288	286	542	286	306	765	1026	-	-	1232	-	-
Stage 1	518	515	-	732	683	-	-	-	-	-	-	-
Stage 2	725	647	-	510	513	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	276	284	542	269	304	765	1026	-	-	1232	-	-
Mov Cap-2 Maneuver	276	284	-	269	304	-	-	-	-	-	-	-
Stage 1	518	511	-	732	683	-	-	-	-	-	-	-
Stage 2	708	647	-	485	509	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.7	106.7	0	0.1
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1026	-	-	312	274	1232	-	-
HCM Lane V/C Ratio	-	-	-	0.089	1.042	0.005	-	-
HCM Control Delay (s)	0	-	-	17.7	106.7	7.9	0	-
HCM Lane LOS	A	-	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	11.1	0	-	-

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	264	108	185	31	26	705
Future Vol, veh/h	264	108	185	31	26	705
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	120	206	34	29	783

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	475	29	812	0	-	0
Stage 1	29	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	548	1046	814	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	409	1046	814	-	-	-
Mov Cap-2 Maneuver	409	-	-	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	645	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.1	9.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	814	-	409	1046	-	-
HCM Lane V/C Ratio	0.253	-	0.717	0.115	-	-
HCM Control Delay (s)	10.9	-	33.2	8.9	-	-
HCM Lane LOS	B	-	D	A	-	-
HCM 95th %tile Q(veh)	1	-	5.5	0.4	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	107	18	357	803	1
Future Vol, veh/h	1	107	18	357	803	1
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	68	68	85	85	89	89
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	1	157	21	420	902	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1365	903	903	0	-	0
Stage 1	903	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	164	337	761	-	-	-
Stage 1	399	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	158	337	761	-	-	-
Mov Cap-2 Maneuver	158	-	-	-	-	-
Stage 1	385	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.2	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	761	-	334	-	-
HCM Lane V/C Ratio	0.028	-	0.476	-	-
HCM Control Delay (s)	9.9	0	25.2	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2.4	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	21	36	0	9	49	364	57	12	919	19
Future Vol, veh/h	6	0	21	36	0	9	49	364	57	12	919	19
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	63	63	63	83	83	83	94	94	94	89	89	89
Heavy Vehicles, %	0	0	0	12	0	29	0	1	12	22	1	0
Mvmt Flow	10	0	33	43	0	11	52	387	61	13	1033	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1597	1622	1044	1608	1602	418	1054	0	0	448	0	0
Stage 1	1070	1070	-	522	522	-	-	-	-	-	-	-
Stage 2	527	552	-	1086	1080	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.49	4.1	-	-	4.32	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.561	2.2	-	-	2.398	-	-
Pot Cap-1 Maneuver	87	104	281	80	107	581	668	-	-	1014	-	-
Stage 1	270	300	-	520	534	-	-	-	-	-	-	-
Stage 2	538	518	-	251	297	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	90	281	63	93	581	668	-	-	1014	-	-
Mov Cap-2 Maneuver	77	90	-	63	93	-	-	-	-	-	-	-
Stage 1	242	291	-	465	478	-	-	-	-	-	-	-
Stage 2	473	464	-	214	288	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.7	123.9	1.1	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	668	-	-	177	77	1014	-	-
HCM Lane V/C Ratio	0.078	-	-	0.242	0.704	0.013	-	-
HCM Control Delay (s)	10.8	0	-	31.7	123.9	8.6	0	-
HCM Lane LOS	B	A	-	D	F	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.9	3.3	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	53	417	0	0	976
Future Vol, veh/h	0	53	417	0	0	976
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	92	100	100	92	92	100
Heavy Vehicles, %	2	13	1	2	2	1
Mvmt Flow	0	53	417	0	0	976

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	417	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	607	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	607	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

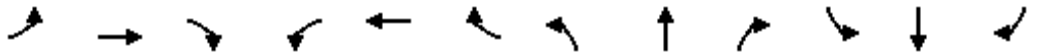
Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	607	-
HCM Lane V/C Ratio	-	0.087	-
HCM Control Delay (s)	-	11.5	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	98	6	1129	442	100	6	1	362	5	0	0
Future Volume (vph)	0	98	6	1129	442	100	6	1	362	5	0	0
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		0.99		1.00	0.97			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.96	1.00		0.95	
Satd. Flow (prot)		3361		3433	3441			1439	2760		2046	
Flt Permitted		1.00		0.95	1.00			0.85	1.00		0.75	
Satd. Flow (perm)		3361		3433	3441			1280	2760		1619	
Peak-hour factor, PHF	0.71	0.71	0.71	0.73	0.73	0.73	0.78	0.78	0.78	0.75	0.75	0.75
Adj. Flow (vph)	0	138	8	1547	605	137	8	1	464	7	0	0
RTOR Reduction (vph)	0	5	0	0	7	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	141	0	1547	735	0	0	9	464	0	7	0
Heavy Vehicles (%)	0%	4%	50%	2%	2%	2%	25%	0%	3%	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)		9.5		50.0	65.5			20.0	20.0		20.0	
Effective Green, g (s)		9.5		50.0	65.5			20.0	20.0		20.0	
Actuated g/C Ratio		0.10		0.51	0.67			0.21	0.21		0.21	
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)		327		1760	2311			262	566		332	
v/s Ratio Prot		c0.04		c0.45	0.21							
v/s Ratio Perm								0.01	c0.17		0.00	
v/c Ratio		0.43		0.88	0.32			0.03	0.82		0.02	
Uniform Delay, d1		41.5		21.1	6.7			31.0	37.0		30.9	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.9		5.4	0.1			0.1	9.1		0.0	
Delay (s)		42.4		26.4	6.8			31.1	46.1		31.0	
Level of Service		D		C	A			C	D		C	
Approach Delay (s)		42.4			20.0			45.8			31.0	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
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	321	144	118	952	0	0	0	0	420	0	754
Future Volume (vph)	0	321	144	118	952	0	0	0	0	420	0	754
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					3502		2814
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5981	1419	2918	3455					3502		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	401	180	148	1190	0	0	0	0	560	0	1005
RTOR Reduction (vph)	0	0	123	0	0	0	0	0	0	0	0	122
Lane Group Flow (vph)	0	401	57	148	1190	0	0	0	0	560	0	883
Heavy Vehicles (%)	0%	2%	10%	12%	1%	0%	2%	2%	2%	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)		31.3	31.3	25.1	62.4					25.1		25.1
Effective Green, g (s)		31.3	31.3	25.1	62.4					25.1		25.1
Actuated g/C Ratio		0.31	0.31	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)		1881	446	736	2166					883		709
v/s Ratio Prot		0.07	0.04	0.05	c0.34					0.16		c0.31
v/s Ratio Perm												
v/c Ratio		0.21	0.13	0.20	0.55					0.63		1.25
Uniform Delay, d1		25.1	24.3	29.3	10.6					33.1		37.2
Progression Factor		1.00	1.00	0.93	1.53					1.00		1.00
Incremental Delay, d2		0.1	0.3	0.1	0.3					2.1		122.2
Delay (s)		25.2	24.6	27.3	16.5					35.2		159.4
Level of Service		C	C	C	B					D		F
Approach Delay (s)		25.0			17.7			0.0			114.9	
Approach LOS		C			B			A			F	

Intersection Summary			
HCM 2000 Control Delay	62.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.7%	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)	146	595	0	0	388	59	682	0	278	0	0	0
Future Volume (vph)	146	595	0	0	388	59	682	0	278	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
Grade (%)		0%			11%			0%			0%	
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			4693		3433		2733			
Flt Permitted	0.45	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	1465	3421			4693		3433		2733			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.85	0.85	0.78	0.92	0.78	0.92	0.92	0.92
Adj. Flow (vph)	168	684	0	0	456	69	874	0	356	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	266	0	0	0
Lane Group Flow (vph)	168	684	0	0	507	0	874	0	90	0	0	0
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	2%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	48.3	31.3			39.4		25.1		25.1			
Effective Green, g (s)	48.3	31.3			39.4		25.1		25.1			
Actuated g/C Ratio	0.49	0.31			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)	992	1076			1858		866		689			
v/s Ratio Prot	c0.03	c0.20			c0.11		c0.25		0.03			
v/s Ratio Perm	0.05											
v/c Ratio	0.17	0.64			0.27		1.01		0.13			
Uniform Delay, d1	13.9	29.2			20.3		37.2		28.8			
Progression Factor	1.17	1.15			1.00		1.00		1.00			
Incremental Delay, d2	0.1	1.6			0.2		32.9		0.2			
Delay (s)	16.4	35.1			20.5		70.1		28.9			
Level of Service	B	D			C		E		C			
Approach Delay (s)		31.4			20.5			58.2			0.0	
Approach LOS		C			C			E			A	

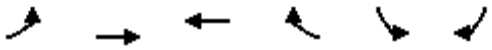
Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	831	422	1588	168	271	463
Future Volume (vph)	831	422	1588	168	271	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	1599	4988	1229	3242	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	1599	4988	1229	3242	3374
Peak-hour factor, PHF	0.87	0.87	0.93	0.93	0.81	0.81
Adj. Flow (vph)	955	485	1708	181	335	572
RTOR Reduction (vph)	0	320	0	114	0	0
Lane Group Flow (vph)	955	165	1708	67	335	572
Heavy Vehicles (%)	6%	1%	4%	27%	8%	7%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	34.3	34.3	15.7	56.0
Effective Green, g (s)	25.0	25.0	34.3	34.3	15.7	56.0
Actuated g/C Ratio	0.27	0.27	0.37	0.37	0.17	0.60
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)	887	429	1839	453	547	2031
v/s Ratio Prot	c0.29	0.10	c0.34	0.05	c0.10	0.17
v/s Ratio Perm						
v/c Ratio	1.08	0.39	0.93	0.15	0.61	0.28
Uniform Delay, d1	34.0	27.7	28.2	19.6	35.8	8.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.0	0.8	9.8	0.7	2.3	0.3
Delay (s)	87.0	28.5	38.0	20.3	38.2	9.2
Level of Service	F	C	D	C	D	A
Approach Delay (s)	67.3		36.3			19.9
Approach LOS	E		D			B

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.1%	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)	471	1539	555	473	180	179
Future Volume (vph)	471	1539	555	473	180	179
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)	548	1790	578	493	237	236
RTOR Reduction (vph)	0	0	0	343	0	180
Lane Group Flow (vph)	548	1790	578	150	237	56
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)	9.0	33.0	18.0	18.0	14.0	14.0
Effective Green, g (s)	9.0	33.0	18.0	18.0	14.0	14.0
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)	272	1941	1019	482	407	364
v/s Ratio Prot	c0.31	c0.52	0.17		c0.14	0.04
v/s Ratio Perm				0.09		
v/c Ratio	2.01	0.92	0.57	0.31	0.58	0.15
Uniform Delay, d1	25.0	11.8	17.2	15.7	19.9	17.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	469.4	8.8	2.3	1.7	2.5	0.3
Delay (s)	494.4	20.6	19.5	17.4	22.4	18.1
Level of Service	F	C	B	B	C	B
Approach Delay (s)		131.7	18.6		20.3	
Approach LOS		F	B		C	

Intersection Summary			
HCM 2000 Control Delay	86.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1084	635	84	621	407	533
Future Volume (vph)	1084	635	84	621	407	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1468	1752	3438	1680	1538
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1468	1752	3438	1680	1538
Peak-hour factor, PHF	0.95	0.95	0.90	0.90	0.80	0.80
Adj. Flow (vph)	1141	668	93	690	509	666
RTOR Reduction (vph)	0	347	0	0	0	376
Lane Group Flow (vph)	1141	321	93	690	509	290
Heavy Vehicles (%)	2%	10%	3%	5%	11%	5%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	66.3	66.3	13.7	86.0	40.0	40.0
Effective Green, g (s)	66.3	66.3	13.7	86.0	40.0	40.0
Actuated g/C Ratio	0.48	0.48	0.10	0.62	0.29	0.29
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)	1700	705	173	2142	486	445
v/s Ratio Prot	c0.32	0.22	c0.05	0.20	c0.30	0.19
v/s Ratio Perm						
v/c Ratio	0.67	0.46	0.54	0.32	1.05	0.65
Uniform Delay, d1	27.5	23.8	59.1	12.3	49.0	42.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	2.1	4.1	0.4	53.8	3.8
Delay (s)	29.6	26.0	63.2	12.7	102.8	46.7
Level of Service	C	C	E	B	F	D
Approach Delay (s)	28.3			18.7	71.0	
Approach LOS	C			B	E	

Intersection Summary			
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	15.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	20	7	205	90	84	15	75	74	19	215	25
Future Vol, veh/h	0	20	7	205	90	84	15	75	74	19	215	25
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.87	0.87	0.87	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	2	0	5	0	6	8	14	0	0
Mvmt Flow	0	40	14	293	129	120	17	86	85	27	307	36
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	10.3	15.4	11.7	18.3
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	9%	0%	100%	0%	7%
Vol Thru, %	46%	74%	0%	52%	83%
Vol Right, %	45%	26%	0%	48%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	164	27	205	174	259
LT Vol	15	0	205	0	19
Through Vol	75	20	0	90	215
RT Vol	74	7	0	84	25
Lane Flow Rate	189	54	293	249	370
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.31	0.097	0.553	0.408	0.617
Departure Headway (Hd)	5.929	6.494	6.802	5.916	6.005
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	603	548	530	607	599
Service Time	3.997	4.584	4.559	3.672	4.06
HCM Lane V/C Ratio	0.313	0.099	0.553	0.41	0.618
HCM Control Delay	11.7	10.3	17.7	12.7	18.3
HCM Lane LOS	B	B	C	B	C
HCM 95th-tile Q	1.3	0.3	3.3	2	4.2

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	8	10	26	5	15	26	179	33	35	321	33
Future Vol, veh/h	6	8	10	26	5	15	26	179	33	35	321	33
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	83	83	83	79	79	79	66	66	66
Heavy Vehicles, %	25	0	14	0	33	9	0	4	0	4	1	4
Mvmt Flow	8	11	14	31	6	18	33	227	42	53	486	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	943	952	511	944	956	248	536	0	0	269	0	0
Stage 1	617	617	-	314	314	-	-	-	-	-	-	-
Stage 2	326	335	-	630	642	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.34	7.1	6.83	6.29	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.426	3.5	4.297	3.381	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	221	261	540	244	229	774	1042	-	-	1283	-	-
Stage 1	440	484	-	701	604	-	-	-	-	-	-	-
Stage 2	641	646	-	473	424	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	200	242	540	217	213	774	1042	-	-	1283	-	-
Mov Cap-2 Maneuver	200	242	-	217	213	-	-	-	-	-	-	-
Stage 1	426	464	-	679	585	-	-	-	-	-	-	-
Stage 2	600	625	-	431	407	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.8	20.1	0.9	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1042	-	-	294	216	774	1283	-	-
HCM Lane V/C Ratio	0.032	-	-	0.115	0.173	0.023	0.041	-	-
HCM Control Delay (s)	8.6	-	-	18.8	25.1	9.8	7.9	-	-
HCM Lane LOS	A	-	-	C	D	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.6	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	11	6	46	11	11	6	341	285	17	148	17
Future Vol, veh/h	6	11	6	46	11	11	6	341	285	17	148	17
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	12	7	51	12	12	7	379	317	19	164	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	776	922	174	773	773	538	183	0	0	696	0	0
Stage 1	212	212	-	552	552	-	-	-	-	-	-	-
Stage 2	564	710	-	221	221	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	315	270	869	316	330	543	1392	-	-	900	-	-
Stage 1	790	727	-	518	515	-	-	-	-	-	-	-
Stage 2	510	437	-	781	720	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	291	261	869	295	319	543	1392	-	-	900	-	-
Mov Cap-2 Maneuver	291	261	-	295	319	-	-	-	-	-	-	-
Stage 1	783	710	-	513	510	-	-	-	-	-	-	-
Stage 2	482	433	-	743	703	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	19.5	0.1	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1392	-	-	330	323	900	-	-
HCM Lane V/C Ratio	0.005	-	-	0.077	0.234	0.021	-	-
HCM Control Delay (s)	7.6	0	-	16.8	19.5	9.1	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.9	0.1	-	-

Intersection	
Int Delay, s/veh	69.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	621	348	136	10	46	165
Future Vol, veh/h	621	348	136	10	46	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	290	100	-	-	175
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	690	387	151	11	51	183

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	364	51	234	0	-	0
Stage 1	51	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 635	1017	1333	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 563	1017	1333	-	-	-
Mov Cap-2 Maneuver	~ 563	-	-	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	93.8	7.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1333	-	563	1017	-	-
HCM Lane V/C Ratio	0.113	-	1.226	0.38	-	-
HCM Control Delay (s)	8	-	140.3	10.7	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	25.9	1.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	141	932	328	0
Future Vol, veh/h	0	14	141	932	328	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	50	50	67	67	75	75
Heavy Vehicles, %	2	2	1	2	2	0
Mvmt Flow	0	28	210	1391	437	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2248	437	437	0	-	0
Stage 1	437	-	-	-	-	-
Stage 2	1811	-	-	-	-	-
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	46	620	1128	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	143	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	8	620	1128	-	-	-
Mov Cap-2 Maneuver	8	-	-	-	-	-
Stage 1	118	-	-	-	-	-
Stage 2	143	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1128	-	620	-	-
HCM Lane V/C Ratio	0.187	-	0.045	-	-
HCM Control Delay (s)	8.9	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.1	-	-

Intersection	
Int Delay, s/veh	11.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	5	27	0	2	25	1054	58	8	327	0
Future Vol, veh/h	0	0	5	27	0	2	25	1054	58	8	327	0
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	38	38	38	71	71	71	71	71	71	70	70	70
Heavy Vehicles, %	0	0	33	17	0	50	6	1	7	17	3	0
Mvmt Flow	0	0	13	38	0	3	35	1485	82	11	467	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2087	2126	467	2092	2085	1526	467	0	0	1567	0	0
Stage 1	489	489	-	1596	1596	-	-	-	-	-	-	-
Stage 2	1598	1637	-	496	489	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.27	6.5	6.7	4.16	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.653	4	3.75	2.254	-	-	2.353	-	-
Pot Cap-1 Maneuver	39	51	537	~ 35	54	112	1074	-	-	381	-	-
Stage 1	564	553	-	123	168	-	-	-	-	-	-	-
Stage 2	135	160	-	529	553	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	29	36	537	~ 26	38	112	1074	-	-	381	-	-
Mov Cap-2 Maneuver	29	36	-	~ 26	38	-	-	-	-	-	-	-
Stage 1	412	531	-	90	123	-	-	-	-	-	-	-
Stage 2	96	117	-	496	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	$ 576.3	0.2	0.4
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1074	-	-	537	27	381	-	-
HCM Lane V/C Ratio	0.033	-	-	0.025	1.513	0.03	-	-
HCM Control Delay (s)	8.5	0	-	11.9	$ 576.3	14.7	0	-
HCM Lane LOS	A	A	-	B	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	4.9	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

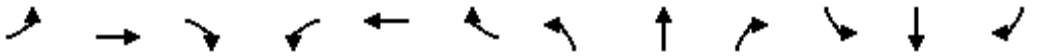
Intersection	
Int Delay, s/veh	9.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	193	944	0	0	359
Future Vol, veh/h	0	193	944	0	0	359
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	92	76	95	92	92	80
Heavy Vehicles, %	2	3	2	2	2	4
Mvmt Flow	0	254	994	0	0	449

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	994	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	295	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	295	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	61.4	0	0
HCM LOS	F		

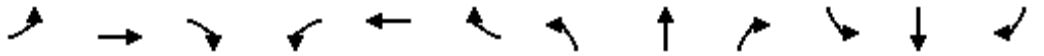
Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	295	-
HCM Lane V/C Ratio	-	0.861	-
HCM Control Delay (s)	-	61.4	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	7.5	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	366	6	305	211	255	9	0	1126	84	14	3
Future Volume (vph)	5	366	6	305	211	255	9	0	1126	84	14	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)	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	1.00		1.00	0.92			1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1357	3532		3155	3299			1491	2842		2058	
Flt Permitted	0.95	1.00		0.95	1.00			0.71	1.00		0.76	
Satd. Flow (perm)	1357	3532		3155	3299			1120	2842		1619	
Peak-hour factor, PHF	0.69	0.69	0.69	0.88	0.88	0.88	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	7	530	9	347	240	290	10	0	1211	104	17	4
RTOR Reduction (vph)	0	1	0	0	142	0	0	0	0	0	1	0
Lane Group Flow (vph)	7	538	0	347	388	0	0	10	1211	0	124	0
Heavy Vehicles (%)	33%	2%	0%	11%	1%	0%	17%	0%	0%	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)	3.9	19.7		13.4	30.2			20.2	20.2		20.2	
Effective Green, g (s)	3.9	19.7		13.4	30.2			20.2	20.2		20.2	
Actuated g/C Ratio	0.05	0.28		0.19	0.42			0.28	0.28		0.28	
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)	74	975		592	1397			317	805		458	
v/s Ratio Prot	0.01	c0.15		c0.11	0.12							
v/s Ratio Perm								0.01	c0.43		0.08	
v/c Ratio	0.09	0.55		0.59	0.28			0.03	1.50		0.27	
Uniform Delay, d1	32.0	22.0		26.4	13.4			18.5	25.5		19.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	0.7		1.5	0.1			0.0	233.4		0.3	
Delay (s)	32.2	22.7		27.9	13.5			18.5	259.0		20.2	
Level of Service	C	C		C	B			B	F		C	
Approach Delay (s)		22.8			19.2			257.0			20.2	
Approach LOS		C			B			F			C	

Intersection Summary			
HCM 2000 Control Delay	124.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.3%	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	1033	543	575	551	0	0	0	0	325	0	228
Future Volume (vph)	0	1033	543	575	551	0	0	0	0	325	0	228
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	0.92	0.85	0.85	0.94	0.94	0.92	0.92	0.92	0.92	0.75	0.25	0.75
Adj. Flow (vph)	0	1215	639	612	586	0	0	0	0	433	0	304
RTOR Reduction (vph)	0	0	369	0	0	0	0	0	0	0	0	232
Lane Group Flow (vph)	0	1215	270	612	586	0	0	0	0	433	0	72
Heavy Vehicles (%)	0%	1%	1%	1%	1%	0%	2%	2%	2%	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	24.2	60.5					24.0		24.0
Effective Green, g (s)		35.0	35.0	24.2	60.5					24.0		24.0
Actuated g/C Ratio		0.35	0.35	0.24	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)		2088	534	773	2065					830		667
v/s Ratio Prot		c0.20	0.17	c0.19	0.17					c0.12		0.03
v/s Ratio Perm												
v/c Ratio		0.58	0.51	0.79	0.28					0.52		0.11
Uniform Delay, d1		27.1	26.2	36.1	9.9					33.6		30.2
Progression Factor		1.00	1.00	1.34	1.08					1.00		1.00
Incremental Delay, d2		0.6	1.6	4.4	0.1					1.1		0.2
Delay (s)		27.8	27.8	52.8	10.8					34.7		30.4
Level of Service		C	C	D	B					C		C
Approach Delay (s)		27.8			32.3			0.0			32.9	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.3%	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)	620	738	0	0	854	341	272	0	524	0	0	0
Future Volume (vph)	620	738	0	0	854	341	272	0	524	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
Grade (%)		0%			11%			0%			0%	
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			0.96		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	3236	3455			4659		3433		2814			
Flt Permitted	0.11	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	389	3455			4659		3433		2814			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.90	0.90	0.94	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	713	848	0	0	949	379	289	0	557	0	0	0
RTOR Reduction (vph)	0	0	0	0	68	0	0	0	425	0	0	0
Lane Group Flow (vph)	713	848	0	0	1260	0	289	0	132	0	0	0
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	1%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	57.9	35.0			36.3		24.0		24.0			
Effective Green, g (s)	57.9	35.0			36.3		24.0		24.0			
Actuated g/C Ratio	0.57	0.35			0.36		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)	866	1194			1671		814		667			
v/s Ratio Prot	c0.19	0.25			0.27		c0.08		0.05			
v/s Ratio Perm	c0.28											
v/c Ratio	0.82	0.71			0.75		0.36		0.20			
Uniform Delay, d1	25.3	28.7			28.5		32.2		30.9			
Progression Factor	1.69	0.59			1.00		1.00		1.00			
Incremental Delay, d2	5.7	2.1			2.4		0.6		0.3			
Delay (s)	48.3	19.0			30.9		32.7		31.2			
Level of Service	D	B			C		C		C			
Approach Delay (s)		32.3			30.9			31.7			0.0	
Approach LOS		C			C			C			A	

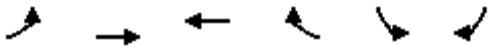
Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	874	148	1503	236	648	1193
Future Volume (vph)	874	148	1503	236	648	1193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3367	1509	5085	1323	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3367	1509	5085	1323	3433	3539
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.84	0.84
Adj. Flow (vph)	982	166	1582	248	771	1420
RTOR Reduction (vph)	0	121	0	168	0	0
Lane Group Flow (vph)	982	45	1582	80	771	1420
Heavy Vehicles (%)	4%	7%	2%	18%	2%	2%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	30.0	30.0	20.0	56.0
Effective Green, g (s)	25.0	25.0	30.0	30.0	20.0	56.0
Actuated g/C Ratio	0.27	0.27	0.32	0.32	0.22	0.60
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)	905	405	1640	426	738	2131
v/s Ratio Prot	c0.29	0.03	c0.31	0.06	c0.22	0.40
v/s Ratio Perm						
v/c Ratio	1.09	0.11	0.96	0.19	1.04	0.67
Uniform Delay, d1	34.0	25.6	31.0	22.7	36.5	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	55.7	0.2	15.3	1.0	45.4	1.7
Delay (s)	89.7	25.8	46.3	23.7	81.9	14.0
Level of Service	F	C	D	C	F	B
Approach Delay (s)	80.5		43.2			37.9
Approach LOS	F		D			D

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.5%	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)	265	1386	1076	198	435	765
Future Volume (vph)	265	1386	1076	198	435	765
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)	301	1575	1157	213	500	879
RTOR Reduction (vph)	0	0	0	148	0	168
Lane Group Flow (vph)	301	1575	1157	65	500	711
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	c0.17	0.45	c0.33		0.28	c0.44
v/s Ratio Perm				0.04		
v/c Ratio	1.99	0.91	1.07	0.13	0.92	1.46
Uniform Delay, d1	27.0	13.7	20.5	14.9	19.8	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	469.8	8.3	49.0	0.6	20.6	218.0
Delay (s)	496.8	22.1	69.5	15.4	40.4	238.5
Level of Service	F	C	E	B	D	F
Approach Delay (s)		98.2	61.1		166.7	
Approach LOS		F	E		F	

Intersection Summary			
HCM 2000 Control Delay	107.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	806	1015	348	1101	173	401
Future Volume (vph)	806	1015	348	1101	173	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1568	1787	3539	1636	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1568	1787	3539	1636	1583
Peak-hour factor, PHF	0.89	0.89	0.86	0.86	0.88	0.88
Adj. Flow (vph)	906	1140	405	1280	197	456
RTOR Reduction (vph)	0	361	0	0	0	378
Lane Group Flow (vph)	906	779	405	1280	197	78
Heavy Vehicles (%)	2%	3%	1%	2%	14%	2%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	59.2	59.2	37.1	102.3	23.7	23.7
Effective Green, g (s)	59.2	59.2	37.1	102.3	23.7	23.7
Actuated g/C Ratio	0.43	0.43	0.27	0.74	0.17	0.17
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)	1518	672	480	2623	280	271
v/s Ratio Prot	0.26	c0.50	c0.23	0.36	c0.12	0.05
v/s Ratio Perm						
v/c Ratio	0.60	1.16	0.84	0.49	0.70	0.29
Uniform Delay, d1	30.2	39.4	47.7	7.2	53.8	49.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	87.7	13.2	0.7	8.3	0.8
Delay (s)	32.0	127.1	60.9	7.9	62.2	50.6
Level of Service	C	F	E	A	E	D
Approach Delay (s)	85.0			20.6	54.1	
Approach LOS	F			C	D	

Intersection Summary			
HCM 2000 Control Delay	55.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	138.0	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

Intersection	
Intersection Delay, s/veh	28.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	67	17	189	17	15	1	254	190	55	82	3
Future Vol, veh/h	52	67	17	189	17	15	1	254	190	55	82	3
Peak Hour Factor	0.71	0.71	0.71	0.90	0.90	0.90	0.75	0.75	0.75	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	0	10	0	1	3	11	4	0
Mvmt Flow	73	94	24	210	19	17	1	339	253	63	93	3
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	14.1	15.8	41.9	13
HCM LOS	B	C	E	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	38%	100%	0%	39%
Vol Thru, %	57%	49%	0%	53%	59%
Vol Right, %	43%	12%	0%	47%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	445	136	189	32	140
LT Vol	1	52	189	0	55
Through Vol	254	67	0	17	82
RT Vol	190	17	0	15	3
Lane Flow Rate	593	192	210	36	159
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.919	0.371	0.453	0.068	0.306
Departure Headway (Hd)	5.576	6.965	7.758	6.874	6.928
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	653	515	464	520	517
Service Time	3.617	5.03	5.519	4.634	4.992
HCM Lane V/C Ratio	0.908	0.373	0.453	0.069	0.308
HCM Control Delay	41.9	14.1	16.8	10.1	13
HCM Lane LOS	E	B	C	B	B
HCM 95th-tile Q	12	1.7	2.3	0.2	1.3

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	9	6	51	6	30	10	357	41	16	303	15
Future Vol, veh/h	5	9	6	51	6	30	10	357	41	16	303	15
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	87	87	87	73	73	73	90	90	90
Heavy Vehicles, %	0	0	25	3	25	0	0	3	0	0	1	0
Mvmt Flow	8	14	9	59	7	34	14	489	56	18	337	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	948	955	346	938	935	517	354	0	0	545	0	0
Stage 1	382	382	-	545	545	-	-	-	-	-	-	-
Stage 2	566	573	-	393	390	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.45	7.13	6.75	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.525	3.527	4.225	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	243	260	648	243	243	562	1216	-	-	1034	-	-
Stage 1	645	616	-	521	483	-	-	-	-	-	-	-
Stage 2	513	507	-	630	570	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	218	252	648	225	236	562	1216	-	-	1034	-	-
Mov Cap-2 Maneuver	218	252	-	225	236	-	-	-	-	-	-	-
Stage 1	637	606	-	515	477	-	-	-	-	-	-	-
Stage 2	469	501	-	596	560	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	22	0.2	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1216	-	-	295	226	562	1034	-	-
HCM Lane V/C Ratio	0.011	-	-	0.104	0.29	0.061	0.017	-	-
HCM Control Delay (s)	8	-	-	18.6	27.3	11.8	8.5	-	-
HCM Lane LOS	A	-	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1.2	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	35.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	17	6	267	11	6	0	188	108	6	467	6
Future Vol, veh/h	6	17	6	267	11	6	0	188	108	6	467	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	19	7	297	12	7	0	209	120	7	519	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	816	866	523	819	809	269	526	0	0	329	0	0
Stage 1	537	537	-	269	269	-	-	-	-	-	-	-
Stage 2	279	329	-	550	540	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	296	291	554	~ 294	314	770	1041	-	-	1231	-	-
Stage 1	528	523	-	737	687	-	-	-	-	-	-	-
Stage 2	728	646	-	519	521	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	283	289	554	~ 274	311	770	1041	-	-	1231	-	-
Mov Cap-2 Maneuver	283	289	-	~ 274	311	-	-	-	-	-	-	-
Stage 1	528	519	-	737	687	-	-	-	-	-	-	-
Stage 2	709	646	-	490	517	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.5	133.6	0	0.1
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1041	-	-	319	279	1231	-	-
HCM Lane V/C Ratio	-	-	-	0.101	1.131	0.005	-	-
HCM Control Delay (s)	0	-	-	17.5	133.6	7.9	0	-
HCM Lane LOS	A	-	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	13.4	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	105.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	262	155	394	34	28	711
Future Vol, veh/h	262	155	394	34	28	711
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	291	172	438	38	31	790

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	945	31	821	0	-	0
Stage 1	31	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 291	1043	808	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 133	1043	808	-	-	-
Mov Cap-2 Maneuver	~ 133	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	391	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 388.5	13.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	808	-	133	1043	-	-
HCM Lane V/C Ratio	0.542	-	2.189	0.165	-	-
HCM Control Delay (s)	14.6	-	$ 612.9	9.1	-	-
HCM Lane LOS	B	-	F	A	-	-
HCM 95th %tile Q(veh)	3.3	-	24.3	0.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	118	19	400	1008	1
Future Vol, veh/h	1	118	19	400	1008	1
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	68	68	85	85	89	89
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	1	174	22	471	1133	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1649	1134	1134	0	-	0
Stage 1	1134	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	110	248	623	-	-	-
Stage 1	310	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	105	248	623	-	-	-
Mov Cap-2 Maneuver	105	-	-	-	-	-
Stage 1	295	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	49.5	0.5	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	623	-	245	-	-
HCM Lane V/C Ratio	0.036	-	0.714	-	-
HCM Control Delay (s)	11	0	49.5	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0.1	-	4.8	-	-

Intersection	
Int Delay, s/veh	17.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	0	23	40	0	10	55	408	63	14	1137	20
Future Vol, veh/h	7	0	23	40	0	10	55	408	63	14	1137	20
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	63	63	63	83	83	83	94	94	94	89	89	89
Heavy Vehicles, %	0	0	0	12	0	29	0	1	12	22	1	0
Mvmt Flow	11	0	37	48	0	12	59	434	67	16	1278	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1913	1940	1289	1926	1918	468	1300	0	0	501	0	0
Stage 1	1321	1321	-	586	586	-	-	-	-	-	-	-
Stage 2	592	619	-	1340	1332	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.49	4.1	-	-	4.32	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.561	2.2	-	-	2.398	-	-
Pot Cap-1 Maneuver	52	66	202	~ 47	68	543	540	-	-	968	-	-
Stage 1	195	228	-	479	500	-	-	-	-	-	-	-
Stage 2	496	483	-	179	225	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	43	53	202	~ 32	54	543	540	-	-	968	-	-
Mov Cap-2 Maneuver	43	53	-	~ 32	54	-	-	-	-	-	-	-
Stage 1	165	214	-	406	424	-	-	-	-	-	-	-
Stage 2	411	409	-	138	212	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	62.3	$ 501.2	1.3	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	540	-	-	108	39	968	-	-
HCM Lane V/C Ratio	0.108	-	-	0.441	1.545	0.016	-	-
HCM Control Delay (s)	12.5	0	-	62.3	$ 501.2	8.8	0	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	1.9	6.3	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

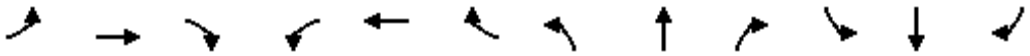
Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	63	463	0	0	1200
Future Vol, veh/h	0	63	463	0	0	1200
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	92	100	100	92	92	100
Heavy Vehicles, %	2	13	1	2	2	1
Mvmt Flow	0	63	463	0	0	1200

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	463	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	571	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	571	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

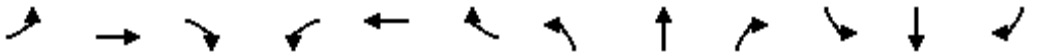
Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	571	-
HCM Lane V/C Ratio	-	0.11	-
HCM Control Delay (s)	-	12.1	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	112	6	1129	489	100	6	1	362	5	0	0
Future Volume (vph)	0	112	6	1129	489	100	6	1	362	5	0	0
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		0.99		1.00	0.97			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.96	1.00		0.95	
Satd. Flow (prot)		3374		3433	3449			1439	2760		2046	
Flt Permitted		1.00		0.95	1.00			0.85	1.00		0.75	
Satd. Flow (perm)		3374		3433	3449			1280	2760		1619	
Peak-hour factor, PHF	0.71	0.71	0.71	0.73	0.73	0.73	0.78	0.78	0.78	0.75	0.75	0.75
Adj. Flow (vph)	0	158	8	1547	670	137	8	1	464	7	0	0
RTOR Reduction (vph)	0	4	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	162	0	1547	801	0	0	9	464	0	7	0
Heavy Vehicles (%)	0%	4%	50%	2%	2%	2%	25%	0%	3%	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)		10.0		50.0	66.0			20.0	20.0		20.0	
Effective Green, g (s)		10.0		50.0	66.0			20.0	20.0		20.0	
Actuated g/C Ratio		0.10		0.51	0.67			0.20	0.20		0.20	
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)		344		1751	2322			261	563		330	
v/s Ratio Prot		c0.05		c0.45	0.23							
v/s Ratio Perm								0.01	c0.17		0.00	
v/c Ratio		0.47		0.88	0.34			0.03	0.82		0.02	
Uniform Delay, d1		41.5		21.4	6.8			31.3	37.3		31.2	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		1.0		5.7	0.1			0.1	9.5		0.0	
Delay (s)		42.5		27.1	6.9			31.3	46.8		31.2	
Level of Service		D		C	A			C	D		C	
Approach Delay (s)		42.5			20.2			46.5			31.2	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

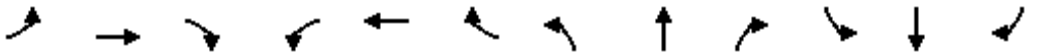
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	335	144	118	978	0	0	0	0	420	0	775
Future Volume (vph)	0	335	144	118	978	0	0	0	0	420	0	775
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					3502		2814
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5981	1419	2918	3455					3502		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	419	180	148	1222	0	0	0	0	560	0	1033
RTOR Reduction (vph)	0	0	123	0	0	0	0	0	0	0	0	114
Lane Group Flow (vph)	0	419	57	148	1223	0	0	0	0	560	0	919
Heavy Vehicles (%)	0%	2%	10%	12%	1%	0%	2%	2%	2%	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)		31.7	31.7	25.1	62.8					25.1		25.1
Effective Green, g (s)		31.7	31.7	25.1	62.8					25.1		25.1
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)		1897	450	733	2171					879		707
v/s Ratio Prot		0.07	0.04	0.05	c0.35					0.16		c0.33
v/s Ratio Perm												
v/c Ratio		0.22	0.13	0.20	0.56					0.64		1.30
Uniform Delay, d1		25.0	24.3	29.5	10.7					33.3		37.4
Progression Factor		1.00	1.00	0.95	1.49					1.00		1.00
Incremental Delay, d2		0.1	0.3	0.1	0.4					2.1		145.3
Delay (s)		25.2	24.5	28.1	16.3					35.5		182.7
Level of Service		C	C	C	B					D		F
Approach Delay (s)		25.0			17.5			0.0			130.9	
Approach LOS		C			B			A			F	

Intersection Summary			
HCM 2000 Control Delay	69.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.1%	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)	152	603	0	0	414	59	682	0	278	0	0	0
Future Volume (vph)	152	603	0	0	414	59	682	0	278	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
Grade (%)		0%			11%			0%			0%	
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			4699		3433		2733			
Flt Permitted	0.43	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	1420	3421			4699		3433		2733			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.85	0.85	0.78	0.92	0.78	0.92	0.92	0.92
Adj. Flow (vph)	175	693	0	0	487	69	874	0	356	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	267	0	0	0
Lane Group Flow (vph)	175	693	0	0	540	0	874	0	89	0	0	0
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	2%	4%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	48.7	31.7			39.8		25.1		25.1			
Effective Green, g (s)	48.7	31.7			39.8		25.1		25.1			
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)	980	1085			1872		862		686			
v/s Ratio Prot	c0.03	c0.20			c0.11		c0.25		0.03			
v/s Ratio Perm	0.06											
v/c Ratio	0.18	0.64			0.29		1.01		0.13			
Uniform Delay, d1	13.9	29.2			20.4		37.4		29.0			
Progression Factor	1.16	1.13			1.00		1.00		1.00			
Incremental Delay, d2	0.1	1.6			0.2		34.2		0.2			
Delay (s)	16.2	34.6			20.6		71.6		29.1			
Level of Service	B	C			C		E		C			
Approach Delay (s)		30.9			20.6			59.3			0.0	
Approach LOS		C			C			E			A	

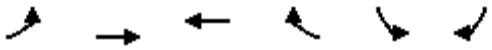
Intersection Summary			
HCM 2000 Control Delay	41.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	831	422	1588	168	281	463
Future Volume (vph)	831	422	1588	168	281	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	1599	4988	1229	3242	3374
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	1599	4988	1229	3242	3374
Peak-hour factor, PHF	0.87	0.87	0.93	0.93	0.81	0.81
Adj. Flow (vph)	955	485	1708	181	347	572
RTOR Reduction (vph)	0	320	0	115	0	0
Lane Group Flow (vph)	955	165	1708	66	347	572
Heavy Vehicles (%)	6%	1%	4%	27%	8%	7%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	34.0	34.0	16.0	56.0
Effective Green, g (s)	25.0	25.0	34.0	34.0	16.0	56.0
Actuated g/C Ratio	0.27	0.27	0.37	0.37	0.17	0.60
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)	887	429	1823	449	557	2031
v/s Ratio Prot	c0.29	0.10	c0.34	0.05	c0.11	0.17
v/s Ratio Perm						
v/c Ratio	1.08	0.39	0.94	0.15	0.62	0.28
Uniform Delay, d1	34.0	27.7	28.5	19.8	35.7	8.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.0	0.8	10.7	0.7	2.5	0.3
Delay (s)	87.0	28.5	39.1	20.5	38.2	9.2
Level of Service	F	C	D	C	D	A
Approach Delay (s)	67.3		37.3			20.1
Approach LOS	E		D			C

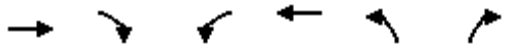
Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	471	1539	555	512	191	189
Future Volume (vph)	471	1539	555	512	191	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)	548	1790	578	533	251	249
RTOR Reduction (vph)	0	0	0	370	0	188
Lane Group Flow (vph)	548	1790	578	163	251	61
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)	8.5	32.5	18.0	18.0	14.5	14.5
Effective Green, g (s)	8.5	32.5	18.0	18.0	14.5	14.5
Actuated g/C Ratio	0.14	0.55	0.31	0.31	0.25	0.25
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)	257	1911	1019	482	422	377
v/s Ratio Prot	c0.31	c0.52	0.17		c0.15	0.04
v/s Ratio Perm				0.10		
v/c Ratio	2.13	0.94	0.57	0.34	0.59	0.16
Uniform Delay, d1	25.2	12.3	17.2	15.9	19.7	17.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	522.4	10.2	2.3	1.9	2.6	0.3
Delay (s)	547.6	22.5	19.5	17.8	22.3	17.8
Level of Service	F	C	B	B	C	B
Approach Delay (s)		145.6	18.7		20.0	
Approach LOS		F	B		C	

Intersection Summary			
HCM 2000 Control Delay	94.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1087	643	84	632	435	533
Future Volume (vph)	1087	643	84	632	435	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1468	1752	3438	1680	1538
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1468	1752	3438	1680	1538
Peak-hour factor, PHF	0.95	0.95	0.90	0.90	0.80	0.80
Adj. Flow (vph)	1144	677	93	702	544	666
RTOR Reduction (vph)	0	352	0	0	0	352
Lane Group Flow (vph)	1144	325	93	702	544	314
Heavy Vehicles (%)	2%	10%	3%	5%	11%	5%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	66.3	66.3	13.7	86.0	40.0	40.0
Effective Green, g (s)	66.3	66.3	13.7	86.0	40.0	40.0
Actuated g/C Ratio	0.48	0.48	0.10	0.62	0.29	0.29
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)	1700	705	173	2142	486	445
v/s Ratio Prot	c0.32	0.22	c0.05	0.20	c0.32	0.20
v/s Ratio Perm						
v/c Ratio	0.67	0.46	0.54	0.33	1.12	0.71
Uniform Delay, d1	27.5	23.9	59.1	12.3	49.0	43.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	2.2	4.1	0.4	77.7	5.4
Delay (s)	29.7	26.1	63.2	12.7	126.7	49.2
Level of Service	C	C	E	B	F	D
Approach Delay (s)	28.3			18.6	84.0	
Approach LOS	C			B	F	

Intersection Summary			
HCM 2000 Control Delay	43.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	20	7	252	90	84	15	75	88	19	215	25
Future Vol, veh/h	0	20	7	252	90	84	15	75	88	19	215	25
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.87	0.87	0.87	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	2	0	5	0	6	8	14	0	0
Mvmt Flow	0	40	14	360	129	120	17	86	101	27	307	36
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	10.6	19.4	12.5	19.8
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	8%	0%	100%	0%	7%
Vol Thru, %	42%	74%	0%	52%	83%
Vol Right, %	49%	26%	0%	48%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	27	252	174	259
LT Vol	15	0	252	0	19
Through Vol	75	20	0	90	215
RT Vol	88	7	0	84	25
Lane Flow Rate	205	54	360	249	370
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.347	0.103	0.69	0.415	0.639
Departure Headway (Hd)	6.106	6.843	6.895	6.008	6.217
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	585	527	522	597	577
Service Time	4.195	4.843	4.667	3.779	4.29
HCM Lane V/C Ratio	0.35	0.102	0.69	0.417	0.641
HCM Control Delay	12.5	10.6	23.8	13	19.8
HCM Lane LOS	B	B	C	B	C
HCM 95th-tile Q	1.5	0.3	5.3	2	4.5

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	8	10	26	5	15	26	193	33	35	368	33
Future Vol, veh/h	6	8	10	26	5	15	26	193	33	35	368	33
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	83	83	83	79	79	79	66	66	66
Heavy Vehicles, %	25	0	14	0	33	9	0	4	0	4	1	4
Mvmt Flow	8	11	14	31	6	18	33	244	42	53	558	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1032	1041	583	1033	1045	265	608	0	0	286	0	0
Stage 1	689	689	-	331	331	-	-	-	-	-	-	-
Stage 2	343	352	-	702	714	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.34	7.1	6.83	6.29	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.426	3.5	4.297	3.381	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	191	232	490	213	202	757	980	-	-	1265	-	-
Stage 1	401	450	-	687	593	-	-	-	-	-	-	-
Stage 2	627	635	-	432	392	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	172	215	490	187	187	757	980	-	-	1265	-	-
Mov Cap-2 Maneuver	172	215	-	187	187	-	-	-	-	-	-	-
Stage 1	387	431	-	664	573	-	-	-	-	-	-	-
Stage 2	585	613	-	391	376	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	22.8	0.9	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	980	-	-	259	187	757	1265	-	-
HCM Lane V/C Ratio	0.034	-	-	0.131	0.2	0.024	0.042	-	-
HCM Control Delay (s)	8.8	-	-	21	29	9.9	8	-	-
HCM Lane LOS	A	-	-	C	D	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.7	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	11	6	46	11	11	6	402	285	17	169	17
Future Vol, veh/h	6	11	6	46	11	11	6	402	285	17	169	17
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	12	7	51	12	12	7	447	317	19	188	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	868	1014	198	865	865	606	207	0	0	764	0	0
Stage 1	236	236	-	620	620	-	-	-	-	-	-	-
Stage 2	632	778	-	245	245	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	273	239	843	274	292	497	1364	-	-	849	-	-
Stage 1	767	710	-	476	480	-	-	-	-	-	-	-
Stage 2	468	407	-	759	703	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	251	231	843	254	282	497	1364	-	-	849	-	-
Mov Cap-2 Maneuver	251	231	-	254	282	-	-	-	-	-	-	-
Stage 1	760	692	-	472	476	-	-	-	-	-	-	-
Stage 2	441	403	-	721	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.5	22.5	0.1	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1364	-	-	292	281	849	-	-
HCM Lane V/C Ratio	0.005	-	-	0.088	0.269	0.022	-	-
HCM Control Delay (s)	7.7	0	-	18.5	22.5	9.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	96

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	682	348	136	10	46	186
Future Vol, veh/h	682	348	136	10	46	186
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	758	387	151	11	51	207

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	364	51	258	0	-	0
Stage 1	51	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 635	1017	1307	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	~ 741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 561	1017	1307	-	-	-
Mov Cap-2 Maneuver	~ 561	-	-	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	~ 741	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	130.1	7.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1307	-	561	1017	-	-
HCM Lane V/C Ratio	0.116	-	1.351	0.38	-	-
HCM Control Delay (s)	8.1	-	191	10.7	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	33.2	1.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	141	993	349	0
Future Vol, veh/h	0	14	141	993	349	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	50	50	67	67	75	75
Heavy Vehicles, %	2	2	1	2	2	0
Mvmt Flow	0	28	210	1482	465	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2367	465	465	0	-	0
Stage 1	465	-	-	-	-	-
Stage 2	1902	-	-	-	-	-
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	39	597	1102	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	129	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	0	597	1102	-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	129	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1102	-	597	-	-
HCM Lane V/C Ratio	0.191	-	0.047	-	-
HCM Control Delay (s)	9	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.1	-	-

Intersection	
Int Delay, s/veh	17.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	5	27	0	2	25	1115	58	8	348	0
Future Vol, veh/h	0	0	5	27	0	2	25	1115	58	8	348	0
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	38	38	38	71	71	71	71	71	71	70	70	70
Heavy Vehicles, %	0	0	33	17	0	50	6	1	7	17	3	0
Mvmt Flow	0	0	13	38	0	3	35	1570	82	11	497	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2202	2241	497	2207	2200	1611	497	0	0	1652	0	0
Stage 1	519	519	-	1681	1681	-	-	-	-	-	-	-
Stage 2	1683	1722	-	526	519	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.27	6.5	6.7	4.16	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.653	4	3.75	2.254	-	-	2.353	-	-
Pot Cap-1 Maneuver	32	43	515	~ 29	45	99	1047	-	-	353	-	-
Stage 1	544	536	-	110	152	-	-	-	-	-	-	-
Stage 2	121	145	-	509	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	19	22	515	~ 18	23	99	1047	-	-	353	-	-
Mov Cap-2 Maneuver	19	22	-	~ 18	23	-	-	-	-	-	-	-
Stage 1	295	513	-	60	83	-	-	-	-	-	-	-
Stage 2	64	79	-	475	513	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	$ 953.4	0.2	0.3
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1047	-	-	515	19	353	-	-
HCM Lane V/C Ratio	0.034	-	-	0.026	2.15	0.032	-	-
HCM Control Delay (s)	8.6	0	-	12.2	$ 953.4	15.5	0	-
HCM Lane LOS	A	A	-	B	F	C	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	5.5	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	15.4

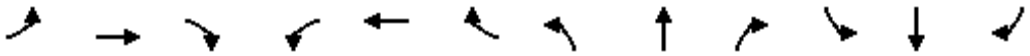
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	215	983	0	0	380
Future Vol, veh/h	0	215	983	0	0	380
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	76	95	92	92	80
Heavy Vehicles, %	2	3	2	2	2	4
Mvmt Flow	0	283	1035	0	0	475

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1035	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	~ 279	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	~ 279	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	97.8	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	279	-
HCM Lane V/C Ratio	-	1.014	-
HCM Control Delay (s)	-	97.8	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	10.5	-

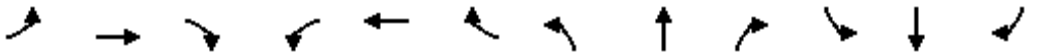
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	412	6	305	232	255	9	0	1126	84	14	3
Future Volume (vph)	5	412	6	305	232	255	9	0	1126	84	14	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)	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	1.00		1.00	0.92			1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1357	3532		3155	3311			1491	2842		2058	
Flt Permitted	0.95	1.00		0.95	1.00			0.71	1.00		0.76	
Satd. Flow (perm)	1357	3532		3155	3311			1118	2842		1619	
Peak-hour factor, PHF	0.69	0.69	0.69	0.88	0.88	0.88	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	7	597	9	347	264	290	10	0	1211	104	17	4
RTOR Reduction (vph)	0	1	0	0	129	0	0	0	0	0	1	0
Lane Group Flow (vph)	7	605	0	347	425	0	0	10	1211	0	124	0
Heavy Vehicles (%)	33%	2%	0%	11%	1%	0%	17%	0%	0%	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)	4.1	21.4		13.6	31.9			20.2	20.2		20.2	
Effective Green, g (s)	4.1	21.4		13.6	31.9			20.2	20.2		20.2	
Actuated g/C Ratio	0.06	0.29		0.19	0.44			0.28	0.28		0.28	
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)	76	1032		586	1442			308	784		446	
v/s Ratio Prot	0.01	c0.17		c0.11	0.13							
v/s Ratio Perm								0.01	c0.43		0.08	
v/c Ratio	0.09	0.59		0.59	0.29			0.03	1.54		0.28	
Uniform Delay, d1	32.8	22.1		27.3	13.4			19.4	26.5		20.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	0.9		1.6	0.1			0.0	251.4		0.3	
Delay (s)	33.0	23.0		28.9	13.5			19.4	277.9		21.1	
Level of Service	C	C		C	B			B	F		C	
Approach Delay (s)		23.1			19.4			275.8			21.1	
Approach LOS		C			B			F			C	

Intersection Summary			
HCM 2000 Control Delay	129.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	73.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

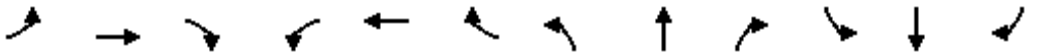
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1079	543	575	563	0	0	0	0	325	0	237
Future Volume (vph)	0	1079	543	575	563	0	0	0	0	325	0	237
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	0.92	0.85	0.85	0.94	0.94	0.92	0.92	0.92	0.92	0.75	0.25	0.75
Adj. Flow (vph)	0	1269	639	612	599	0	0	0	0	433	0	316
RTOR Reduction (vph)	0	0	369	0	0	0	0	0	0	0	0	241
Lane Group Flow (vph)	0	1269	270	612	599	0	0	0	0	433	0	75
Heavy Vehicles (%)	0%	1%	1%	1%	1%	0%	2%	2%	2%	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)		35.1	35.1	24.2	60.2					24.0		24.0
Effective Green, g (s)		35.1	35.1	24.2	60.2					24.0		24.0
Actuated g/C Ratio		0.35	0.35	0.24	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)		2092	535	773	2053					829		666
v/s Ratio Prot		c0.21	0.17	c0.19	0.17					c0.12		0.03
v/s Ratio Perm												
v/c Ratio		0.61	0.51	0.79	0.29					0.52		0.11
Uniform Delay, d1		27.4	26.2	36.2	10.1					33.7		30.3
Progression Factor		1.00	1.00	1.34	1.09					1.00		1.00
Incremental Delay, d2		0.7	1.6	4.3	0.1					1.1		0.2
Delay (s)		28.1	27.8	52.6	11.1					34.8		30.5
Level of Service		C	C	D	B					C		C
Approach Delay (s)		28.0			32.1			0.0			33.0	
Approach LOS		C			C			A			C	

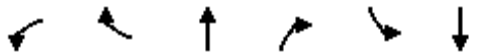
Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	641	763	0	0	866	341	272	0	524	0	0	0
Future Volume (vph)	641	763	0	0	866	341	272	0	524	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
Grade (%)		0%			11%			0%			0%	
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			0.96		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	3236	3455			4660		3433		2814			
Flt Permitted	0.11	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	388	3455			4660		3433		2814			
Peak-hour factor, PHF	0.87	0.87	0.92	0.92	0.90	0.90	0.94	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	737	877	0	0	962	379	289	0	557	0	0	0
RTOR Reduction (vph)	0	0	0	0	68	0	0	0	425	0	0	0
Lane Group Flow (vph)	737	877	0	0	1273	0	289	0	132	0	0	0
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	1%	2%	2%	2%
Turn Type	pm+pt	NA			NA		Prot		Prot			
Protected Phases	1	6			2		3		3			
Permitted Phases	6											
Actuated Green, G (s)	58.4	35.1			36.0		24.0		24.0			
Effective Green, g (s)	58.4	35.1			36.0		24.0		24.0			
Actuated g/C Ratio	0.58	0.35			0.36		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)	878	1197			1656		813		666			
v/s Ratio Prot	c0.19	0.25			0.27		c0.08		0.05			
v/s Ratio Perm	c0.29											
v/c Ratio	0.84	0.73			0.77		0.36		0.20			
Uniform Delay, d1	25.8	29.0			29.0		32.2		30.9			
Progression Factor	1.69	0.57			1.00		1.00		1.00			
Incremental Delay, d2	6.2	2.4			2.6		0.6		0.3			
Delay (s)	49.7	18.9			31.6		32.8		31.3			
Level of Service	D	B			C		C		C			
Approach Delay (s)		32.9			31.6			31.8			0.0	
Approach LOS		C			C			C			A	

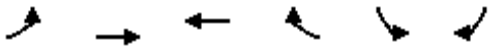
Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	874	148	1503	236	676	1193
Future Volume (vph)	874	148	1503	236	676	1193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	0.97	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3367	1509	5085	1323	3433	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3367	1509	5085	1323	3433	3539
Peak-hour factor, PHF	0.89	0.89	0.95	0.95	0.84	0.84
Adj. Flow (vph)	982	166	1582	248	805	1420
RTOR Reduction (vph)	0	121	0	168	0	0
Lane Group Flow (vph)	982	45	1582	80	805	1420
Heavy Vehicles (%)	4%	7%	2%	18%	2%	2%
Turn Type	Prot	Prot	NA	Prot	Prot	NA
Protected Phases	7	7	6	6	5	2
Permitted Phases						
Actuated Green, G (s)	25.0	25.0	30.0	30.0	20.0	56.0
Effective Green, g (s)	25.0	25.0	30.0	30.0	20.0	56.0
Actuated g/C Ratio	0.27	0.27	0.32	0.32	0.22	0.60
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)	905	405	1640	426	738	2131
v/s Ratio Prot	c0.29	0.03	c0.31	0.06	c0.23	0.40
v/s Ratio Perm						
v/c Ratio	1.09	0.11	0.96	0.19	1.09	0.67
Uniform Delay, d1	34.0	25.6	31.0	22.7	36.5	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	55.7	0.2	15.3	1.0	60.6	1.7
Delay (s)	89.7	25.8	46.3	23.7	97.1	14.0
Level of Service	F	C	D	C	F	B
Approach Delay (s)	80.5		43.2			44.0
Approach LOS	F		D			D

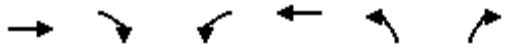
Intersection Summary			
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	265	1386	1076	215	468	793
Future Volume (vph)	265	1386	1076	215	468	793
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)	301	1575	1157	231	538	911
RTOR Reduction (vph)	0	0	0	161	0	168
Lane Group Flow (vph)	301	1575	1157	70	538	743
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	c0.17	0.45	c0.33		0.30	c0.46
v/s Ratio Perm				0.04		
v/c Ratio	1.99	0.91	1.07	0.15	0.99	1.53
Uniform Delay, d1	27.0	13.7	20.5	14.9	20.4	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	469.8	8.3	49.0	0.6	35.0	246.7
Delay (s)	496.8	22.1	69.5	15.5	55.4	267.2
Level of Service	F	C	E	B	E	F
Approach Delay (s)		98.2	60.5		188.5	
Approach LOS		F	E		F	

Intersection Summary			
HCM 2000 Control Delay	114.9	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	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	816	1038	348	1106	185	401
Future Volume (vph)	816	1038	348	1106	185	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
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)	3539	1568	1787	3539	1636	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1568	1787	3539	1636	1583
Peak-hour factor, PHF	0.89	0.89	0.86	0.86	0.88	0.88
Adj. Flow (vph)	917	1166	405	1286	210	456
RTOR Reduction (vph)	0	367	0	0	0	373
Lane Group Flow (vph)	917	799	405	1286	210	83
Heavy Vehicles (%)	2%	3%	1%	2%	14%	2%
Turn Type	NA	Prot	Prot	NA	Prot	Prot
Protected Phases	6	6	5	2	7	7
Permitted Phases						
Actuated Green, G (s)	57.8	57.8	37.2	101.0	25.0	25.0
Effective Green, g (s)	57.8	57.8	37.2	101.0	25.0	25.0
Actuated g/C Ratio	0.42	0.42	0.27	0.73	0.18	0.18
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)	1482	656	481	2590	296	286
v/s Ratio Prot	0.26	c0.51	c0.23	0.36	c0.13	0.05
v/s Ratio Perm						
v/c Ratio	0.62	1.22	0.84	0.50	0.71	0.29
Uniform Delay, d1	31.5	40.1	47.6	7.8	53.1	48.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	111.4	13.1	0.7	8.1	0.8
Delay (s)	33.4	151.5	60.7	8.5	61.2	49.6
Level of Service	C	F	E	A	E	D
Approach Delay (s)	99.5			21.0	53.2	
Approach LOS	F			C	D	

Intersection Summary			
HCM 2000 Control Delay	62.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	43.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	67	17	210	17	15	1	254	236	55	82	3
Future Vol, veh/h	52	67	17	210	17	15	1	254	236	55	82	3
Peak Hour Factor	0.71	0.71	0.71	0.90	0.90	0.90	0.75	0.75	0.75	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	2	0	10	0	1	3	11	4	0
Mvmt Flow	73	94	24	233	19	17	1	339	315	63	93	3
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	14.9	17.8	69.9	13.6
HCM LOS	B	C	F	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	38%	100%	0%	39%
Vol Thru, %	52%	49%	0%	53%	59%
Vol Right, %	48%	12%	0%	47%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	491	136	210	32	140
LT Vol	1	52	210	0	55
Through Vol	254	67	0	17	82
RT Vol	236	17	0	15	3
Lane Flow Rate	655	192	233	36	159
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.039	0.38	0.51	0.069	0.313
Departure Headway (Hd)	5.715	7.393	8.092	7.205	7.32
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	642	490	448	500	495
Service Time	3.715	5.393	5.792	4.905	5.32
HCM Lane V/C Ratio	1.02	0.392	0.52	0.072	0.321
HCM Control Delay	69.9	14.9	18.9	10.4	13.6
HCM Lane LOS	F	B	C	B	B
HCM 95th-tile Q	17.3	1.8	2.8	0.2	1.3

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	9	6	51	6	30	10	403	41	16	324	15
Future Vol, veh/h	5	9	6	51	6	30	10	403	41	16	324	15
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	-	-	-	-	-	80	85	-	-	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	87	87	87	73	73	73	90	90	90
Heavy Vehicles, %	0	0	25	3	25	0	0	3	0	0	1	0
Mvmt Flow	8	14	9	59	7	34	14	552	56	18	360	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1034	1041	369	1024	1021	580	377	0	0	608	0	0
Stage 1	405	405	-	608	608	-	-	-	-	-	-	-
Stage 2	629	636	-	416	413	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.45	7.13	6.75	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.75	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.525	3.527	4.225	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	212	232	628	213	216	518	1193	-	-	980	-	-
Stage 1	626	602	-	481	451	-	-	-	-	-	-	-
Stage 2	474	475	-	612	556	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	188	225	628	196	210	518	1193	-	-	980	-	-
Mov Cap-2 Maneuver	188	225	-	196	210	-	-	-	-	-	-	-
Stage 1	618	591	-	475	446	-	-	-	-	-	-	-
Stage 2	430	469	-	578	546	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.5	25.3	0.2	0.4
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1193	-	-	263	197	518	980	-	-
HCM Lane V/C Ratio	0.011	-	-	0.117	0.333	0.067	0.018	-	-
HCM Control Delay (s)	8.1	-	-	20.5	32.1	12.4	8.7	-	-
HCM Lane LOS	A	-	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.4	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	51.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	17	6	267	11	6	0	215	108	6	528	6
Future Vol, veh/h	6	17	6	267	11	6	0	215	108	6	528	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	19	7	297	12	7	0	239	120	7	587	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	914	964	591	917	907	299	594	0	0	359	0	0
Stage 1	605	605	-	299	299	-	-	-	-	-	-	-
Stage 2	309	359	-	618	608	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	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	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	254	255	507	~ 253	276	741	982	-	-	1200	-	-
Stage 1	485	487	-	710	666	-	-	-	-	-	-	-
Stage 2	701	627	-	477	486	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	242	253	507	~ 234	274	741	982	-	-	1200	-	-
Mov Cap-2 Maneuver	242	253	-	~ 234	274	-	-	-	-	-	-	-
Stage 1	485	483	-	710	666	-	-	-	-	-	-	-
Stage 2	682	627	-	448	482	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	211.1	0	0.1
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	982	-	-	279	239	1200	-	-
HCM Lane V/C Ratio	-	-	-	0.115	1.32	0.006	-	-
HCM Control Delay (s)	0	-	-	19.6	211.1	8	0	-
HCM Lane LOS	A	-	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	16.7	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	141.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	289	155	394	34	28	772
Future Vol, veh/h	289	155	394	34	28	772
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	321	172	438	38	31	858

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	945	31	889	0	-	0
Stage 1	31	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 291	1043	762	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 124	1043	762	-	-	-
Mov Cap-2 Maneuver	~ 124	-	-	-	-	-
Stage 1	422	-	-	-	-	-
Stage 2	391	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s$	519.9	14.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	762	-	124	1043	-	-
HCM Lane V/C Ratio	0.575	-	2.59	0.165	-	-
HCM Control Delay (s)	15.9	-	$ 793.9	9.1	-	-
HCM Lane LOS	C	-	F	A	-	-
HCM 95th %tile Q(veh)	3.7	-	28.8	0.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	118	19	427	1069	1
Future Vol, veh/h	1	118	19	427	1069	1
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	68	68	85	85	89	89
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	1	174	22	502	1201	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1748	1202	1202	0	-	0
Stage 1	1202	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	96	226	588	-	-	-
Stage 1	287	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	226	588	-	-	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	272	-	-	-	-	-
Stage 2	584	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	62.4	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	588	-	223	-	-
HCM Lane V/C Ratio	0.038	-	0.785	-	-
HCM Control Delay (s)	11.4	0	62.4	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	5.6	-	-

Intersection	
Int Delay, s/veh	22

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	0	23	40	0	10	55	435	63	14	1198	20
Future Vol, veh/h	7	0	23	40	0	10	55	435	63	14	1198	20
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	63	63	63	83	83	83	94	94	94	89	89	89
Heavy Vehicles, %	0	0	0	12	0	29	0	1	12	22	1	0
Mvmt Flow	11	0	37	48	0	12	59	463	67	16	1346	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2010	2037	1357	2023	2015	497	1368	0	0	530	0	0
Stage 1	1389	1389	-	615	615	-	-	-	-	-	-	-
Stage 2	621	648	-	1408	1400	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.49	4.1	-	-	4.32	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.561	2.2	-	-	2.398	-	-
Pot Cap-1 Maneuver	44	57	184	~ 40	59	522	508	-	-	943	-	-
Stage 1	178	212	-	462	485	-	-	-	-	-	-	-
Stage 2	478	469	-	163	209	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	44	184	~ 26	46	522	508	-	-	943	-	-
Mov Cap-2 Maneuver	36	44	-	~ 26	46	-	-	-	-	-	-	-
Stage 1	148	197	-	385	404	-	-	-	-	-	-	-
Stage 2	389	391	-	121	194	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	77.4	$ 683.1	1.3	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	508	-	-	94	32	943	-	-
HCM Lane V/C Ratio	0.115	-	-	0.507	1.883	0.017	-	-
HCM Control Delay (s)	13	0	-	77.4	$ 683.1	8.9	0	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	2.2	6.8	0.1	-	-

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	73	480	0	0	1261
Future Vol, veh/h	0	73	480	0	0	1261
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	92	100	100	92	92	100
Heavy Vehicles, %	2	13	1	2	2	1
Mvmt Flow	0	73	480	0	0	1261

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	480	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	558	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	558	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	558	-
HCM Lane V/C Ratio	-	0.131	-
HCM Control Delay (s)	-	12.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.4	-

APPENDIX H
Site Development Plan

SITE NOTES:

1. STRIPE PARKING AREAS AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES SHALL BE THERMOPLASTIC MATERIAL. THERMOPLASTIC MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO AASHTO M249. (ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE TRAFFIC PAINT. CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING YELLOW TRAFFIC PAINT. ALL TRAFFIC PAINT SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F").
2. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
3. SEE DETAILS FOR PARKING STALL MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE.
5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
6. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
7. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
9. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF PORTSMOUTH AND PEASE DEVELOPMENT AUTHORITY.
10. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
11. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
12. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
13. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
14. COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
15. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.

SITE DATA:
LOCATION: TAX MAP 308, LOT 1
80 ROCHESTER AVENUE
PORTSMOUTH, NEW HAMPSHIRE

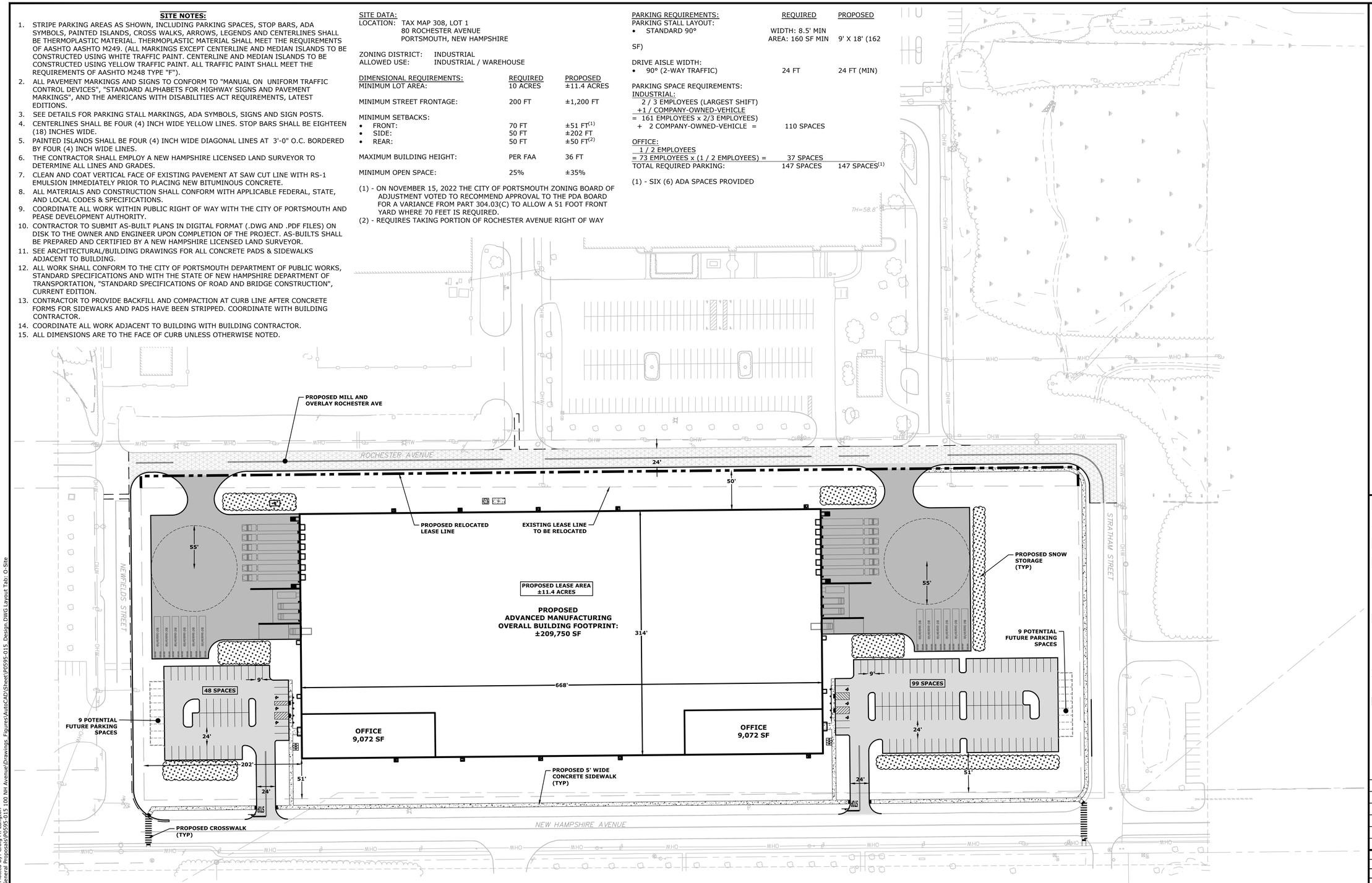
ZONING DISTRICT: INDUSTRIAL
ALLOWED USE: INDUSTRIAL / WAREHOUSE

DIMENSIONAL REQUIREMENTS:	REQUIRED	PROPOSED
MINIMUM LOT AREA:	10 ACRES	±11.4 ACRES
MINIMUM STREET FRONTAGE:	200 FT	±1,200 FT
MINIMUM SETBACKS:		
• FRONT:	70 FT	±51 FT(1)
• SIDE:	50 FT	±202 FT
• REAR:	50 FT	±50 FT(2)
MAXIMUM BUILDING HEIGHT:	PER FAA	36 FT
MINIMUM OPEN SPACE:	25%	±35%

(1) - ON NOVEMBER 15, 2022 THE CITY OF PORTSMOUTH ZONING BOARD OF ADJUSTMENT VOTED TO RECOMMEND APPROVAL TO THE PDA BOARD FOR A VARIANCE FROM PART 304.03(C) TO ALLOW A 51 FOOT FRONT YARD WHERE 70 FEET IS REQUIRED.
(2) - REQUIRES TAKING PORTION OF ROCHESTER AVENUE RIGHT OF WAY

PARKING REQUIREMENTS:	REQUIRED	PROPOSED
PARKING STALL LAYOUT:		
• STANDARD 90°	WIDTH: 8.5' MIN AREA: 160 SF MIN	9' X 18' (162 SF)
DRIVE AISLE WIDTH:		
• 90° (2-WAY TRAFFIC)	24 FT	24 FT (MIN)
PARKING SPACE REQUIREMENTS:		
INDUSTRIAL:		
2 / 3 EMPLOYEES (LARGEST SHIFT)		
+1 / COMPANY-OWNED-VEHICLE		
= 161 EMPLOYEES x 2/3 EMPLOYEES)		
+ 2 COMPANY-OWNED-VEHICLE =	110 SPACES	
OFFICE:		
1 / 2 EMPLOYEES		
= 73 EMPLOYEES x (1 / 2 EMPLOYEES) =	37 SPACES	
TOTAL REQUIRED PARKING:	147 SPACES	147 SPACES(1)

(1) - SIX (6) ADA SPACES PROVIDED



Tighe&Bond

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Proposed Advanced Manufacturing Facility

Procon, Inc.

100 New Hampshire Avenue
Portsmouth, NH

MARK	DATE	DESCRIPTION
A	12/19/2022	TAC Submission

PROJECT NO:	P0595-015
DATE:	12/19/2022
FILE:	P0595-015_DESIGN.DWG
DRAWN BY:	CML
CHECKED:	NAH
APPROVED:	PMC

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

Last Save Date: December 5, 2022 10:21 AM By: CML
Plot Date: Monday, December 05, 2022 10:31 AM By: Craig M. Langton
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-015 100 NH Avenue\Drawings, Figures\AutoCAD\Sheet\P0595-015_Design.DWG Layout Tab: O-Site

APPENDIX I

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
C 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

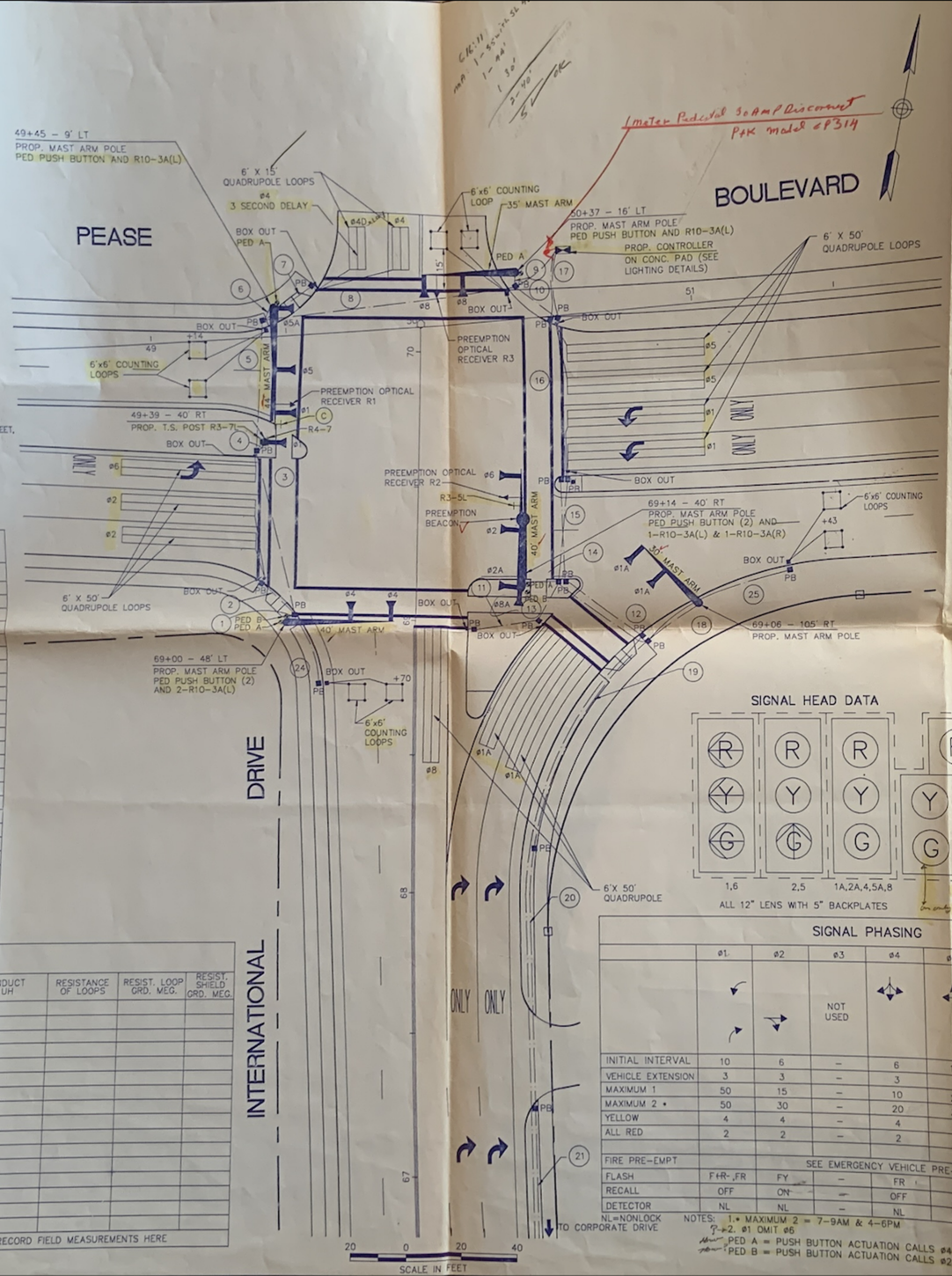
I.D.	STATION TO STATION	NO.	LENGTH	SCHEDULE TYPE	REMARKS
(1)	69+00 – 48' LT — 69+02 – 45' LT	1	4'	40	FROM MAST ARM
(2)	69+02 – 45' LT — 69+14 – 58' LT	1	16'	40	
(3)	69+02 – 45' LT — 49+36 – 42' RT	1	61'	80	
(4)	49+36 – 42' RT — 49+39 – 40' RT	1	4'	40	TO TS POST
(5)	49+39 – 40' RT — 49+42 – 05' LT	1	46'	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'	80	
(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

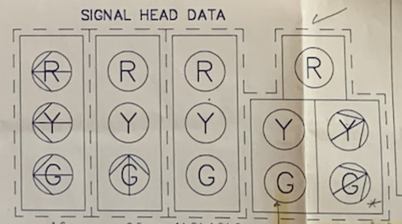
DETECTOR STREET	DIRECTION	LANE	Ø	AMPLIFIER NO.	AMPLIFIER CHANNEL	INDUCT UH	RESISTANCE OF LOOPS	RESIST. LOOP GRD. MEG.	RESIST. SHIELD GRD. MEG.
PEASE BOULEVARD	EASTBOUND	LEFT	6	1	1				
PEASE BOULEVARD	EASTBOUND	CENTER & RIGHT	2	1	2				
PEASE BOULEVARD	WESTBOUND	LEFT & CENTER	1	2	1				
PEASE BOULEVARD	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



SIGNAL HEAD DATA



ALL 12" LENS WITH 5" BACKPLATES

SIGNAL PHASING

	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	FLASH	FLASH	–	FLASH	FLASH	FLASH	–	FLASH
RECALL	OFF	ON	–	OFF	ON	OFF	–	OFF
DETECTOR	NL	NL	–	NL	NL	NL	–	NL

NL=NONLOCK

NOTES: 1.• MAXIMUM 2 = 7–9AM & 4–6PM
Ø2, Ø1 OMIT Ø5
PED A = PUSH BUTTON ACTUATION CALLS Ø4 MAX 2
PED B = PUSH BUTTON ACTUATION CALLS Ø2 MAX 1

TO CORPORATE DRIVE

PRE-EMPTION PHASING & PRIORITY

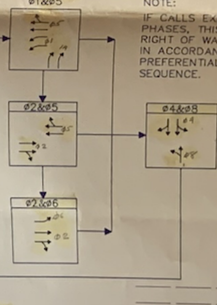
RECEIVER & PRIORITY	PREEMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
R1	1		1 + 5
R2	2		2 + 6
R3	3		8

EMERGENCY VEHICLE PRE-EMPTION OPERATION

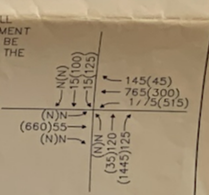
1. PRE-EMPTION OPERATION UTILIZES AVAILABLE PHASES IN 8 PHASE TIMER THROUGH THE MSD PRE-EMPT INPUTS TO EFFECT APPROPRIATE SIGNAL DISPLAYS FOR SINGLE APPROACH MOVEMENTS AS SHOWN IN THE PRE-EMPTION PHASING AND PRIORITY CHART.
2. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL 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)

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, Milton Road
Bedford, New Hampshire 03110
603 644 0888 • FAX 603 644 2385

6/16:11

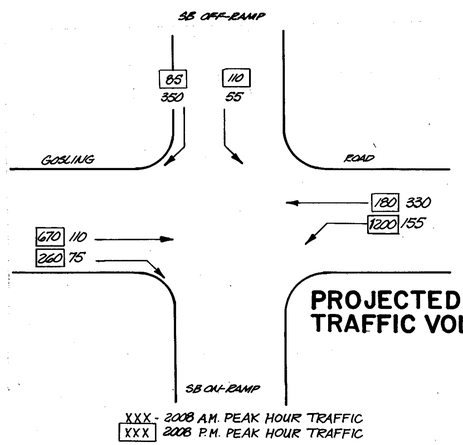
Designed by:	Drawn by:	Checked by:
Scale: 1" = 20'	Date: March 18, 1994	
Sheet:	of	

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

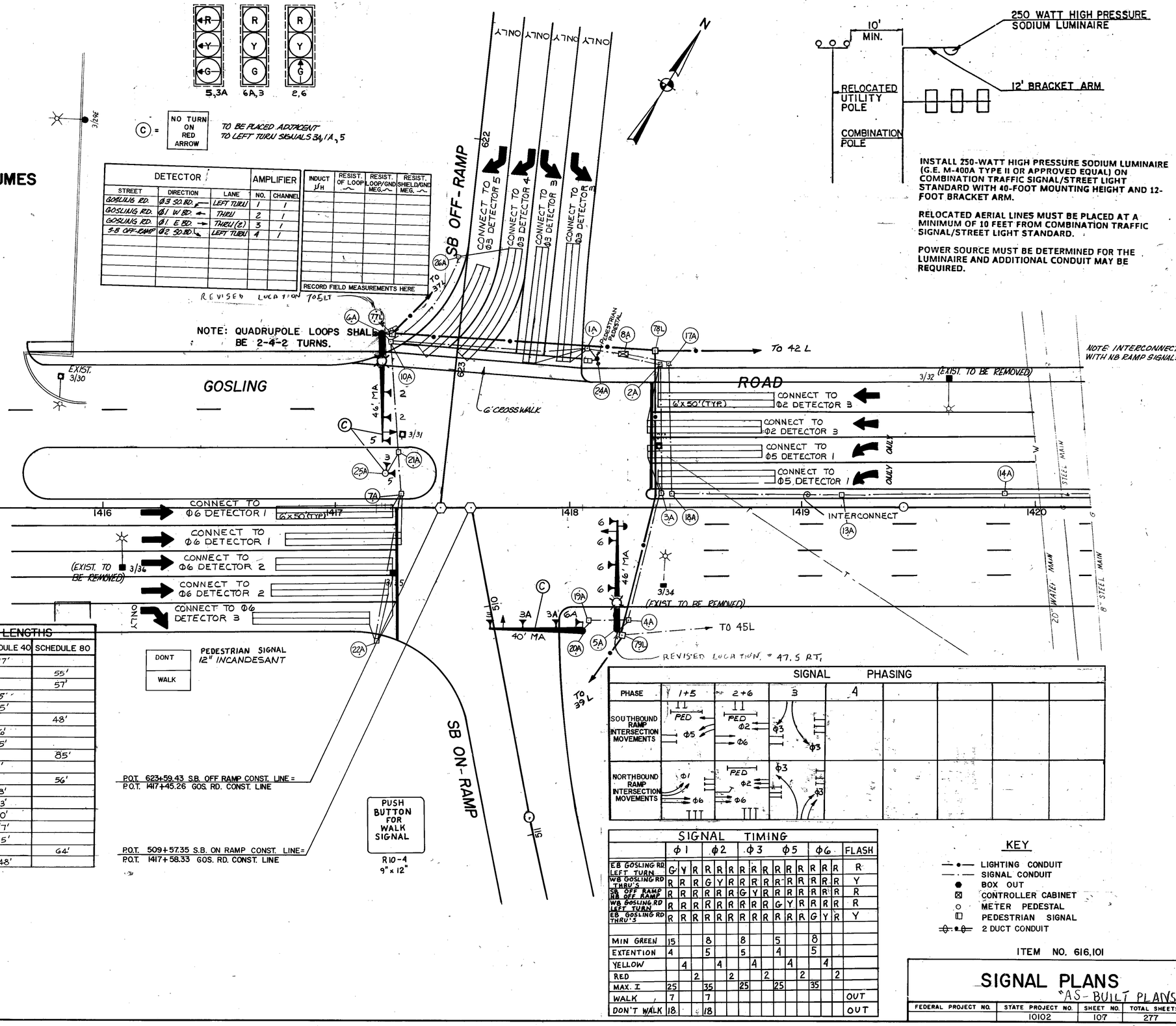
DETECTOR			AMPLIFIER	
STREET	DIRECTION	LANE	NO.	CHANNEL
GOSLING RD.	Ø3 SO. BD.	LEFT TURN	1	1
GOSLING RD.	Ø1 W. BD.	THRU	2	1
GOSLING RD.	Ø1 E. BD.	THRU (2)	3	1
SB OFF-RAMP	Ø2 SO. BD.	LEFT TURN	4	1

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

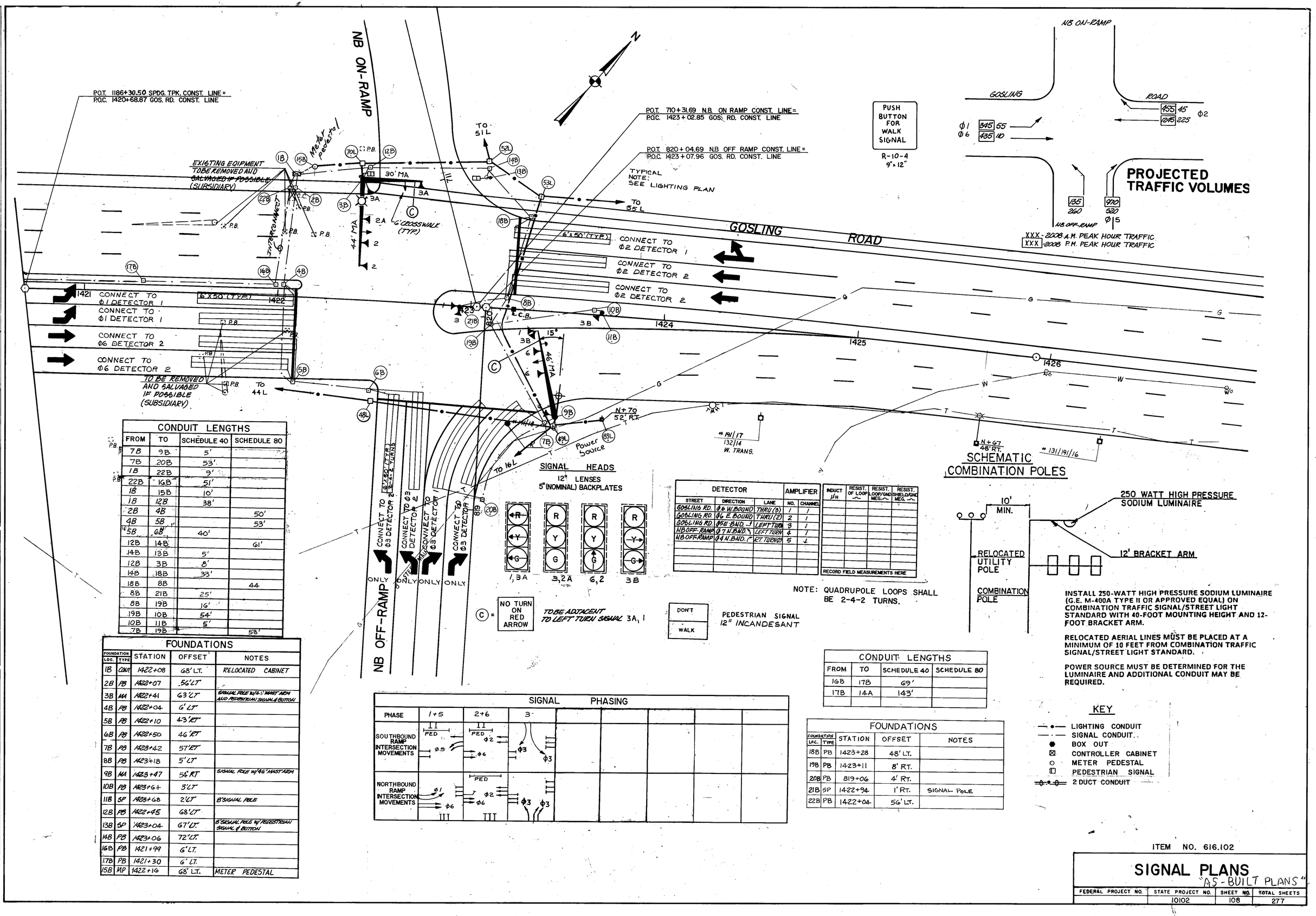
- LIGHTING CONDUIT
- SIGNAL CONDUIT
- BOX OUT
- CONTROLLER CABINET
- METER PEDESTAL
- PEDESTRIAN SIGNAL
- 2 DUCT CONDUIT

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

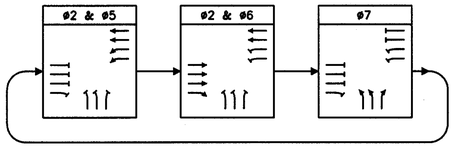
EXISTING

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			

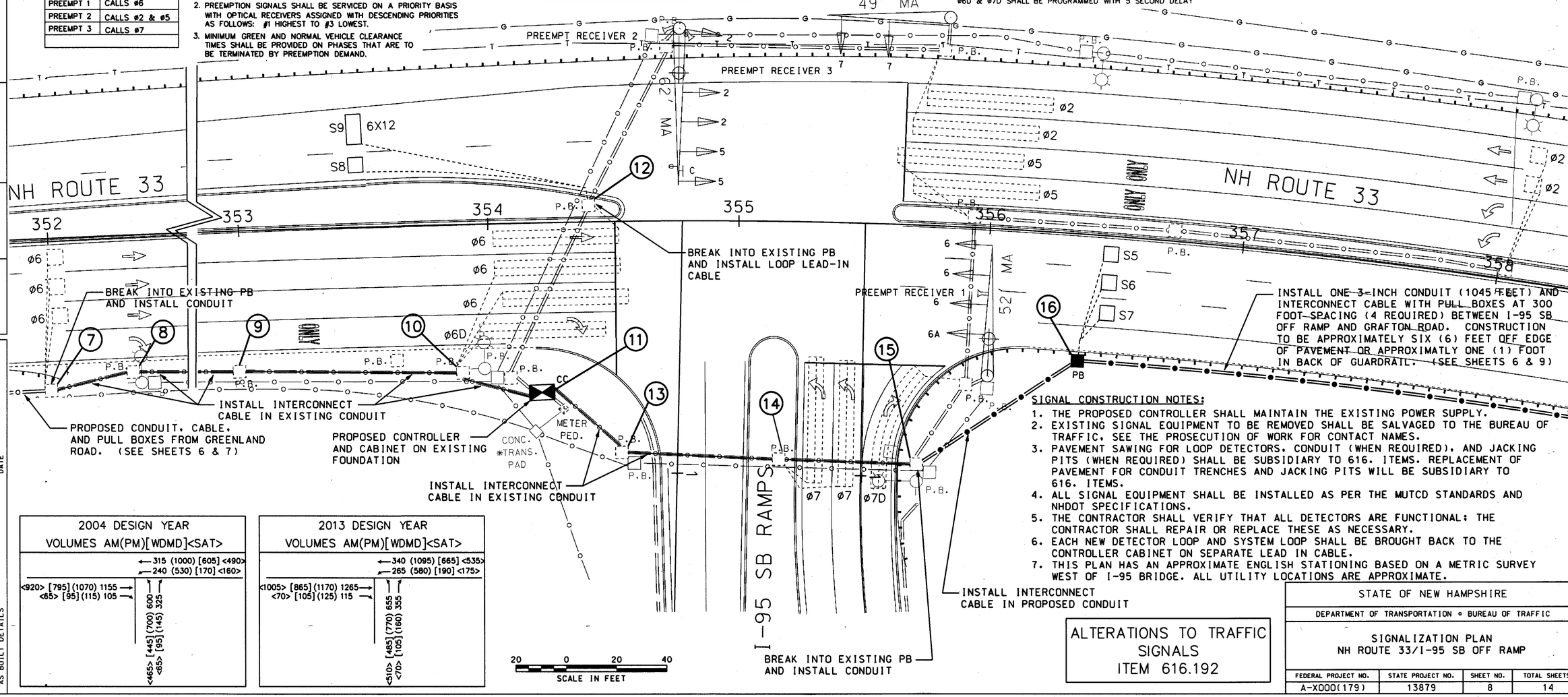
S = SYSTEM LOOP
ø6D & ø7D SHALL BE PROGRAMMED WITH 5 SECOND DELAY

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

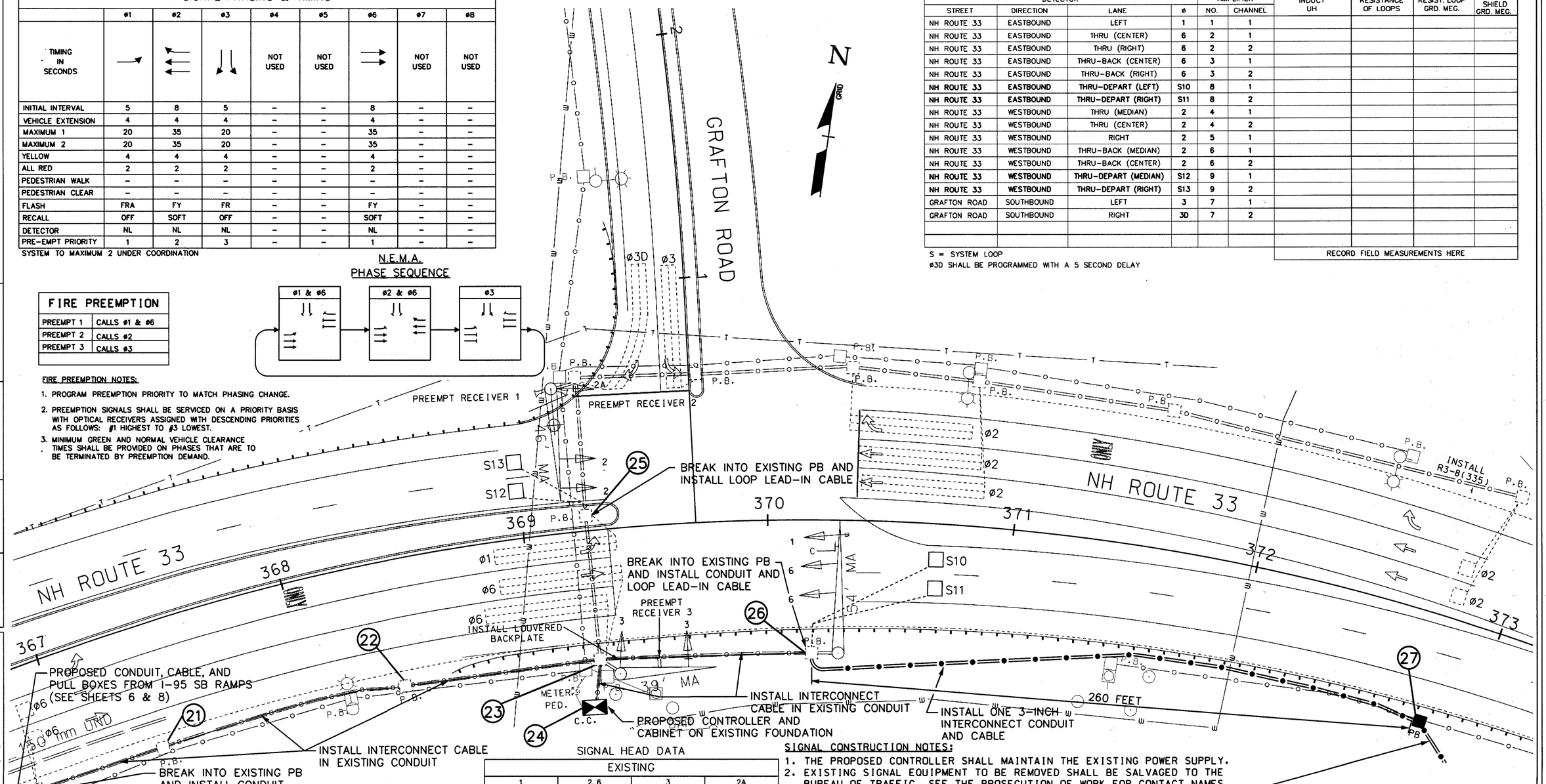
FIRE PREEMPTION NOTES:

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.

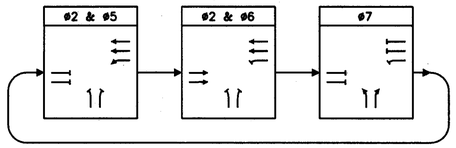
FIRE PREEMPTION

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

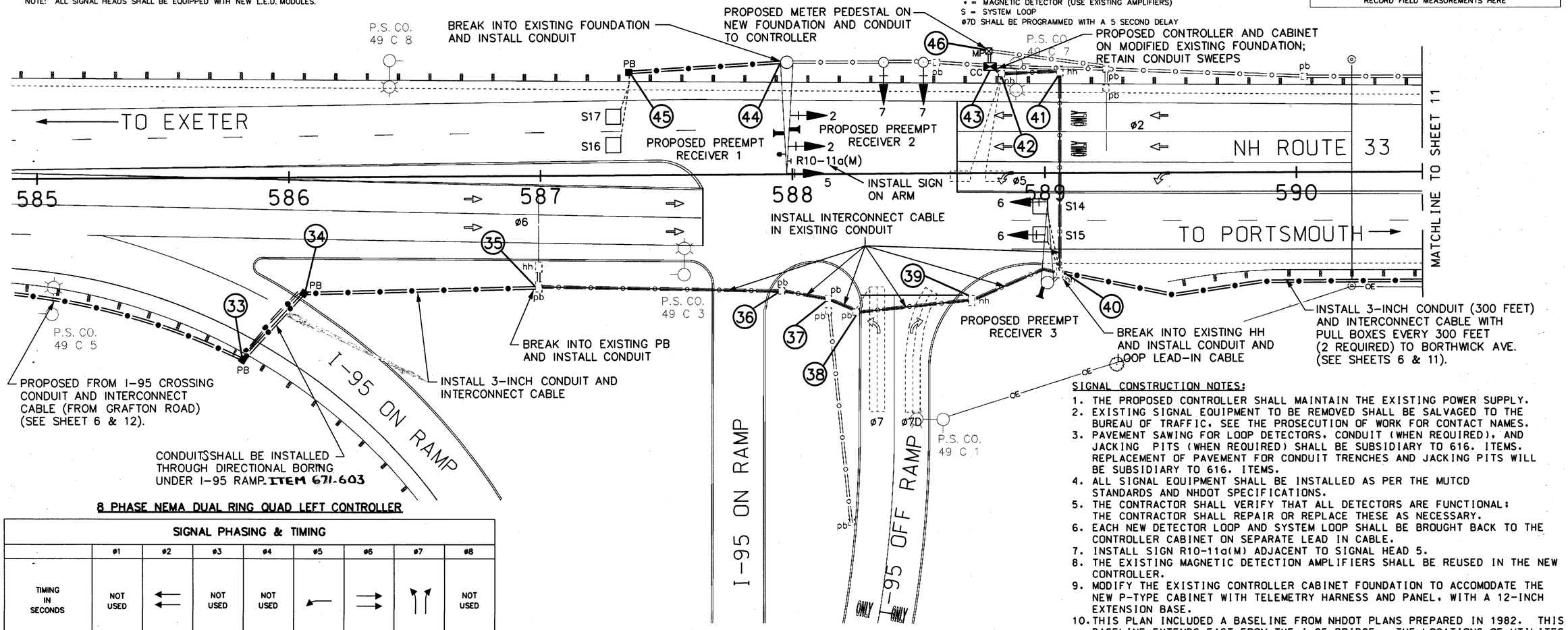


N GRID

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

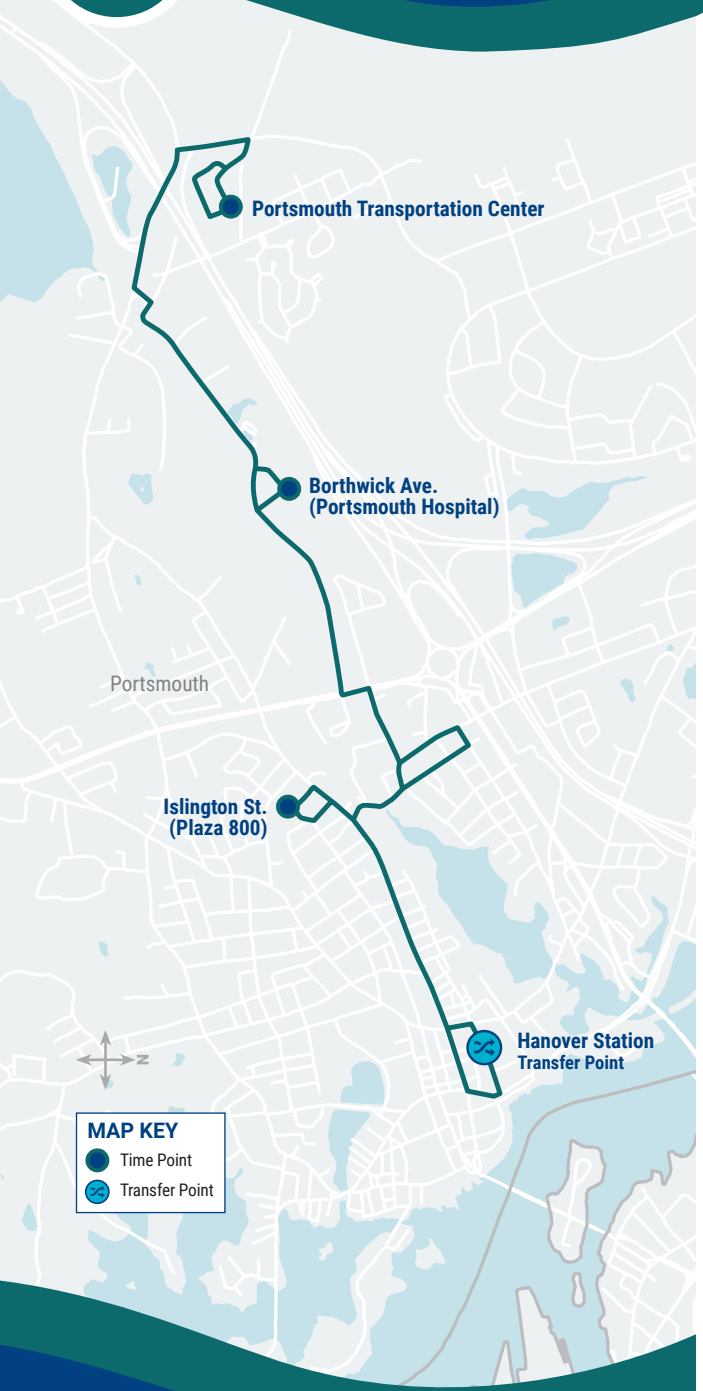
		DATE
SDR PROCESSED	CMB	7/7/03
NEW DESIGN	DJD	8/11/03
SHEET CHECKED	CMB	8/21/03
AS BUILT DETAILS		DATE

APPENDIX J

COAST Bus Schedules & 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

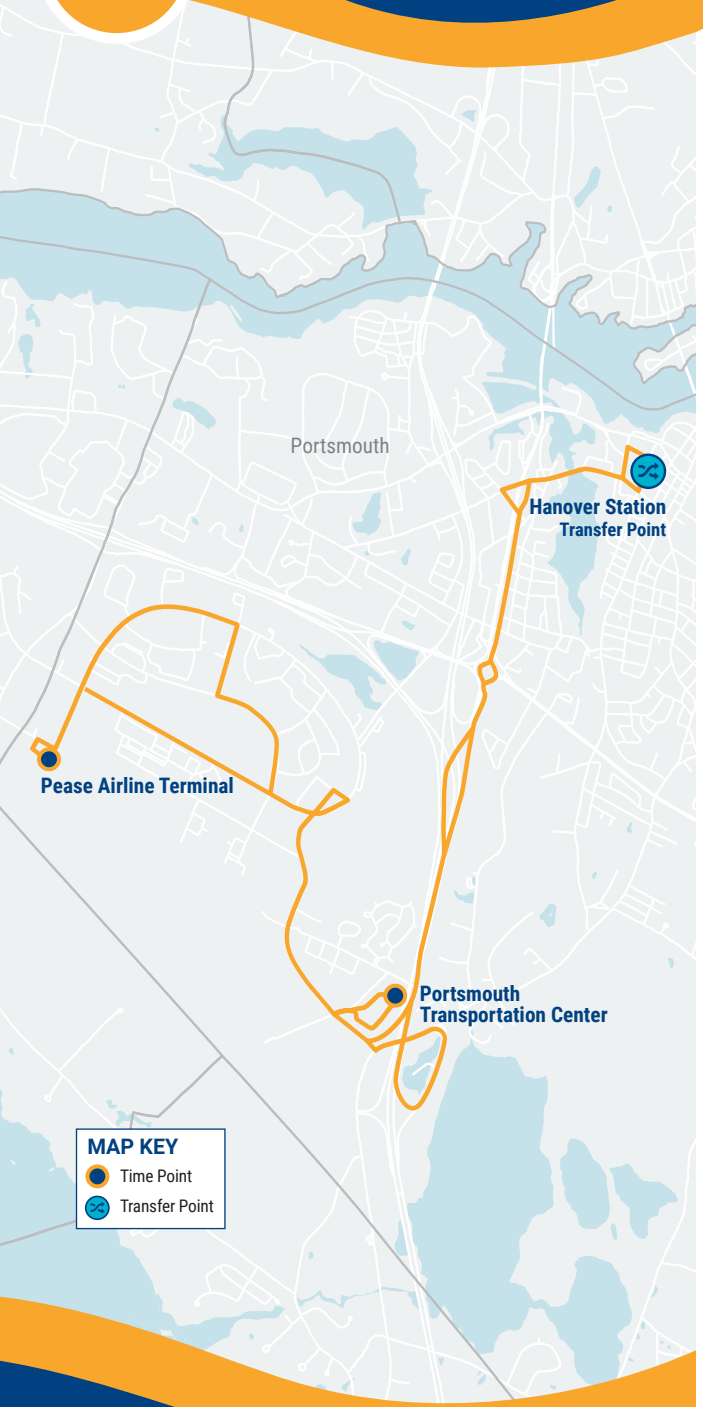
Hanover Station	13 14 40 41 42 43 44
Dover Transportation Center	1 12 13 33 M-F 33 SAT 34
Dover NHDOT Park & Ride (Exit 9)	1 14
Rochester City Hall	6 12 14

14 33 SAT Temporarily suspended part of route due to driver shortage.

Hanover Station, Portsmouth

Route 42 Map

Portsmouth • Pease Shuttle



Ride Information

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Base Cash Fare **$1.50**

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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

Newington

56-01
Smith Great Bay Farm Ltd Ptr
Po Box 156
Greenland, NH 03840-0156

53-05
Barbara Baird Rev Trust 2001
Barbara Baird Trustee
316 Newington Rd
Newington, NH 03801

54-06
Brian D & Mary Ann Short
336 Newington Rd
Newington, NH 03801

54-05
Alexander Richard Jack & Elaine M D'orto-Jack
62 Airport Road
Newington, NH 03801

54-03
Reginald Savageau & Pauline Church
66 Airport Road
Newington, NH 03801

54-02
Skillings, Brent Scott
56 Airport Road
Newington, NH 03801

52-06
Town of Newington
205 Nimble Hill Rd
Newington, NH 03801

52-05
Brendan W Cornwell & Sara Zoe Patterson
67 Airport Rd
Newington, NH 03801

52-04
Scott C. & Sandra M. Taylor
59 Airport Road
Newington, NH 03801

52-07
Wayne C. Wood
428 Newington Road
Newington, NH 0380

51-15
Kenneth L Peterson Rev. Trust
Kenneth L Peterson, Trustee
408 Newington Road
Newington, NH 03801

51-09
Wayne C Wood, Rev Trust
Wayne C Wood & Patricia L Bennett-Wood, Trustees
428 Newington Rd
Newington, NH 03801

47-01A
Alan N Thomas, Sr
501 Newington Rd
Newington, NH 03801

47-01B
Alan N. Thomas
501 Newington Road
Newington, NH 03801

51-06
Joanne L. Drinkwater Rev Trust
Joanne L. Drinkwater Trustee
36 Concord Point
Rye, NH 03870

51-09B
John W & Laura L Stone
436 Newington Rd
Newington, NH 03801

47-04B
Roger W Heath
468 Newington Rd
Newington, NH 03801

24-12
Town of Newington
205 Nimble Hill Rd
Newington, NH 03801

24-13
Town of Newington
205 Nimble Hill Rd
Newington, NH 03801

23-34
Mary Jeppesen Rev. Trust 50%
Russell Jeppesen Rev. Trust 50%
Po Box 9
Greenland NH 03840-0009

23-35
Michael Metzger & Myhanh Nguyen
23 Welsh Cove Drive
Newington, NH 03801

23-36
Marple Revoc Trust
Robert A. & Anastasia L Marple
15 Welsh Cove Drive
Newington, NH 03801

23-07B
Karen J Schaffer
338 Little Bay Rd
Newington, NH 03801

23-07A
Donald & Sylvia Bly Rev. Trust
340 Little Bay Rd
Newington, NH 03801

23-08
Gurubhai K Khalsa
11 Old Post Road
Newington, NH 03801

23-08-1
Greta & Donald Mcevoy
888 Mcintyre Rd
Newington NH 03801

23-11
Jennifer R. Ruel,
9 Little Bay Road Ext
Newington, NH 03801

23-09
Scott W. & Patricia Borkland
5 Little Bay Rd Ext.
Newington, NH 03801

23-20
Susan Gordon
299 Little Bay Rd
Newington NH 03801

23-19
Curtis J. Pickering
293C Little Bay Rd
Newington, NH 03801

23-18
Thomas P Redden Jr Rev Living Tr
Thomas P. Redden Jr., Trustee
283 Little Bay Rd
Newington, NH 03801

23-05
Dean R & Emily J Turner
275 Little Bay Road
Newington, NH 03801

23-04
Ruth K Fletcher Trustee
271 Little Bay Road
Newington, NH 03801

23-14
Brian C. Rogers Rev Trust
Brian C. Rogers Trustee
2 Little Bay Rd Ext
Newington, NH 03801

23-13
Donna L. Gifford
6 Little Bay Rd Ext.
Newington, NH 03801

23-12
William J. Murray, Trustee
10 Little Bay Rd Ext.
Newington, NH 03801

23-17
Marlen Frink Rev. Trusts
Marlen Frink Trustee
264 Little Bay Rd
Newington, NH 03801

23-03
Kimberly & Brian Dumont Rev Trusts
Kimberly & Brian Dumont, Trustees
251 Little Bay Road
Newington, NH 03801

23-15
Seth M. Frink & Debbie Shlain-Frink
1408 Centre St.
Newton, MA 02459

23-30
Robert M Chaikin, Revoc Trust
Robert M Chaikin, Trustee
59 Atlantic Avenue
North Hampton NH 03862

23-31
Dennis & Andrea Glynn
34 Welsh Cove Drive
Newington, NH 03801

23-32
Thomas B. & Catherine B. Hazelton
44 Welsh Cove Drive
Newington, NH 03801

23-33
Marlon S. Frink
264 Little Bay Road
Newington, NH 03801

23-23
Lulu Arline Pickering &William A Gilbert
339 Little Bay Rd
Newington, NH 03801

18-03A
John A. Byron Rev. Trust
John A. Byron Trustee
11 Hannah Ln
Newington NH 03801

18-03B
John Liatsis
271 Nimble Hill Rd
Newington, NH 03801

24-01
Alexander C. O'Brien
293 Nimble Hill Road
Newington, NH 03801

24-02
Paul & Carolyn Harvey
Carolyn Harvey, Trustee
517 New Castle Ave
Portsmouth, NH 03801

24-04
Christopher A & Cynthia B. Cross
327 Nimble Hill Road
Newington, NH 03801

24-11
Town of Newington Church UCC
c/o Cheryl Bagley
30 Hannah Ln.
Newington, NH 03801

24-03
MCEVOY, GRETA
888 MCINTYRE ROAD
Newington, NH 03801

24-12
Town of Newington
205 Nimble Hill Road
Newington, NH 03801

24-10
Town of Newington
205 Nimble Hill Road
Newington, NH 03801

24-06
Town of Newington
Town Office
205 Nimble Hill Road
Newington, NH 03801

23-08-3
Pease Development Authority
360 Corporate Drive
Portsmouth, NH 03801

12-12
Keith C. & Sara F. Frizzell
Keith C. Frizzell, Trustee
P.o. Box 310
Dover, NH 03820

18-02
Annette Lee Lord & Beverly Packard
8 Fox Point Road
Newington, NH 03801

18-01
Jay M. Link Ii & Deirdre L. Link
16 Fox Point Road
Newington, NH 03801

18-04
O'Reilly Family Rev Trust
John James & Luanne O'Reilly, Trustees
7 Fox Point Road
Newington, NH 03801

18-05
Renato J. Maldini
11 Fox Point Road
Newington, NH 03801

18-06

Frank Family Rev Trust of 2007
Vincent & Shirley Frank, Trustees
19 Fox Point Road
Newington, NH 03801

18-07
Jason M. Cole & Heather Cole-Geraci
61 Old Post Rd
Newington, NH 03801

18-11
Wendy Lou Sweeney, Rev Trust
Wendy Lou Sweeney, Trustee
28 Fox Point Road
Newington, NH 03801

18-08
Ralph & Barbara Cooley
37 Fox Point Rd
Newington, NH 03801

12-15
19 NIMBLE HILL REALTY LLC
19 Nimble Hill Rd
Newington, NH 03801

12-16
25 Nimble Property Ownes, LLC
133 Pearl St.
Boston, MA 02110

12-11A
Cynthia A Lyons
49 Nimble Hill Road
Newington, NH 03801

12-10-B
Michael P. & Robin H. Patenaude
65 Nimble Hill Rd.
Newington, NH 03801

12-12
Keith C. & Sara F Frizzell
Keith C. Frizzell, Trustee
P.O. Box 310
Dover, NH 03820

ACROSS THE SPAULDING:

07-14
Sprague Operating Resources LLC
185 International Dr
Portsmouth, NH 03801

07-16
Short Family Ltd Partnership
373 Shattuck Way
Newington, NH 03801

08-01
Short Family Ltd Partnership
373 Shattuck Way
Newington, NH 03801

13-01A
Mo Y Wong, Living Rev Trust
Mo Y Wong, Trustee
110 Hartford Drive
Portsmouth, NH 03801

13-01
WONG, JOHN
1 Fairway Dr
Dover, NH 03820

13-05A
Rollins Farm Holdings, LLC
35 Hodgdon Ln.
Newington, NH 03801

13-12
Rollins Farm Holdings, LLC
35 Hodgdon Ln.
Newington, NH 03801

13-06A
NEWINGTON FALLS LLC
155 BORTHWICK AVE
SUITE 200 EAST
PORTSMOUTH, NH 03801

19-05
Park River LLC
23 River Rd.
Newington, NH 03801

19-04
LAM, KARLA
801 ENTRAL AVENUE
DOVER, NH 03820

19-03
19 NIMBLE HILL
19 NIMBLE HILL ROAD SUITE 2
NEWINGTON, NH 03801

19-02
The Storage Barn of Newington LLC
35 Hodgdon Ln.
Newington, NH 03801

19-01B
Wal-Mart Stores, Inc. #2398
Property Tax Dept Ms 0555
PO Box 8050
Bentonville, AR 72712-8050

19-01
Wal-Mart Stores, Inc #2398
Property Tax Dept Ms 0555
PO Box 8050
Bentonville, AR 72712-8050

19-01A
2204 WOODBURY AVE LLC
2204 WOODBURY AVENUE
NEWINGTON, NH 03801

26-01
Holy Trinity Lutheran Church
22 Fox Run Rd
Newington, NH 03801

26-02
Rubin Newington, LLC
308 E. Main St.
Norton, MA 02766

26-03
Seritage SRC Finance LLC
c/o Seritage Growth Properties
500 Fifth Avenue, Suite 1530
New York, NY 10110

26-04
SUB HOLDINGS LLC, PENNEY PROPERTY
Po Box 10001
Dallas, TX 75301-1

34-03
RPT CROSSINGS LLC
19 W 44TH STREET
SUITE 1002
NEW YORK, NY 10036

34-03-1
MAG RE HOLDINGS-NEWINGTON LLC
777 WASHINGTON ST
NEWTON, MA 02460

34-03-2
RPT CROSSINGS LLC
19 W 44TH STREET
SUITE 1002
NEW YORK, NY 10036

34-03-3
BUGABOO CREEK OF NEWINGTON
C/O KEYPOINT PARTNERS
ONE BURLINGTON WOODS
BURLINGTON, MA 01803

34-03-4
IHOP PROPERTIES
450 NORTH BRAND BLVD
7TH FLOOR ATTN: TAX DEPT
GLENDALE, CA 91203-1

34-03-5
RPT CROSSINGS LLC
19 W 44TH STREET
SUITE 1002
NEW YORK, NY 10036

34-03-6
BEST BUY STORES LP
7601 PENN AVE S
RICHFIELD, MN 555423-364

GREENLAND

R21-018-000
Keith J Tobin & Emily E Harris
7 Portsmouth Ave.
Greenland, NH 03840

R21-019-000
Robert F & Theresa Krasko
11 Portsmouth Ave.
Greenland, NH 03840

R21-020-000
Mark A & Shawna L Chag
15 Portsmouth Ave.
Greenland, NH 03840

R21-021-000
Robert S Furino
17 Portsmouth Ave.
Greenland, NH 03840

R21-017-000
Marilyn Twombly
703 Narrow Leaf Dr.
Upper Marlborough, MD 20774

R22-015-000
Smith Great Bay Farm Ltd Ptr
PO Box 156
Greenland, NH 03840-0156

R22-033-000
Pease Development Authority
55 International drive
Portsmouth, NH 03801

R22-032-000
Pease Development Authority
55 International drive
Portsmouth, NH 03801

EVERSOURCE ENERGY

December 6, 2022

1700 Lafayette Road
Portsmouth, NH 03801

Michael J Busby
603-436-7708 x555-5678
michael.busby@eversource.com

Craig Langton
Tighe & Bond, Inc.
177 Corporate Drive
Portsmouth, NH 03801

Dear Mr. Langton:

I am responding to your request to confirm the availability of electric service for the proposed 80 Rochester Avenue project being constructed for/by Aviation Avenue Group, LLC.

The proposed project consists of a 1-story ±191,600 SF Manufacturing and approximately 18,144 s/f of office space with at grade parking. The proposed development will be constructed along New Hampshire Avenue.

The developer will be responsible for the installation of all underground/overhead facilities and infrastructure required to service the new building. The service will be as shown on attached marked up Utility Plan C-104, dated 12/6/2022. The proposed building service will be fed from a new transform adjacent to the building as determined by Eversource Engineering as depicted on utility plan C-104, dated 12/6/2022. The developer will work with Eversource to obtain all necessary easements and licenses for the proposed underground/overhead facilities listed above.

This letter serves as confirmation that Eversource has sufficient capacity in the area to provide service to this proposed development. The cost of extending service to the aforementioned location and any associated infrastructure improvements necessary to provide service will be borne by the developer unless otherwise agreed upon.

The attached drawing titled "Overall Utility Plan" sheet C-104 dated 12/6/2022, shows transformer locations to service your proposed project.

Eversource approves the locations shown; assuming the final installed locations meet all clearances, physical protection, and access requirements as outlined in Eversource's "Information & Requirements For Electric Supply" (https://www.eversource.com/content/docs/default-source/pdfs/requirements-for-electric-service-connections.pdf?sfvrsn=2).

If you require additional information or I can be of further assistance please do not hesitate to contact me at our Portsmouth Office, 603-436-7708 Ext. 555-5678

Respectfully.

Michael J. Busby, PE
NH Eastern Regional Engineering and Design Manager, Eversource

cc: (via e-mail)
Thomas Boulter, Eastern Region Operations Manager, Eversource
Nickolai Kosko, Field Supervisor, Electric Design, Eversource

Unitil
Northern Utilities, Inc.

December 1st, 2022

Craig Langton, PE
Project Engineer
Tighe & Bond
177 Corporate Drive Portsmouth, NH

Natural Gas to 100 New Hampshire Ave - Portsmouth, NH

Hi Craig,

Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for natural gas service:

Unitil hereby confirms that natural gas is available for the proposed building at 100 New Hampshire Ave - Portsmouth, NH.

If you have any questions, please contact me at 603-534-2379.

Sincerely,

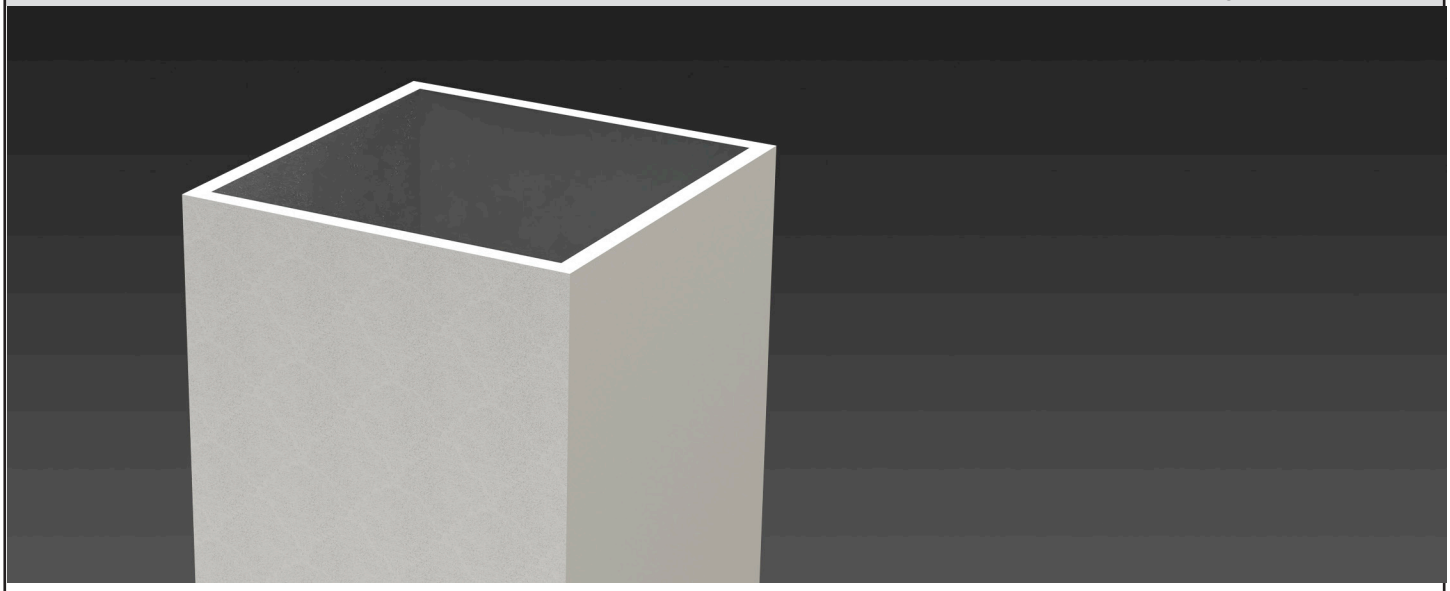
Dave MacLean
Senior Business Development Rep
Unitil

T 603.294.5261
M 603.534.2379
F 603.294.5264
Email macleand@unitil.com

NLS LIGHTING

SSAP

Square Straight Aluminum Pole



Height
10' - 25'

Pole Shaft
Square straight aluminum 6061 alloy, extruded pole shaft. Heat treated to produce a T6 temper. Ground lug welded inside hand hole opposite side of the Pole Extrusion. Pole shaft is welded to base plate on top and bottom of base plate.

Base Plate
Machined from aluminum. The Base Plate vary in size from 3/4" thick for poles 10 to 20 feet, or 1" thick for poles 20 feet and over.

Anchor Bolts
All anchor bolts are hot dipped galvanized steel and come with two galvanized nuts and washers per bolt. Minimum yield strength 50,000 psi. Anchor bolts are not included for Custom Bolt Circle.

Base Cover
All base covers are fabricated two-piece 6063 aluminum and powder coated to match the pole.

Hand-Hole
A reinforced hand-hole is 12" on center from the base plate and is constructed of 3"x 5" rectangular aluminum tubing which is welded to pole shaft for added strength. The hand-hole covers are provided with internal bridge support and powder coated to match pole finish.

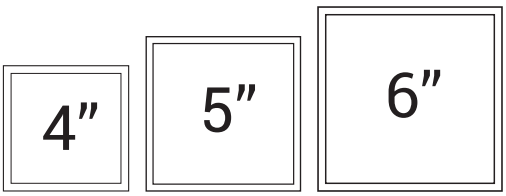
Pole Cap
All poles come with removable polymer pole cap installed. All pole caps are black finish.

Finish
All poles are treated with sand blast media for a near white finish, power blasted with 100 psi prior to powder coat application. Poles are pre-heated then electrostatically applied polyester powder coat with a 3 to 5 mil thickness for maximum adherence.

Marine Grade Finish
All poles are washed through a 5-stage cleaning system with a deionized rinse, a 3 to 5 mils zinc rich durable polyester primer powder coat, followed by a 3 to 5 mils super durable polyester powder coat finish.

Anodized Under Powder
Anodized Under Powder (AUP) poles are dipped in a 3 step process for a clear anodized finish inside and outside of the pole. The final stage is electrostatically applied polyester powder coat with a 3 to 5 mil thickness for maximum adherence.

Vibration Dampener
The Vibration Dampener is factory installed. The Vibration Dampener consists of a rugged galvanized chain coated with heavy duty polyester tubing that is factory secured at the bottom 2-3rds of the pole and field secured by contractor at the base during installation.



Project Name:	Type:

SSAP ORDERING GUIDE

Cat#

Square
Straight
Aluminum Pole
(SSAP)

Height

10′ **(10)**
12′ **(12)**
14′ **(14)**
16′ **(16)**
18′ **(18)**
20′ **(20)**
22′ **(22)**
24′ **(24)**
25′ **(25)**

Pole Dimension

4″ Square
(4S)

5″ Square
(5S)

6″ Square
(6S)

Gauge

.120
Wall Thickness
(120)❶

.188
Wall Thickness
(188)

.25
Wall Thickness
(250)

Base Pattern

(10′-20′)
8 3/16″- 10 3/16″
Bolt Circle
(9BC)

(22′-Over)
11 1/2″- 14″
Bolt Circle
(12BC)

Custom
Bolt Circle
(CBC)
** Consult Factory*

Mounting

Single
(SGL)

Double
(D-90)
(D-180)

Triple
(T-90)

Quad
(QD)

No Drill
(ND)
**Tenon Option*

Tenon

2 3/8″ Round **(T2R)**

3″ Round **(T3R)**

3 1/2″ Round **(T312R)**

4 1/2″ Round **(T412R)**

3 1/2″ Square **(T312S)**

4 1/2″ Square **(T412S)**

5 1/2″ Square **(T512S)**

Color

Bronze Textured
(BRZ)

White Textured
(WHT)

Smooth White
Gloss
(SWT)

Silver
(SVR)

Green Textured
(GRN)

Hunter Green Textured
(HGN)

Black Textured
(BLK)

Smooth Black
Gloss
(SBK)

Graphite Textured
(GPH)

Grey Textured
(GRY)

Custom
(CS)

Bolts

3/4″ x 30″
(3430)

1″ x 36″
(136)

Less Anchor
Bolts
(LAB)

Options

GFI Kit
(GFI20A)
20 Amp
Weather Proof Receptacle

GFI
Provision Only
(PROV)

1/2″ Coupling
(COUP)
** Specify Location*

Vibration Dampener
(VD)

Extra Hand Hole
(XHH)
** Specify Location*

Marine Grade
Finish
(MGF)

Anodized Under Powder
(AUP)

Notes:

❶ .120 Wall Thickness only available in Poles 16′ or shorter.
Pole Dimension of 6″ not available with .120 Wall Thickness.

Max. allowable EPA - SSAP poles (per AASHTO LRFDLTS-1)

Catalog Number	Shaft Length, ft	Wall thick-ness, in.	Shaft dia., in.	Base Plate	Bolt Circle	Bolts	80 mph	Max. wt. (lb)	90 mph	Max. wt. (lb)	100 mph	Max. wt. (lb)	110 mph	Max. wt. (lb)	115 mph	Max. wt., lb	120 mph	Max. wt., lb	130 mph	Max. wt., lb	140 mph	Max. wt., lb	150 mph	Max. wt., lb	160 mph	Max. wt., lb	170 mph	Max. wt., lb	180 mph	Max. wt., lb
SSAP-10-4S-120-9BC	10	0.120	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	8.3	208	7.3	208	6.4	208	5.1	208	4.0	208	3.2	208	2.5	208	1.9	208	1.4	208
SSAP-12-4S-120-9BC	12	0.120	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	6.9	173	5.1	128	4.5	128	4.0	128	3.2	128	2.4	128	1.7	128	1.1	128	0.6	128	--	128
SSAP-14-4S-120-9BC	14	0.120	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	6.0	150	4.6	115	3.3	83	2.8	83	2.5	83	1.5	83	0.8	83	0.2	83	--	83	--	83	--	83
SSAP-15-4S-120-9BC	15	0.120	4	9"sq X 3/4"	9-3/16"	3/4"x30"	7.1	178	4.9	123	3.8	95	2.7	68	2.1	68	1.8	68	1.0	68	0.2	68	--	68	--	68	--	68	--	68
SSAP-16-4S-120-9BC	16	0.120	4	9"sq X 3/4"	9-3/16"	3/4"x30"	5.2	130	3.9	98	2.9	73	1.9	60	1.3	60	0.9	60	0.2	60	--	60	--	60	--	60	--	60	--	60
SSAP-18-4S-120-9BC	18	0.120	4	9"sq X 3/4"	9-3/16"	3/4"x30"	3.7	93	2.6	65	1.6	60	0.7	60	0.3	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-10-4S-188-9BC	10	0.188	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	7.9	225	6.4	225	5.4	225	4.4	225	3.8	225
SSAP-12-4S-188-9BC	12	0.188	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.4	225	6.4	225	5.2	225	4.2	225	3.2	225	2.6	225	2.0	225
SSAP-14-4S-188-9BC	14	0.188	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	7.2	180	6.3	180	5.3	180	4.3	180	3.3	180	2.3	180	1.7	180	1.1	180	0.4	180
SSAP-15-4S-188-9BC	15	0.188	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	8.2	205	5.7	143	5.0	143	4.5	143	3.3	143	2.5	143	1.7	143	1.0	143	0.4	143	--	143
SSAP-16-4S-188-9BC	16	0.188	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	8.8	220	6.0	150	4.6	115	4.0	115	3.3	115	2.5	115	1.5	115	0.9	115	0.3	115	--	115	--	115
SSAP-18-4S-188-9BC	18	0.188	4	9"sq X 3/4"	9-3/16"	3/4"x30"	8.7	218	5.6	140	4.2	105	3.0	75	2.3	75	2.0	75	1.1	75	0.2	75	--	75	--	75	--	75	--	75
SSAP-20-4S-188-9BC	20	0.188	4	9"sq X 3/4"	9-3/16"	3/4"x30"	5.3	133	4.0	100	2.6	65	1.5	60	1.0	60	0.7	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-22-4S-188-12BC	22	0.188	4	12"sq X 1"	12-3/4"	1"x36"	3.6	90	2.3	60	1.2	60	0.4	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-24-4S-188-12BC	24	0.188	4	12"sq X 1"	12-3/4"	1"x36"	2.5	63	1.3	60	0.1	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-25-4S-188-12BC	25	0.188	4	12"sq X 1"	12-3/4"	1"x36"	1.9	60	0.6	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-15-4S-250-9BC	15	0.250	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	8.3	225	7.0	225	5.4	225	4.0	225	3.0	225	1.9	225	1.1	225	0.6	225
SSAP-16-4S-250-9BC	16	0.250	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	7.2	180	6.1	180	5.4	180	4.2	180	3.0	180	2.0	180	1.0	180	0.3	180	--	180
SSAP-18-4S-250-9BC	18	0.250	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	6.6	165	4.9	123	4.1	123	3.5	123	2.4	123	1.3	123	0.4	123	--	123	--	123	--	123
SSAP-20-4S-250-9BC	20	0.250	4	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	6.3	158	4.6	115	3.1	78	2.7	78	2.0	78	0.9	78	--	78	--	78	--	78	--	78	--	78
SSAP-22-4S-250-12BC	22	0.250	4	12"sq X 1"	12-3/4"	1"x36"	5.6	140	4.0	100	2.7	68	1.7	60	1.2	60	0.7	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-24-4S-250-12BC	24	0.250	4	12"sq X 1"	12-3/4"	1"x36"	4.0	100	2.6	65	1.4	60	0.5	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-25-4S-250-12BC	25	0.250	4	12"sq X 1"	12-3/4"	1"x36"	3.3	83	2.1	60	0.8	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60

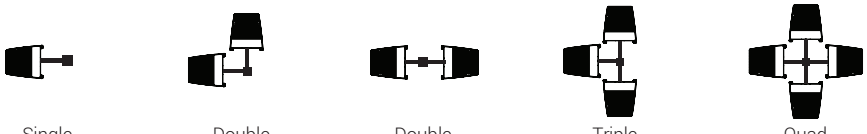
*Pole Assemblies With EPA>9.0 Require Specific Review

4"

***Anchor Bolts are NOT included with Custom Bolt Circle.**
***Do NOT pour concrete referencing this drawing. Consult Factory.**

***All wind loading calculations are based on sustained wind force plus an additional 1.3 gust.**

MOUNTING CONFIGURATION



Single **(SGL)** | Double **(D-90)** | Double **(D-180)** | Triple **(T-90)** | Quad **(QD)**

Max. allowable EPA - SSAP poles (per AASHTO LRFDLTS-1)

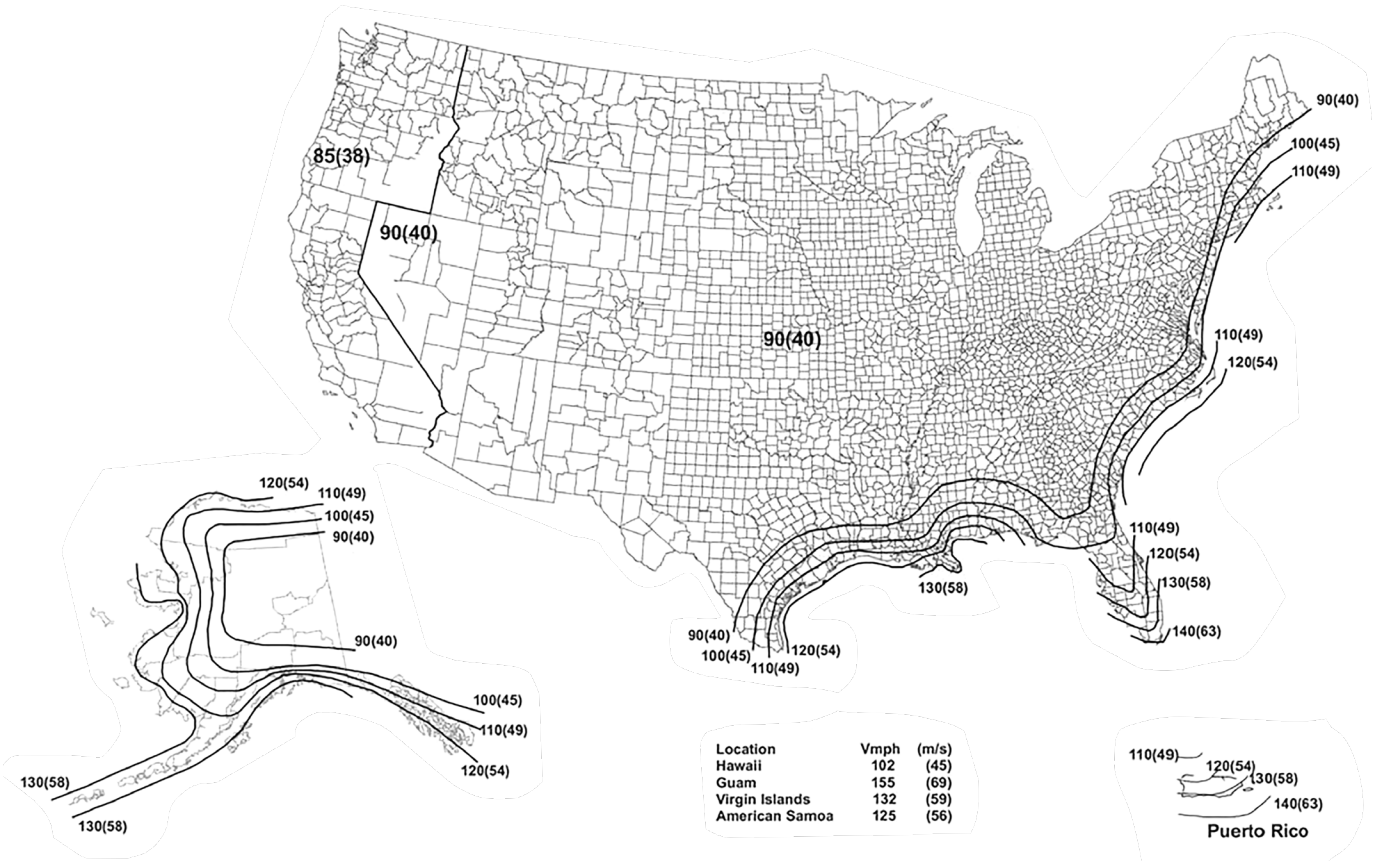
Catalog Number	Shaft Length, ft	Wall thick-ness, in.	Shaft dia., in.	Base Plate	Bolt Circle	Bolts	80 mph	Max. wt. (lb)	90 mph	Max. wt. (lb)	100 mph	Max. wt. (lb)	110 mph	Max. wt. (lb)	115 mph	Max. wt., lb	120 mph	Max. wt., lb	130 mph	Max. wt., lb	140 mph	Max. wt., lb	150 mph	Max. wt., lb	160 mph	Max. wt., lb	170 mph	Max. wt., lb	180 mph	Max. wt., lb
SSAP-10-5S-120-9BC	10	0.120	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.2	225	6.4	225	5.3	225	4.2	225	3.5	225
SSAP-12-5S-120-9BC	12	0.120	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.6	225	6.4	225	4.9	225	3.8	225	3.0	225	2.0	225	1.3	225
SSAP-14-5S-120-9BC	14	0.120	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	7.4	185	6.2	185	5.4	185	3.9	185	2.9	185	1.8	185	1.1	185	0.4	185	--	185
SSAP-15-5S-120-9BC	15	0.120	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	8.4	210	5.9	148	4.9	148	4.2	148	2.9	148	2.0	148	0.9	148	0.3	148	--	148	--	148
SSAP-16-5S-120-9BC	16	0.120	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	6.2	155	4.5	113	3.8	113	3.0	113	2.0	113	0.9	113	0.2	113	--	113	--	113	--	113
SSAP-18-5S-120-9BC	18	0.120	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	6.0	150	4.0	100	2.5	63	1.9	63	1.3	63	0.4	63	--	63	--	63	--	63	--	63	--	63
SSAP-10-5S-188-9BC	10	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	7.7	225	6.1	225	4.9	225	4.1	225
SSAP-12-5S-188-9BC	12	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.0	225	6.1	225	4.7	225	3.7	225	2.6	225	1.9	225
SSAP-14-5S-188-9BC	14	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	8.5	225	7.3	225	5.2	225	3.7	225	2.5	225	1.5	225	0.8	225	0.1	225
SSAP-15-5S-188-9BC	15	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	8.2	205	7.1	205	5.8	205	4.2	205	2.7	205	1.7	205	0.6	205	--	205	--	205
SSAP-16-5S-188-9BC	16	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	6.3	158	5.2	158	4.3	158	2.8	158	1.7	158	0.7	158	--	158	--	158	--	158
SSAP-18-5S-188-9BC	18	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	6.5	163	4.2	105	3.1	105	2.3	105	0.9	105	--	105	--	105	--	105	--	105	--	105
SSAP-20-5S-188-9BC	20	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	7.0	175	4.3	108	2.1	60	1.4	60	0.5	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-22-5S-188-12BC	22	0.188	5	9"sq X 3/4"	9-3/16"	3/4"x30"	7.6	190	4.4	110	2.1	60	0.2	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-24-5S-188-12BC	24	0.188	5	12"sq X 1"	12-3/4"	1"x36"	6.9	173	4.1	103	2.5	63	0.9	60	0.2	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-25-5S-188-12BC	25	0.188	5	12"sq X 1"	12-3/4"	1"x36"	5.4	135	3.3	83	1.6	60	0.3	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-10-5S-250-9BC	10	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	7.7	193	6.1	153	4.9	123	4.1	103
SSAP-12-5S-250-9BC	12	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.0	200	6.1	153	4.7	118	3.7	93	2.6	65	1.9	60
SSAP-14-5S-250-9BC	14	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	8.5	213	7.3	183	5.2	130	3.7	93	2.5	63	1.5	60	0.8	60	0.1	60
SSAP-15-5S-250-9BC	15	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	8.2	205	7.1	178	5.8	145	4.2	105	2.7	68	1.7	60	0.6	60	--	60	--	60
SSAP-16-5S-250-9BC	16	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	6.3	158	5.2	130	4.3	108	2.8	70	1.7	60	0.7	60	--	60	--	60	--	60
SSAP-18-5S-250-9BC	18	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	6.5	163	4.2	105	3.1	78	2.3	60	0.9	60	--	60	--	60	--	60	--	60	--	60
SSAP-20-5S-250-9BC	20	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	7.0	175	4.3	108	2.1	60	1.4	60	0.5	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-22-5S-250-12BC	22	0.250	5	9"sq X 3/4"	9-3/16"	3/4"x30"	7.6	190	4.4	110	2.1	60	0.2	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-24-5S-250-12BC	24	0.250	5	12"sq X 1"	12-3/4"	1"x36"	9.0	225	7.9	198	5.0	125	3.2	80	2.4	60	1.7	60	0.4	60	--	60	--	60	--	60	--	60	--	60
SSAP-25-5S-250-12BC	25	0.250	5	12"sq X 1"	12-3/4"	1"x36"	9.0	225	6.4	160	4.1	103	2.2	60	1.6	60	0.9	60	--	60	--	60	--	60	--	60	--	60	--	60

*Pole Assemblies With EPA>9.0 Require Specific Review

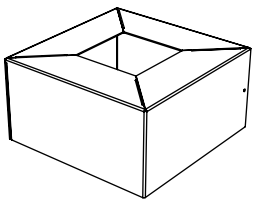


Max. allowable EPA - SSAP poles (per AASHTO LRFDLTS-1)																																
Catalog Number	Shaft Length, ft	Wall thick-ness, in.	Shaft dia., in.	Base Plate	Bolt Circle	Bolts	80 mph	Max. wt. (lb)	90 mph	Max. wt. (lb)	100 mph	Max. wt. (l b)	110 mph	Max. wt. (lb)	115 mph	Max. wt., lb	120 mph	Max. wt., lb	130 mph	Max. wt., lb	140 mph	Max. wt., lb	150 mph	Max. wt., lb	160 mph	Max. wt., lb	170 mph	Max. wt., lb	180 mph	Max. wt., lb
SSAP-10-6S-120-9BC	10	0.120	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.4	210	6.6	165	5.2	130	4.2	105	3.1	78
SSAP-12-6S-120-9BC	12	0.120	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	7.0	175	5.2	130	3.8	95	2.5	63	1.7	60	0.7	60
SSAP-14-6S-120-9BC	14	0.120	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	8.4	210	7.2	180	6.0	150	4.0	100	2.5	63	1.3	60	0.3	60	--	60	--	60
SSAP-16-6S-120-9BC	16	0.120	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	7.6	190	4.9	123	3.9	98	3.1	78	1.7	60	0.3	60	--	60	--	60	--	60	--	60
SSAP-18-6S-120-9BC	18	0.120	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	8.0	200	4.8	120	2.8	70	1.7	60	0.9	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-20-6S-120-12BC	20	0.120	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	8.8	220	5.3	133	3.4	85	2.5	60	1.7	60	0.3	60	--	60	--	60	--	60	--	60	--	60
SSAP-22-6S-120-12BC	22	0.120	6	12"sq X 1"	12-3/4"	1"x36"	8.8	220	5.0	125	3.0	60	1.1	60	0.5	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-24-6S-120-12BC	24	0.120	6	12"sq X 1"	12-3/4"	1"x36"	5.2	60	3.0	60	1.2	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-25-6S-120-12BC	25	0.120	6	12"sq X 1"	12-3/4"	1"x36"	4.4	60	2.1	60	0.2	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-10-6S-188-9BC	10	0.188	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.4	210	6.6	165	5.2	130	4.2	105	3.1	78
SSAP-12-6S-188-9BC	12	0.188	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	7.0	175	5.2	130	3.8	95	2.5	63	1.7	60	0.7	60
SSAP-14-6S-188-9BC	14	0.188	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	8.4	210	7.2	180	6.0	150	4.0	100	2.5	63	1.3	60	0.3	60	--	60	--	60
SSAP-16-6S-188-9BC	16	0.188	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	7.8	195	5.1	128	4.1	103	3.2	80	1.5	60	0.4	60	--	60	--	60	--	60	--	60
SSAP-18-6S-188-9BC	18	0.188	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	8.2	205	5.0	125	2.6	65	1.8	60	1.0	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-20-6S-188-12BC	20	0.188	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	9.0	225	9.0	225	8.7	218	7.1	178	5.5	138	3.3	83	1.5	60	--	60	--	60	--	60	--	60
SSAP-22-6S-188-12BC	22	0.188	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	9.0	225	8.4	210	5.1	128	4.0	100	2.7	68	0.8	60	--	60	--	60	--	60	--	60	--	60
SSAP-24-6S-188-12BC	24	0.188	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	9.0	225	5.8	145	2.9	73	1.6	60	0.7	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-25-6S-188-12BC	25	0.188	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	8.3	208	4.6	115	1.8	60	0.5	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-10-6S-250-9BC	10	0.250	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	8.4	210	6.6	165	5.2	130	4.2	105	3.1	78
SSAP-12-6S-250-9BC	12	0.250	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	9.0	225	7.0	175	5.2	130	3.8	95	2.5	63	1.7	60	0.7	60
SSAP-14-6S-250-9BC	14	0.250	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	9.0	225	8.4	210	7.2	180	6.0	150	4.0	100	2.5	63	1.3	60	0.3	60	--	60	--	60
SSAP-16-6S-250-9BC	16	0.250	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	9.0	225	7.8	195	5.1	128	4.1	103	3.2	80	1.5	60	0.4	60	--	60	--	60	--	60	--	60
SSAP-18-6S-250-9BC	18	0.250	6	9"sq X 3/4"	9-3/16"	3/4"x30"	9.0	225	8.2	205	5.0	125	2.6	65	1.8	60	1.0	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-20-6S-250-12BC	20	0.250	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	9.0	225	9.0	225	8.7	218	7.1	178	5.5	138	3.3	83	1.5	60	--	60	--	60	--	60	--	60
SSAP-22-6S-250-12BC	22	0.250	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	9.0	225	8.4	210	5.1	128	4.0	100	2.7	68	0.8	60	--	60	--	60	--	60	--	60	--	60
SSAP-24-6S-250-12BC	24	0.250	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	9.0	225	5.8	145	2.9	73	1.6	60	0.7	60	--	60	--	60	--	60	--	60	--	60	--	60
SSAP-25-6S-250-12BC	25	0.250	6	12"sq X 1"	12-3/4"	1"x36"	9.0	225	8.3	208	4.6	115	1.8	60	0.5	60	--	60	--	60	--	60	--	60	--	60	--	60	--	60
*Pole Assemblies With EPA>9.0 Require Specific Review																														

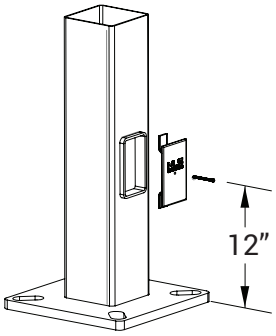




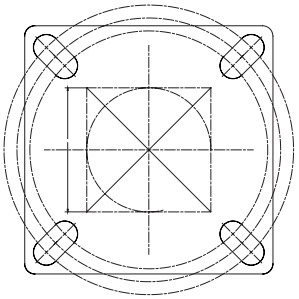
1) All wind load calculations are based on sustained wind force plus and additional 1.3 gust
2) Wind Map is to be used as a reference only. Please coordinate with local agencies for further review.
3) Wind Map values are based on a 50 year mean recurrence. These values do not account for severe conditions, such as hurricanes, tornadoes, etc…
4) For review of poles with additional configurations (arms, banners, shorter/longer pole lengths, etc…), please contact factory.



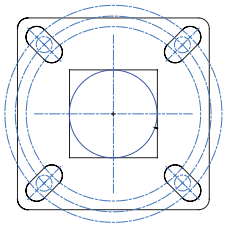
Base Cover



Base Detail



12″ Base Detail



9″ Base Detail

NLS LIGHTING

NV-1

AREA, SITE & ROADWAY



FORM AND FUNCTION

- Sleek, low profile housing
- Spec grade performance
- Engineered for optimum thermal management
- Low depreciation rate
- Reduces energy consumption and costs up to 65%
- Exceeds IES foot candle levels utilizing the least number of poles and fixtures per project
- Optical system designed for:
  - Parking Lots
  - Auto Dealerships
  - General Area Lighting

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP-65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP-67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

FINISH

- 3-5 mils electrostatic powder coat.
- NLS' standard high-quality finishes prevent corrosion, protects against extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

PROUDLY MADE IN THE USA

LED WATTAGE CHART

	16L	32L	48L	64L
350 milliamps	18w	-	-	-
530 milliamps	28w	-	-	-
700 milliamps	36w	71w	104w	136w
1050 milliamps	56w	106w	156w	205w

Project Name:

Type:

Cat#	Light Dist.	# of LEDs	Milliamps	Kelvin	Volts	Mounting	Color	Options
NV-1 **(NV-1)**	Type 2 **(T2)** Type 3 **(T3)** Type 4 **(T4)** Type 5 **(T5)** Nema 2 24° Narrow Beam **(N2)** Nema 3 30° Narrow Beam **(N3)**	16 **(16L)** 32 **(32L)** 48 **(48L)** 64 **(64L)**	350 **(35)** 530 **(53)** 700 **(7)** 1050 **(1)**	2700K, 70 CRI **(27K7)**❻ 2700K, 80 CRI **(27K8)**❶❻ 3000K, 70 CRI **(30K7)**❻ 3000K, 80 CRI **(30K8)**❶❻ 3500K, 80 CRI **(35K8)** 4000K, 70 CRI **(40K7)** 4000K, 80 CRI **(40K8)**❶ 5000K, 70 CRI **(50K7)** 5000K, 80 CRI **(50K8)**❶	120-277 **(UNV)** 347-480 **(HV)**	Architectural Sweep Arm **(ASA)** Direct Pole 3" Arm Single, D180 **(DPS3)**❷ Direct Pole 7" Arm D180, D90, T90, T120, Quad **(DPS7)**❷ Knuckle Mount **(KM)** Wall Mount **(WM)** Trunnion Mount **(TM)**❸ Tennis Arm **(TA)** Mast Arm **(MA)**	Bronze Textured **(BRZ)** White Textured **(WHT)** Smooth White Gloss **(SWT)** Silver **(SVR)** Black Textured **(BLK)** Smooth Black Gloss **(SBK)** Graphite Textured **(GPH)** Grey Textured **(GRY)** Custom **(CS)**	Bird Spikes **(BS)** Marine Grade Finish **(MGF)** Optic Plate Painted to Match Fixture **(OPP)** Nema 7-Pin Receptacle **(PE7)** Photocell + Receptacle **(PCR)** Receptacle + Shorting Cap **(PER)** FSP-211 with Motion Sensor **(FSP-20)**❹ *9'-20" Heights* **(FSP-40)**❹ *21'-40' Heights* Quick Mount Bracket **(QMB)** Retrofit Mount Bracket **(RQMB)** Round Pole Adaptor 3"- 4" Pole **(RPA4)** Round Pole Adaptor 5"- 6" Pole **(RPA5)** Rotated Optic Left **(ROL)** Rotated Optic Right **(ROR)** Automotive House Side Shield **(AHS)** House Side Shield **(HSS)**❺ Black Hardware **(BH)** Black Optic Frame **(BOF)**

Notes:

❶ Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
❷ For Round Pole Specify RPA4 or RPA5
❸ Standard finish is stainless steel. Can be painted to match fixture
❹ Universal Voltage 120-277
❺ HSS not applicable with Nema 2 and Nema 3 Optics
❻ 3000K or lower must be selected to meet International Dark-Sky Association certification.

PRODUCT SPECIFICATIONS

ELECTRICAL
- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
- LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it.
- All internal wiring UL certified for 600 VAC and 105°C
- All drivers, controls, and sensors housed in enclosed IP65 compartment
- CRI 70, 80 or 90
- Color temperatures: 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KVA supplied as standard.

CONSTRUCTION
- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

OPTIONS

- BIRD SPIKES (BS) - Offers a practical and humane deterrent for larger bird species and provides a cost-effective long-term solution to nuisance bird infestations and protects your property.

- MARINE GRADE FINISH (MGF) - A multi-step process creating protective finishing coat against harsh environments. Chemically washed in a 5 stage cleaning system. Pre-baked, Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.

- OPTIC PLATE PAINTED TO MATCH FIXTURE (OPP) - Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.

- QUICK MOUNT BRACKET (QMB) - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2″x4″ Drill Pattern.

- RETROFIT MOUNT BRACKET - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2″x4″ to 2″x6″.

- ROUND POLE ADAPTER (RPA) - When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3″-4″ round poles, and RPA5 when installing on 5″-6″ round poles.

- ROTATED OPTICS (ROL) (ROR) - Rotated optics are designed for perimeter lighting for auto dealerships.

- SHIELDS (HSS, AHS) - House Side Shield (HSS) is designed for full property line cut-off. Automotive House Side Shield (AHS) is a single-sided shield allowing partial cut-off on either side or front of luminaire.

- BLACK HARDWARE (BH) - Optional black, zinc coated steel hardware.

- BLACK OPTIC FRAME (BOF) - Optional black optic frame. Standard is white.

CONTROL OPTIONS
- FSP-211 (FSP-X) - Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet.
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.
  - FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering.

- Controls Agnostics: Please contact factory for your preferred controls option.

- NEMA 7-PIN RECEPTACLE (PE7)—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.

- PHOTOCELL + RECEPTACLE (PCR)—7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.

- RECEPTACLE + SHORTING CAP (PER)—7-Pin Receptacle and Shorting Cap.

FINISH
- 3-5 mils electrostatic powder coat.
- NLS Light's standard high-quality finishes prevent corrosion protects against and extreme environmental conditions

WARRANTY
Five-year limited warranty for drivers and LEDs.

OPTICS
Silicone optics high thermal stability and light output provide higher powered LEDs with minimized lumen depreciation. UV stability with scratch resistance increases exterior application durability. Silicone optics do not yellow, crack or brittle over time

LISTINGS
- Certified to UL 1598
- UL 8750
- CSA C22.2 No. 250.0
- DesignLights Consortium® (DLC)
- DesignLights Consortium Premium® (DLCP)
- IP65/ IP67 Rated
- 3G Vibration Rated per ANSI C136.31-2010
- IDA Dark Sky Approved
- IK10 Rated



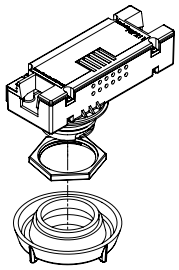
The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.

NLS LIGHTING
701 Kingshill Place, Carson, CA 90746
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nlslighting.com

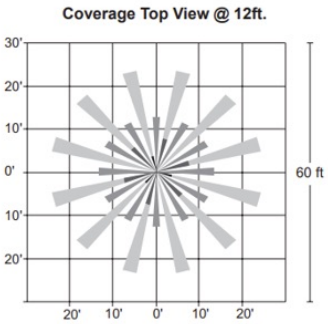
PRODUCT SPECIFICATIONS

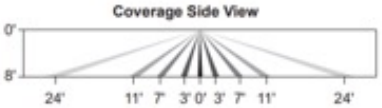
CONTROLS

- **DIMMING CONTROL (FSP)**—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-8 mounting heights 8 feet and below
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet.
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.

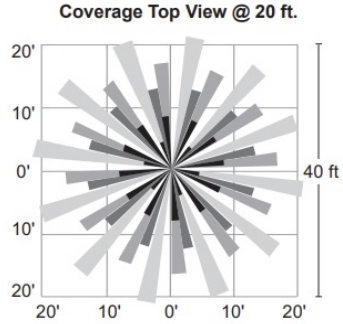


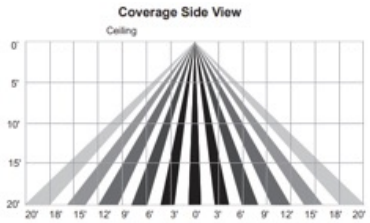
FSP-8



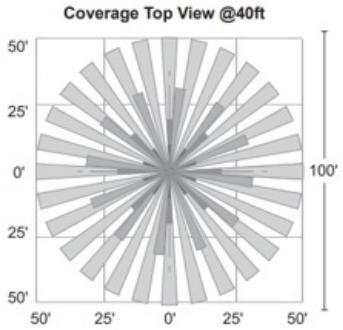


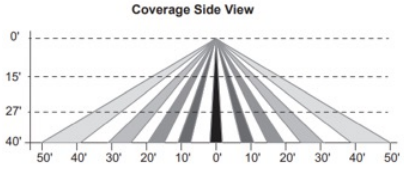
FSP-20



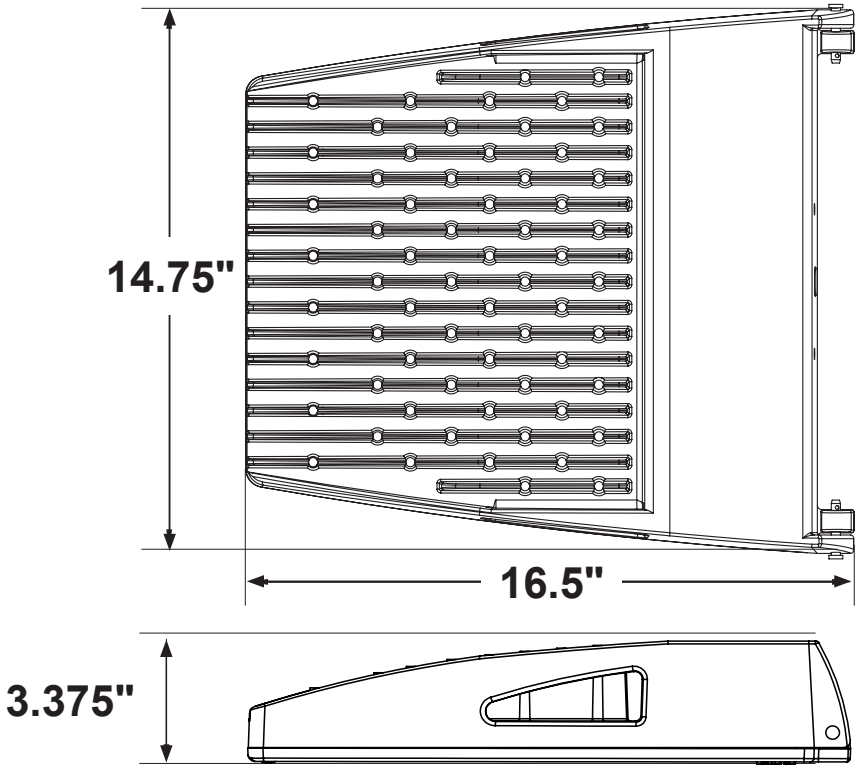


FSP-40





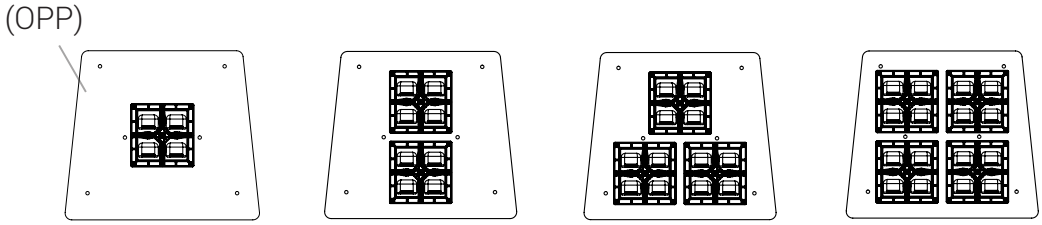
PRODUCT SPECIFICATIONS



Weight: 24 lbs

OPTICAL CONFIGURATIONS

Rotatable Optics (ROR) Rotated Right, (ROL) Rotated Left options available. Optics field and factory rotatable.



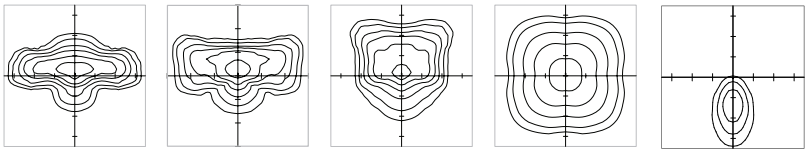
NV-1 / 16L **NV-1 / 32L** **NV-1 / 48L** **NV-1 / 64L**

*** OPTIC PLATE PAINTED TO MATCH FIXTURE FINISH (OPP)**– Optic Plate standard clear anodized, Grade 2. When (OPP) specified, Optic Plate finish will match fixture finish.

OPTICS

Silicone optics high photothermal stability and light output provides higher powered LEDs with minimized lumen depreciation LED life. UV and thermal stability with scratch resistance increases exterior application durability.

- IES Types

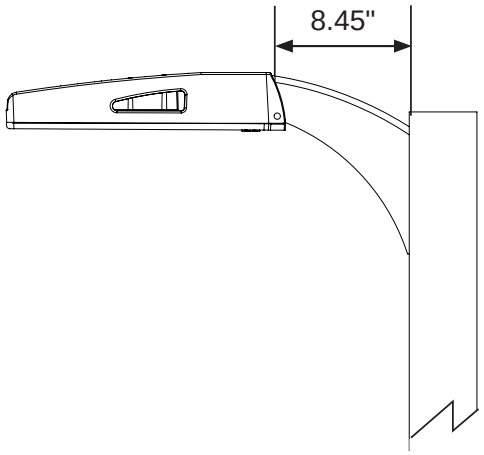


TYPE II (T2) TYPE III (T3) TYPE IV (T4) TYPE V (T5) NEMA 3 (N3)

MOUNTING OPTIONS

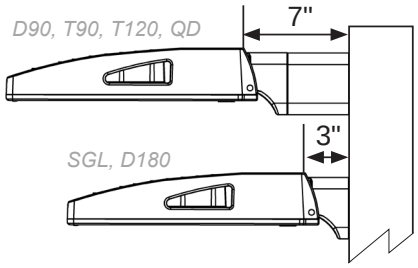
ARCHITECTURAL SWEEP ARM (ASA)

Cast Sweep Arm includes (as standard)
Internal Quick Mount Bracket.



DIRECT POLE (DP)

Standard mounting arm is extruded aluminum in lengths of 3" and 7".
**Arm lengths may vary depending on configuration*

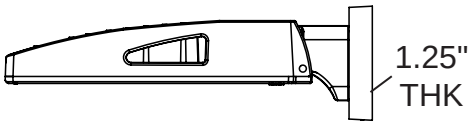


DPX ARM LENGTH

DPX ARM LENGTH	SGL	D90	D180	D180	T90	T120	QD
NV-1	3"	7"	3"	7"	7"	7"	7"

WALL MOUNT (WM)

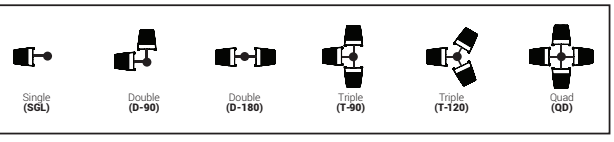
Cast Aluminum Plate for direct wall mount. 3" extruded aluminum arm mounts directly to a cast wall mount box.



EPA

EPA	SGL	D90	D180	T90	T120	QD
NV-1-DP3	0.46		0.92			
NV-1-DP7		1.14	1.05	1.34	1.37	1.34
NV-1-KM	0.54	N/A	1.08	N/A	N/A	N/A
NV-1-ASA	0.75	1.29	1.50	1.99	2.05	1.99

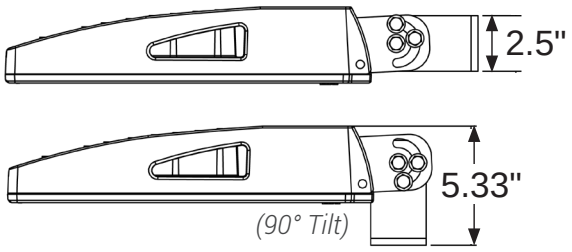
MOUNTING CONFIGURATION



MOUNTING OPTIONS

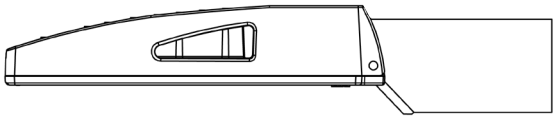
TRUNNION MOUNT (TM)

Steel, bolt-on-mounting for adjustable installation with a maximum uplift of 90 degrees.
**Unpainted stainless steel is standard*



TENNIS ARM (TA)

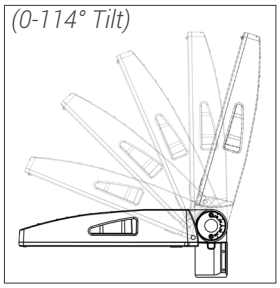
Steel fitter slips over 3.5" x 1.5" rectangular arm.
**See Tennis Arm Spec Sheet for details*

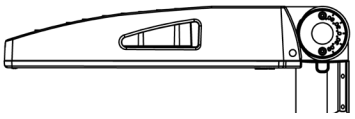


KNUCKLE MOUNT (KM)

Die Cast Knuckle great for adjustable installation on 2-3/8" OD vertical or horizontal tenon.

- Max Up-tilt of 90 degrees
- Adjustable in 6 degree increments
- 1.5G Vibration Rated per ANSI C136.31-2010



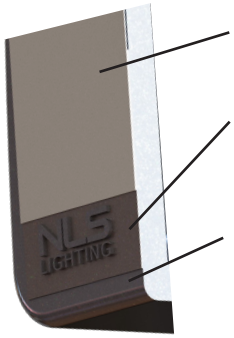


BIRD SPIKES (BS)

Bird Spikes offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations and protect your property.

MARINE GRADE FINISH (MGF)

The **(MGF)** is a multi step process. Chemically washed in a 5 stage cleaning system. Pre-baked. Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.



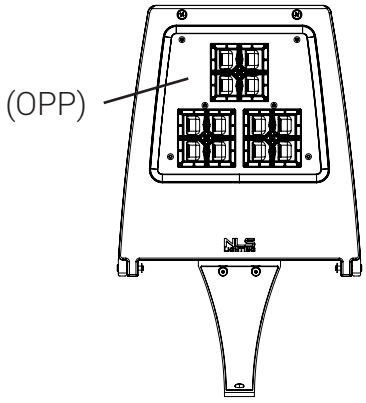
Powder Coat Finish
3-5mm Powder Coat

Primer Layer
3-5mm Zinc Rich
Super Durable Polyester Primer

Prepared Casting
Chemically washed in multi Step 5 stage cleaning process

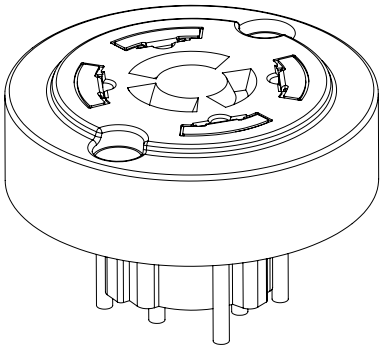
OPTIC PLATE PAINTED TO MATCH (OPP)

Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.



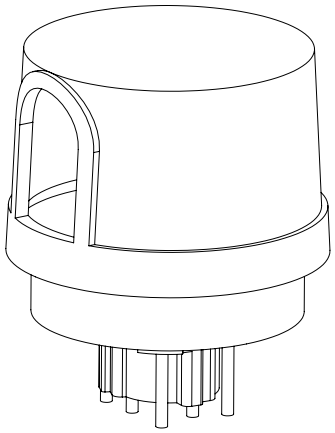
NEMA 7-PIN RECEPTACLE (PE7)

An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.



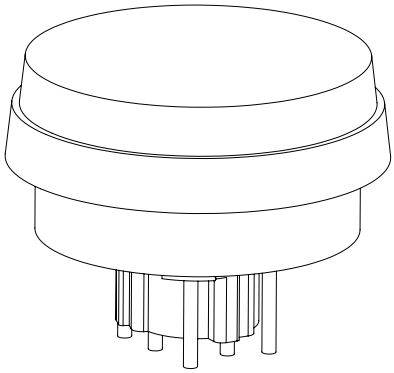
PHOTOCELL + RECEPTACLE (PCR)

7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.



RECEPTACLE + SHORTING CAP (PER)

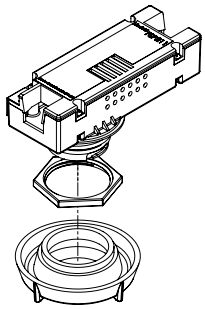
7-Pin Receptacle and Shorting Cap.



FSP-211 WITH MOTION SENSOR (FSP-XX)

- FSP-211 (FSP-X)—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet.
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.

FSP-211



QUICK MOUNT BRACKET (QMB)

Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2”x4” Drill Pattern.



RETROFIT MOUNT BRACKET (RQMB)

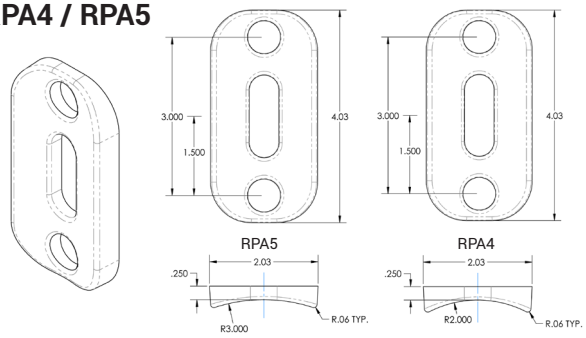
Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2"x4" to 2"x6".



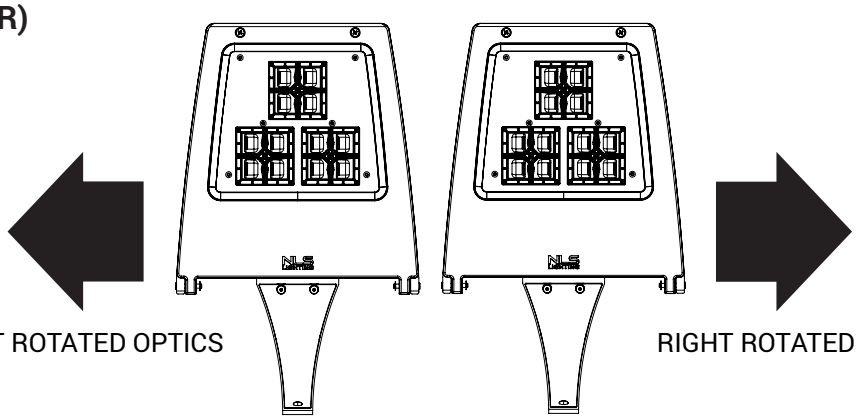
ROUND POLE ADAPTER OPTIONS (RPA4) (RPA5)

When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles.

RPA4 / RPA5



ROTATED OPTICS (ROL) (ROR)



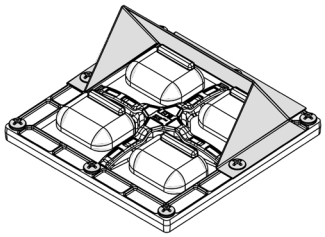
LEFT ROTATED OPTICS

RIGHT ROTATED OPTICS

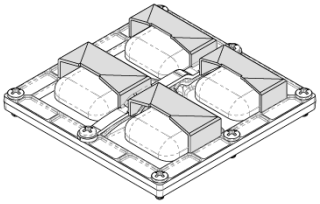
SHIELDING OPTIONS (AHS) (HSS)

SHIELDS (HSS, AHS)—House Side Shield (HSS) is designed for full property line cut-off. Automotive House Side Shield (AHS) is a single-sided shield allowing partial cut-off on either side or front of luminaire.

AUTOMOTIVE HOUSE SIDE SHIELD

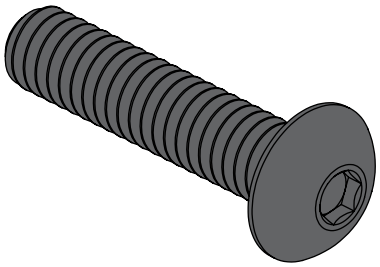


HOUSE SIDE SHIELD



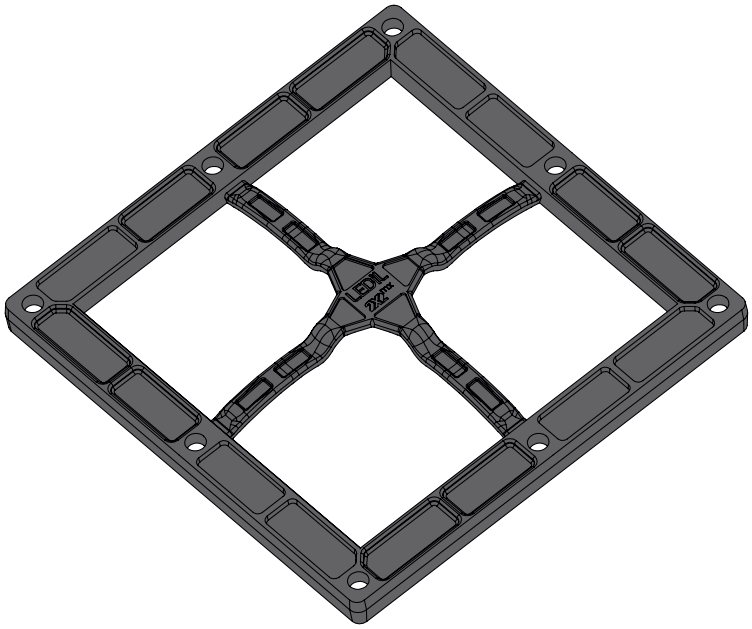
BLACK HARDWARE

Optional black, zinc coated steel hardware.



BLACK OPTIC FRAME

Optional Black Optic Frame.
Standard is white.



LUMENS

PART NUMBER	N3	LM/W	T2	LM/W	DLC	T3	LM/W	DLC	T3 HSS	LM/W	T4	LM/W	DLC	T4 AHS	LM/W	T4 HSS	LM/W	T5	LM/W	DLC	W
NV-1-16L-35-30K7	2016	112	2106	117	P	2106	117	P	1134	63	2187	116	P	1296	72	1116	62	2231	118	P	18
NV-1-16L-35-40K7	2088	116	2268	126	P	2286	127	P	1206	67	2250	125	P	1368	76	1188	66	2304	128	P	18
NV-1-16L-35-50K7	2160	120	2376	132	P	2394	133	P	1278	71	2358	131	P	1440	80	1260	70	2412	134	P	18
NV-1-16L-53-30K7	3136	112	3192	114	P	3220	115	P	1764	63	3119	113	P	2016	72	1736	62	3248	116	P	28
NV-1-16L-53-40K7	3248	116	3472	124	P	3472	124	P	1876	67	3444	123	P	2128	76	1848	66	3500	125	P	28
NV-1-16L-53-50K7	3360	120	3612	129	P	3640	130	P	1988	71	3584	128	P	2240	80	1960	70	3668	131	P	28
NV-1-16L-7-30K7	4032	112	3960	110	P	3960	110	P	2268	63	3973	109	P	2592	72	2232	62	3996	111	P	36
NV-1-16L-7-40K7	4176	116	4428	123	P	4284	119	P	2412	67	4212	117	P	2736	76	2376	66	4320	120	P	36
NV-1-16L-7-50K7	4320	120	4644	129	P	4500	125	P	2556	71	4428	123	P	2880	80	2520	70	4500	125	P	36
NV-1-16L-1-30K7	6272	112	6160	110	S	6384	114	P	3528	63	6232	112	P	4032	72	3472	62	6440	115	P	56
NV-1-16L-1-40K7	6496	116	6832	122	P	6888	123	P	3752	67	6776	121	P	4256	76	3696	66	6944	124	P	56
NV-1-16L-1-50K7	6720	120	7168	128	P	7224	129	P	3976	71	7112	127	P	4480	80	3920	70	7280	130	P	56
NV-1-32L-7-30K7	7952	112	7810	110	S	7810	110	S	4473	63	7739	109	S	5112	72	4402	62	7881	111	S	71
NV-1-32L-7-40K7	8236	116	9017	127	P	8449	119	P	4757	67	8307	117	P	5396	76	4686	66	8520	120	P	71
NV-1-32L-7-50K7	8520	120	9159	129	P	8875	125	P	5041	71	8733	123	P	5680	80	4970	70	8946	126	P	71
NV-1-32L-1-30K7	11872	112	11660	110	S	12084	114	S	6678	63	11820	112	S	7632	72	6572	62	12190	115	S	106
NV-1-32L-1-40K7	12296	116	12932	122	P	13038	123	P	7102	67	12826	121	P	8056	76	6996	66	13144	124	P	106
NV-1-32L-1-50K7	12720	120	13568	128	P	13674	129	P	7526	71	13462	127	P	8480	80	7420	70	13780	130	P	106
NV-1-48L-7-30K7	11648	112	11440	110	S	11440	110	S	6552	63	11336	109	S	7488	72	6448	62	11544	111	S	104
NV-1-48L-7-40K7	12064	116	13208	127	P	12376	119	P	6968	67	12168	117	P	7904	76	6864	66	12480	120	P	104
NV-1-48L-7-50K7	12480	120	13520	130	P	13000	125	P	7384	71	12792	123	P	8320	80	7280	70	13104	126	P	104
NV-1-48L-1-30K7	17472	112	17160	110	S	17784	114	S	9828	63	17472	112	S	11232	72	9672	62	17940	115	S	156
NV-1-48L-1-40K7	18096	116	19032	122	P	19188	123	P	10452	67	18876	121	P	11856	76	10296	66	19344	124	P	156
NV-1-48L-1-50K7	18720	120	19968	128	P	20124	129	P	11076	71	19812	127	P	12480	80	10920	70	20280	130	P	156
NV-1-64L-7-30K7	15232	112	14960	110	S	14960	110	S	8568	63	14824	109	S	9792	72	8432	62	15096	111	S	136
NV-1-64L-7-40K7	15776	116	17272	127	P	16184	119	P	9112	67	15912	117	P	10336	76	8976	66	16320	120	P	136
NV-1-64L-7-50K7	16320	120	17680	130	P	17000	125	P	9656	71	16728	123	P	10880	80	9520	70	17136	126	P	136
NV-1-64L-1-30K7	22960	112	22550	110	S	23370	114	S	12915	63	22960	112	S	14760	72	12710	62	23575	115	S	205
NV-1-64L-1-40K7	23780	116	25010	122	P	25215	123	P	13735	67	24805	121	P	15580	76	13530	66	25420	124	P	205
NV-1-64L-1-50K7	24600	120	26240	128	P	26445	129	P	14555	71	26035	127	P	16400	80	14350	70	26650	130	P	205

3000k or warmer must be selected to meet International Dark-Sky Association certification.

BUG RATINGS

PART NUMBER	T2	T3	T3 HSS	T4	T4 HSS	T5
NV-1-16L-35-30K7	B1-U0-G1	B1-U0-G1	B0-U0-G0	B1-U0-G1	B0-U0-G0	B2-U0-G0
NV-1-16L-35-40K7	B1-U0-G1	B1-U0-G1	B0-U0-G0	B1-U0-G1	B0-U0-G0	B2-U0-G0
NV-1-16L-35-50K7	B1-U0-G1	B1-U0-G1	B0-U0-G0	B1-U0-G1	B0-U0-G0	B2-U0-G2
NV-1-16L-53-30K7	B1-U0-G1	B1-U0-G1	B0-U0-G1	B1-U0-G1	B0-U0-G1	B2-U0-G1
NV-1-16L-53-40K7	B1-U0-G1	B1-U0-G1	B0-U0-G1	B1-U0-G1	B0-U0-G1	B2-U0-G1
NV-1-16L-53-50K7	B1-U0-G1	B1-U0-G1	B0-U0-G1	B1-U0-G1	B0-U0-G1	B2-U0-G1
NV-1-16L-7-30K7	B1-U0-G1	B1-U0-G1	B0-U0-G1	B1-U0-G1	B0-U0-G1	B3-U0-G1
NV-1-16L-7-40K7	B1-U0-G1	B1-U0-G1	B0-U0-G1	B1-U0-G1	B0-U0-G1	B3-U0-G1
NV-1-16L-7-50K7	B1-U0-G1	B1-U0-G1	B0-U0-G1	B1-U0-G1	B0-U0-G1	B3-U0-G1
NV-1-16L-1-30K7	B1-U0-G1	B1-U0-G1	B0-U0-G1	B1-U0-G1	B0-U0-G1	B3-U0-G1
NV-1-16L-1-40K7	B1-U0-G1	B2-U0-G2	B0-U0-G1	B2-U0-G2	B0-U0-G1	B3-U0-G2
NV-1-16L-1-50K7	B1-U0-G2	B2-U0-G2	B0-U0-G1	B2-U0-G2	B0-U0-G1	B3-U0-G2
NV-1-32L-7-30K7	B1-U0-G2	B2-U0-G2	B0-U0-G1	B2-U0-G2	B0-U0-G1	B3-U0-G2
NV-1-32L-7-40K7	B1-U0-G2	B2-U0-G2	B0-U0-G1	B2-U0-G2	B0-U0-G2	B3-U0-G2
NV-1-32L-7-50K7	B2-U0-G2	B2-U0-G2	B0-U0-G2	B2-U0-G2	B0-U0-G2	B3-U0-G2
NV-1-32L-1-30K7	B2-U0-G2	B2-U0-G2	B0-U0-G2	B2-U0-G2	B0-U0-G2	B4-U0-G2
NV-1-32L-1-40K7	B2-U0-G2	B2-U0-G2	B0-U0-G2	B3-U0-G2	B0-U0-G2	B4-U0-G2
NV-1-32L-1-50K7	B2-U0-G2	B3-U0-G3	B0-U0-G2	B3-U0-G3	B0-U0-G2	B4-U0-G2
NV-1-48L-7-30K7	B2-U0-G2	B2-U0-G2	B0-U0-G2	B2-U0-G2	B0-U0-G2	B4-U0-G2
NV-1-48L-7-40K7	B2-U0-G2	B2-U0-G2	B0-U0-G2	B2-U0-G2	B0-U0-G2	B4-U0-G2
NV-1-48L-7-50K7	B2-U0-G2	B3-U0-G3	B0-U0-G2	B2-U0-G2	B0-U0-G2	B4-U0-G2
NV-1-48L-1-30K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B4-U0-G2
NV-1-48L-1-40K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B5-U0-G3
NV-1-48L-1-50K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B5-U0-G3
NV-1-64L-7-30K7	B2-U0-G2	B3-U0-G3	B0-U0-G2	B3-U0-G3	B1-U0-G2	B4-U0-G2
NV-1-64L-7-40K7	B3-U0-G3	B3-U0-G3	B0-U0-G2	B3-U0-G3	B1-U0-G2	B4-U0-G2
NV-1-64L-7-50K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B4-U0-G2
NV-1-64L-1-30K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G3	B5-U0-G3
NV-1-64L-1-40K7	B3-U0-G3	B3-U0-G3	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G3
NV-1-64L-1-50K7	B3-U0-G3	B3-U0-G3	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G3

Lumen Maintenance Data							
Ambient Temperature	Drive Current	L90 Hours*	L70 Hours**	30,000 Hours*	50,000 Hours*	60,00 Hours*	100,000 Hours**
25°C	Up to 700mA	58,000	173,000	95.7%	91.6%	89.6%	82.1%
	1050mA	48,000	143,000	94.3%	89.5%	87.2%	78.5%

*Reported extrapolations per IESNA TM-21 **Projected extrapolations per IESNA TM-21

NV-2

AREA LIGHTING

FORM AND FUNCTION
- Sleek, low profile housing
- Spec grade performance
- Engineered for optimum thermal management
- Low depreciation rate
- Reduces energy consumption and costs up to 65%
- Exceeds IES foot candle levels utilizing the least number of poles and fixtures per project
- Optical system designed for:
  - Parking Lots
  - Auto Dealerships
  - General Area Lighting

CONSTRUCTION
- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP-65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP-67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

FINISH
- 3-5 mils electrostatic powder coat.
- NLS' standard high-quality finishes prevent corrosion protects against and extreme environmental conditions

WARRANTY
Five-year limited warranty for drivers and LEDs.


NV-2 with DPS6

LISTINGS
- Certified to UL 1598
- UL 8750
- CSA C22.2 No. 250.0
- DesignLights Consortium® (DLC)
- DesignLights Consortium Premium® (DLCP)
- IP65/ IP67 Rated
- 3G Vibration Rated per ANSI C136.31-2010
- IDA Dark Sky Approved

LED WATTAGE CHART

	80L	96L	112L	128L
700 milliamps	168w	200w	243w	265w
1050 milliamps	263w	316w	366w	409w

Project Name:

Type:

Cat#	Light Dist.	# of LEDs	Milliamps	Kelvin	Volts	Mounting	Color	Options
NV-2 **(NV-2)**	Type 2 **(T2)** Type 3 **(T3)** Type 4 **(T4)** Type 5 **(T5)** Nema 3 30° Narrow Beam **(N3)**	80 **(80L)** 96 **(96L)** 112 **(112L)** 128 **(128L)**	700 **(7)** 1050 **(1)**	2700K, 70 CRI **(27K7)** ❻ 2700K, 80 CRI **(27K8)** ❶ ❻ 3000K, 70 CRI **(30K7)** ❻ 3000K, 80 CRI **(30K8)** ❶ ❻ 3500K, 80 CRI **(35K8)** 4000K, 70 CRI **(40K7)** 4000K, 80 CRI **(40K8)** ❶ 5000K, 70 CRI **(50K7)** 5000K, 80 CRI **(50K8)** ❶	120-277 **(UNV)** 347-480 **(HV)**	Direct Pole 6" Arm Single, D180 **(DPS6)** ❷ Direct Pole 11" Arm D90, T90, T120, Quad **(DPS11)** ❷ Knuckle Mount **(KM)** Wall Mount **(WM)** Trunnion Mount **(TM)** ❸ Tennis Arm **(TA)** Mast Arm **(MA)**	Bronze Textured **(BRZ)** White Textured **(WHT)** Smooth White Gloss **(SWT)** Silver **(SVR)** Black Textured **(BLK)** Smooth Black Gloss **(SBK)** Graphite Textured **(GPH)** Grey Textured **(GRY)** Custom **(CS)**	Bird Spikes **(BS)** Marine Grade Finish **(MGF)** Optic Plate Painted to Match Fixture **(OPP)** Nema 7-Pin Receptacle **(PE7)** Photocell + Receptacle **(PCR)** Receptacle + Shorting Cap **(PER)** FSP-211 with Motion Sensor **(FSP-20)** ❹ *9'-20" Heights* **(FSP-40)** ❹ *21'-40' Heights* Quick Mount Bracket **(QMB)** Retrofit Mount Bracket **(RQMB)** Round Pole Adaptor 3"- 4" Pole **(RPA4)** Round Pole Adaptor 5"- 6" Pole **(RPA5)** Rotated Optic Left **(ROL)** Rotated Optic Right **(ROR)** Automotive House Side Shield **(AHS)** House Side Shield **(HSS)** ❺

Notes:
❶ Consult Factory for Lead Time. Consult Factory for 90 CRI Requests
❷ Standard finish is stainless steel. Can be painted to match fixture
❸ For Round Pole Specify RPA4 or RPA5
❹ Universal Voltage 120-277
❺ HSS not applicable with Nema 2
❻ 3000K or lower must be selected to meet International Dark-Sky Association certification.

ELECTRICAL

- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
- LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it.
- All internal wiring UL certified for 600 VAC and 105°C
- All drivers, controls, and sensors housed in enclosed IP-65 compartment
- CRI 70, 80 or 90
- Color temperatures: 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KA supplies as standard.

OPTIONS

- **BIRD SPIKES (BS)**—Offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations and protect your property.
- **MARINE GRADE FINISH (MGF)**—A multi-step process creating protective finishing coat against harsh environments.
  - Chemically washed in a 5 stage cleaning system.
  - Pre-baked
  - Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer.
  - 1-2 feet inside pole coverage top and bottom.
  - Oven Baked.
  - Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.
- **SHIELDS (HSS, AHS)**—House Side Shield (HSS) is designed for full property line cut-off. Automotive House Side Shield (AHS) is a single-sided shield allowing partial cut-off on either side or front of luminaire.
- **ROUND POLE ADAPTER (RPA)–** When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles.

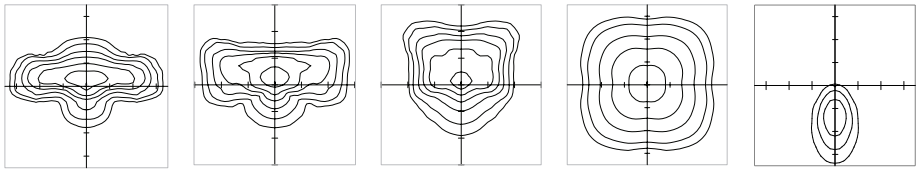
CONTROLS

- **FSP-211 (FSP-X)**—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet.
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, reprogrammable in the field.
  - FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering.
- **NEMA 7-PIN RECEPTACLE (PE7)**—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.

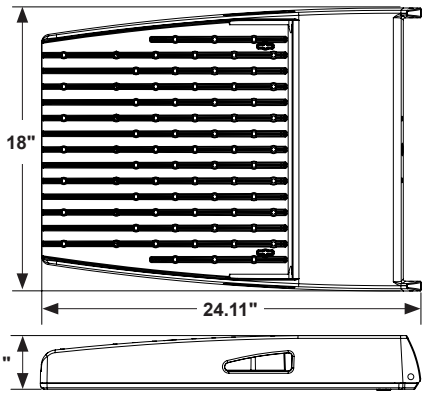
OPTICS

Silicone optics high photothermal stability and light output provides higher powered LEDs with minimized lumen depreciation LED life. UV and thermal stability with scratch resistance increases exterior application durability.

- IES Types

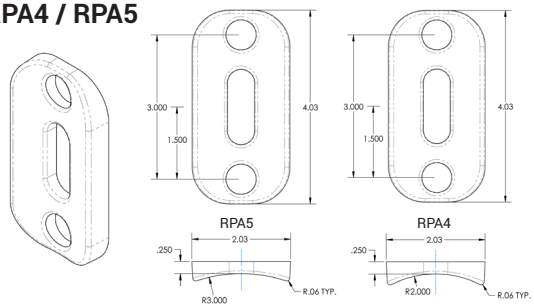


TYPE II (T2) | TYPE III (T3) | TYPE IV (T4) | TYPE V (T5) | NEMA 3 (N3)

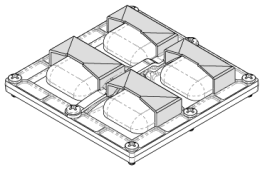


Weight: 42 lbs

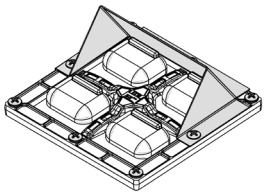
RPA4 / RPA5



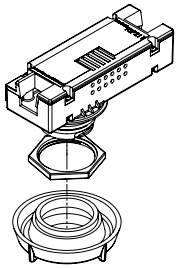
HOUSE SIDE SHIELD



AUTOMOTIVE HOUSE SIDE SHIELD



FSP-211



The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.

LUMENS

PART NUMBER	N3	LM/W	T2	LM/W	DLC	T3	LM/W	DLC	T3 HSS	LM/W	T4	LM/W	DLC	T4 AHS	LM/W	T4 HSS	LM/W	T5	LM/W	DLC	W
NV-2-80L-7-30K7	18816	112	19744	116	S	19218	113	S	9744	58	18992	112	S	12096	72	9576	57	19713	117	P	168
NV-2-80L-7-40K7	19488	116	21000	125	P	20328	121	P	10416	62	20160	120	P	12768	76	10248	61	21168	126	P	168
NV-2-80L-7-50K7	20160	120	21672	129	P	21168	126	P	11088	66	21000	125	P	13440	80	10920	65	21840	130	P	168
NV-2-80L-1-30K7	29456	112	28141	107	S	27352	104	S	15254	58	30245	115	S	18936	72	14991	57	29193	111	S	263
NV-2-80L-1-40K7	30508	116	30245	115	S	29456	112	S	16306	62	32086	122	S	19988	76	16043	61	31297	119	S	263
NV-2-80L-1-50K7	31560	120	31297	119	P	30508	116	S	17358	66	33664	128	P	21040	80	17095	65	33138	126	P	263
NV-2-96L-7-30K7	22400	112	23200	116	S	22600	113	S	11600	58	22400	112	S	14400	72	11400	57	23400	117	S	200
NV-2-96L-7-40K7	23200	116	25000	125	P	24200	121	P	12400	62	24000	120	P	15200	76	12200	61	25200	126	P	200
NV-2-96L-7-50K7	24000	120	25800	129	P	25200	126	P	13200	66	25000	125	P	16000	80	13000	65	26000	130	P	200
NV-2-96L-1-30K7	35392	112	33812	107	S	32864	104	S	18328	58	36340	115	S	22752	72	18012	57	35076	111	S	316
NV-2-96L-1-40K7	36656	116	36340	115	S	35392	112	S	19592	62	38552	122	S	24016	76	19276	61	37604	119	S	316
NV-2-96L-1-50K7	37920	120	37604	119	P	36656	116	S	20856	66	40448	128	P	25280	80	20540	65	39816	126	P	316
NV-2-112L-7-30K7	27216	112	28188	116	S	27459	113	S	14094	58	27216	112	S	17496	72	13851	57	28431	117	P	243
NV-2-112L-7-40K7	28188	116	30375	125	P	29403	121	P	15066	62	29160	120	P	18468	76	14823	61	30618	126	P	243
NV-2-112L-7-50K7	29160	120	31347	129	P	30618	126	P	16038	66	30375	125	P	19440	80	15795	65	31590	130	P	243
NV-2-112L-1-30K7	40992	112	39162	107	S	38064	104	S	21228	58	42090	115	S	26352	72	20862	57	40626	111	S	366
NV-2-112L-1-40K7	42456	116	42090	115	S	40992	112	S	22692	62	44652	122	S	27816	76	22326	61	43554	119	S	366
NV-2-112L-1-50K7	43920	120	43554	119	P	42456	116	S	24156	66	46848	128	P	29280	80	23790	65	46116	126	P	366
NV-2-128L-7-30K7	29680	112	30740	116	S	29945	113	S	15370	58	29680	112	S	19080	72	15105	57	31005	117	P	265
NV-2-128L-7-40K7	30740	116	33125	125	P	32065	121	P	16430	62	31800	120	P	20140	76	16165	61	33390	126	P	265
NV-2-128L-7-50K7	31800	120	34185	129	P	33390	126	P	17490	66	33125	125	P	21200	80	17225	65	34450	130	P	265
NV-2-128L-1-30K7	45808	112	43763	107	S	42536	104	S	23722	58	47035	115	S	29448	72	23313	57	45399	111	S	409
NV-2-128L-1-40K7	47444	116	47035	115	S	45808	112	S	25358	62	49898	122	S	31084	76	24949	61	48671	119	S	409
NV-2-128L-1-50K7	49080	120	48671	119	P	47445	116	S	26994	66	52352	128	P	33129	81	26585	65	51534	126	P	409

3000k or warmer must be selected to meet International Dark-Sky Association certification.

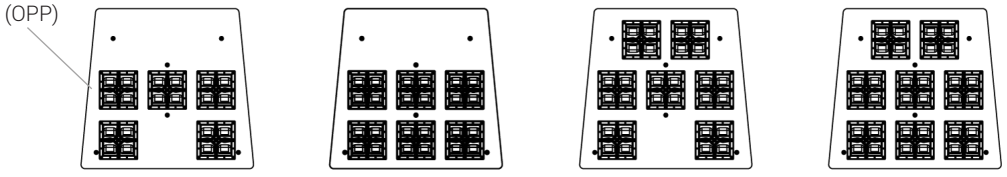
***DLC** *S= Standard* *P= Premium*

BUG RATINGS

PART NUMBER	T2	T3	T3 HSS	T4	T4 HSS	T5
NV-2-80L-7-30K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B5-U0-G3
NV-2-80L-7-40K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B5-U0-G3
NV-2-80L-7-50K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B5-U0-G3
NV-2-80L-1-30K7	B3-U0-G3	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G3
NV-2-80L-1-40K7	B3-U0-G3	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G3
NV-2-80L-1-50K7	B3-U0-G4	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G4
NV-2-96L-7-30K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B5-U0-G3
NV-2-96L-7-40K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G3	B1-U0-G2	B5-U0-G3
NV-2-96L-7-50K7	B3-U0-G3	B3-U0-G3	B1-U0-G2	B3-U0-G4	B1-U0-G3	B5-U0-G3
NV-2-96L-1-30K7	B3-U0-G4	B4-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G4
NV-2-96L-1-40K7	B3-U0-G4	B4-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G4	B5-U0-G4
NV-2-96L-1-50K7	B3-U0-G4	B4-U0-G4	B1-U0-G4	B3-U0-G4	B1-U0-G4	B5-U0-G4
NV-2-112L-7-30K7	B3-U0-G3	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G3
NV-2-112L-7-40K7	B3-U0-G3	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G3
NV-2-112L-7-50K7	B3-U0-G4	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G4
NV-2-112L-1-30K7	B4-U0-G4	B4-U0-G4	B1-U0-G4	B4-U0-G5	B1-U0-G4	B5-U0-G4
NV-2-112L-1-40K7	B4-U0-G4	B4-U0-G4	B1-U0-G4	B4-U0-G5	B1-U0-G4	B5-U0-G4
NV-2-112L-1-50K7	B4-U0-G4	B4-U0-G4	B1-U0-G4	B4-U0-G5	B1-U0-G4	B5-U0-G4
NV-2-128L-7-30K7	B3-U0-G3	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G4
NV-2-128L-7-40K7	B3-U0-G3	B3-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G4
NV-2-128L-7-50K7	B3-U0-G4	B4-U0-G4	B1-U0-G3	B3-U0-G4	B1-U0-G3	B5-U0-G4
NV-2-128L-1-30K7	B4-U0-G4	B4-U0-G4	B1-U0-G4	B4-U0-G5	B1-U0-G4	B5-U0-G4
NV-2-128L-1-40K7	B4-U0-G4	B4-U0-G4	B1-U0-G4	B4-U0-G5	B1-U0-G4	B5-U0-G4
NV-2-128L-1-50K7	B4-U0-G4	B4-U0-G5	B1-U0-G4	B4-U0-G5	B1-U0-G4	B5-U0-G5

OPTICAL CONFIGURATIONS

Rotatable Optics (ROR) Rotated Right, (ROL) Rotated Left options available. Optics field and factory rotatable.



NV-2 / 80L **NV-2 / 96L** **NV-2 / 112L** **NV-2 / 128L**

*** OPTIC PLATE PAINTED TO MATCH FIXTURE FINISH (OPP)**– Optic Plate standard clear anodized, Grade 2. When (OPP) specified, Optic Plate finish will match fixture finish.

EPA

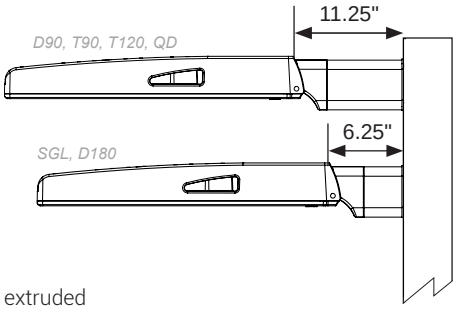
EPA	SGL	D90	D180	T90	T120	QD
NV-2-DP	0.89	1.22	1.78	1.96	1.91	1.96
NV-2-KM	0.69	1.18	1.38	1.85	2.68	1.85
NV-2-ASA	0.98	1.96	1.75	2.66	2.62	2.66

Lumen Maintenance Data							
Ambient Temperature	Drive Current	L90 Hours*	L70 Hours**	30,000 Hours*	50,000 Hours*	60,00 Hours*	100,000 Hours**
25°C	Up to 700mA	58,000	173,000	95.7%	91.6%	89.6%	82.1%
	1050mA	48,000	143,000	94.3%	89.5%	87.2%	78.5%
*Reported extrapolations per IESNA TM-21			**Projected extrapolations per IESNA TM-21				

DPX ARM LENGTH

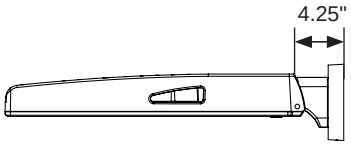
DPX ARM LENGTH	SGL	D90	D180	T90	T120	QD
NV-2	6.25"	11.25"	6.25"	11.25"	11.25"	11.25"

MOUNTING OPTIONS



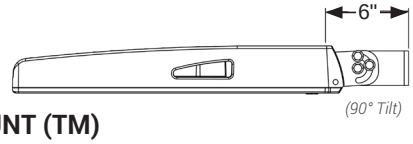
DIRECT POLE (DP)

Standard mounting arm is extruded aluminum in lengths of 6.25" and 11.25".
**Arm lengths may vary depending on configuration*



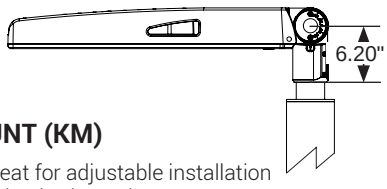
WALL MOUNT (WM)

Cast Aluminum Plate for direct wall mount. 3" extruded aluminum arm mounts directly to a cast wall mount box.



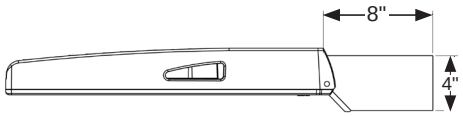
TRUNNION MOUNT (TM)

Steel, bolt-on-mounting for adjustable installation with a maximum uplift of 90 degrees.
**Unpainted stainless steel is standard*



KNUCKLE MOUNT (KM)

Die Cast Knuckle great for adjustable installation on 2-3/8" OD vertical or horizontal tenon.
- Max Up-tilt of 90 degrees
- Adjustable in 6 degree increments

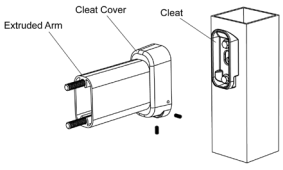


TENNIS ARM (TA)

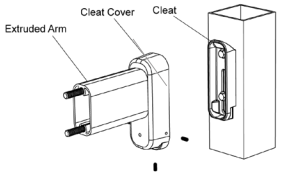
Steel fitter slips over 3.5" x 1.5" rectangular arm.
**See Tennis Arm Spec Sheet for details*

OPTIONAL

Optional Cast Aluminum Bracket, **Quick Mount Bracket (QMB)** and **Retrofit Quick Mount Bracket (RQMB)**, designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures.



QMB



RQMB

City of Portsmouth Planning Department

Site Plan Review Application Fee

Project: Proposed Advanced Manufacturing Facility **Map/Lot: 308 / 1**

Applicant: Aviation Avenue Group, LLC

All development

Base fee $500			$500.00
Plus $5.00 per $1,000 of site costs			
Site costs	$750,000	+	$3,750.00
Plus $10.00 per 1,000 S.F. of site development area			
Site development area	497,000 S.F.	+	$4,970.00
		Fee	**$9,220.00**

Maximum fee: $15,000.00

Fee received by: _____ Date: _____

Note: Initial application fee may be based on the applicant's estimates of site costs and site development area. Following site plan approval, the application fee will be recalculated based on the approved site plan and site engineer's corresponding site cost estimate as approved by the Department of Public Works, and any additional fee shall be paid prior to the issuance of a building permit.

City of Portsmouth Planning Department

Subdivision Application Fee

Project: Proposed Advanced Manufacturing Facility **Map/Lot: 308 / 1**

Applicant: Aviation Avenue Group, LLC

☐ Residential subdivision

$500 plus $200 per lot

Number of lots _____ Fee $0.00

☐ Non-residential subdivision

$700 plus $300 per lot

Number of lots _____ Fee $0.00

☒ Lot line revision/verification

$250

Fee $250.00

☐ Filing of condominium site

$100

Fee $0.00

☐ Lot consolidation

$175

Fee $0.00

Total fee $250.00

Fee received by: _____ Date: _____

ALTUS ENGINEERING

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

December 16, 2022

Peter Britz, Planning and Sustainability Director
City of Portsmouth Municipal Complex
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Beverly M. Zendt, Planning Director
City of Portsmouth Municipal Complex
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Application for Site Plan Review
Assessor's Map 148, Lot 37
765 Middle Street
Altus Project No. 5021

Dear Peter and Beverly,

On behalf of the Applicant, Nicole J. Giusto and David A. Sinclair, Altus Engineering respectfully submits an application for a fourth dwelling unit and garage at 765 Middle Street. The Proposed development will a new detached structure with a 3-bay garage, stormwater management improvements, expanded driveway utility services and a robust landscape plan.

In October 2022, the Board of Adjustment granted variances for building setbacks and lot density to allow the project to proceed. In November, we attended the TAC Work Session. We are now submitting detailed site plans and a supporting drainage study.

Concurrent, Soma Studios is working with the Ms. Giusto and Mr. Sinclair on the architecture and the HDC application.

Enclosed please find the following items for consideration at the January 3, 2023 TAC Meeting:

- Letter of Authorization (Applicant to Altus)
- Full sized sets of Site Plans
- "Green" Statement
- Drainage Report
  - Stormwater Inspection and Maintenance Manual
- Sitework Cost Estimate
- Site Review Checklist

Please call me if you have any questions or need any additional information.

Sincerely,

ALTUS ENGINEERING, INC.



wde/5021 tac cvr ltr-1.docx

Enclosures

eCopy: David Sinclair
Jennifer Ramsey, Somma Studios
Robbi Woodburn, Woodburn and Company
Timothy Phoenix, Esq.

Letter of Authorization

We, Nicole Giusto and David Sinclair, hereby authorize Altus Engineering, Inc. of Portsmouth, NH to represent us in all matters concerning the engineering and related permitting of improvements to the property located at 765 Middle Street in Portsmouth, NH on Assessors Map 148, Lot 37. This authorization shall include any signatures required for Federal, State and Municipal permit applications.

Signature	Nicole Giusto Nicole Giusto	10/28/22 Date
Witness	NANCY W. SINCLAIR Print Name	10/28/2022 Date
Signature	DAVID Sinclair David Sinclair	10/28/22 Date
Witness	NANCY W. SINCLAIR Print Name	10/28/2022 Date

THIS DRAWING SET HAS NOT BEEN RELEASED FOR CONSTRUCTION

RESIDENTIAL DEVELOPMENT EXPANSION

765 Middle Street
Portsmouth, NH

Assessor's Parcel 148, Lot 37

ISSUED FOR TECHNICAL ADVISORY COMMITTEE

Plan Issue Date:

DECEMBER 16, 2022

Civil Engineer:

ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

Surveyor:

James Verra & Associates Inc.
LAND SURVEYORS
101 SHATTUCK WAY, SUITE 8
Newington, New Hampshire
03801-7876
Tel 603-436-3557

Landscape Architect:

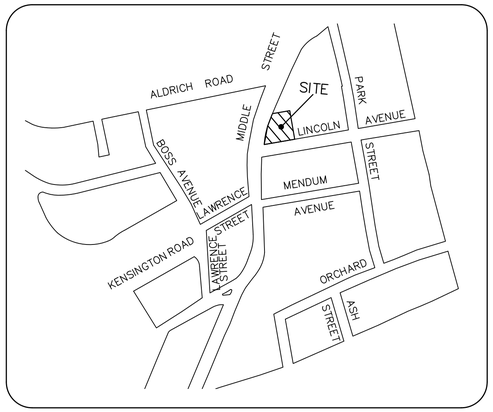
woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

Owner/Applicant:

Nicole J. Giusto
David A. Sinclair
765 Middle Street
Portsmouth, NH 03801
(720) 244-2095

Architectual Designer:

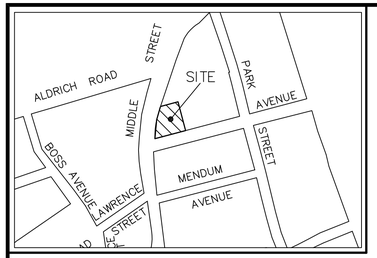
SOMMA
Jennifer Ramsey,
Somma Studios
36 Maplewood Ave
Portsmouth, NH 03801
(603) 766-3760



LOCUS NOT TO SCALE

Sheet Index Title	*Sheet No.:*	*Rev.*	*Date*
Existing Conditions Plan	EX-1	0	03/02/20
Site Preparation Plan	C-1	0	12/16/22
Site Plan	C-2	0	12/16/22
Grading & Stormwater Plan	C-3	0	12/16/22
Utility Plan	C-4	0	12/16/22
Landscape Plan	L-1	0	09/28/22
Notes Sheet	D-1	0	12/16/22
Detail Sheet	D-2	0	12/16/22
Detail Sheet	D-3	0	12/16/22
Architectural - Proposed Elevations 1	A-1	0	12/01/22
Architectural - Proposed Elevations 2	A-2	0	12/01/22
Architectural - Proposed Elevations 3	A-3	0	12/01/22

P5042



LOCUS
(N.T.S.)

NH STATE PLANE COORDINATE SYSTEM
NAD 1983

RIM AND INVERT DATA

CB #1026 RIM = 22.71
(1) INV (6"HDPE)=18.51±
(2) INV (6"PVC)=19.52
(3) (WATER LEVEL)=18.41

CB #1008 RIM = 28.82
(1) INV (12"PVC)=25.17

DMH #1010 RIM = 28.82
INACCESSIBLE(LATCHED)

CB #1030 RIM = 21.72
(1) INV (6"HDPE)=18.92
(2) INV (12"HDPE)=18.42
(3) INV (12"HDPE)=18.32(WATER LEVEL)

SMH #5714 RIM = 21.55
(1) INV (18"PVC)=14.05
(2) INV (18"PVC)=13.93

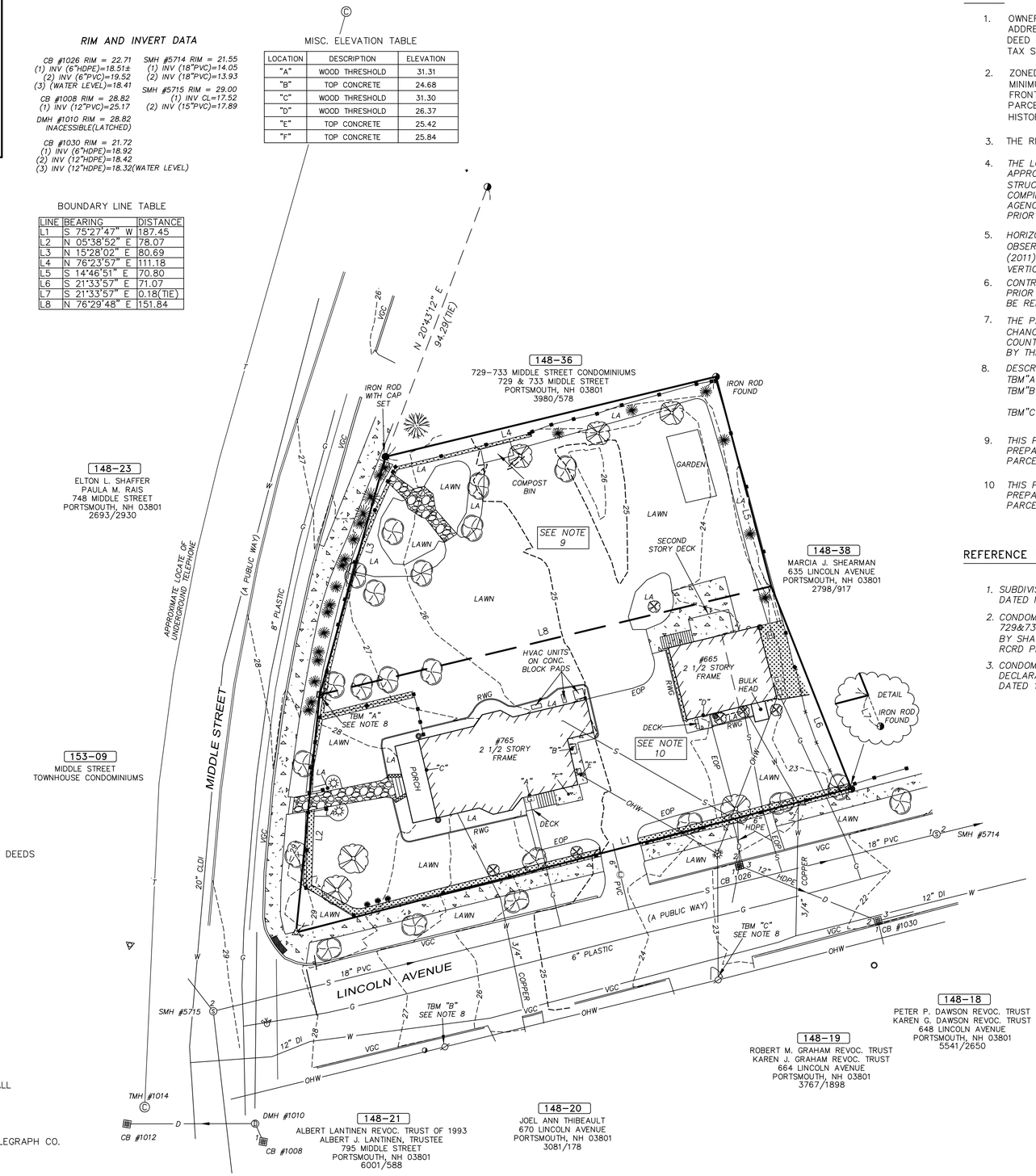
SMH #5715 RIM = 29.00
(1) INV CL=17.52
(2) INV (15"PVC)=17.89

MISC. ELEVATION TABLE

LOCATION	DESCRIPTION	ELEVATION
"A"	WOOD THRESHOLD	31.31
"B"	TOP CONCRETE	24.68
"C"	WOOD THRESHOLD	31.30
"D"	WOOD THRESHOLD	26.37
"E"	TOP CONCRETE	25.42
"F"	TOP CONCRETE	25.84

BOUNDARY LINE TABLE

LINE	BEARING	DISTANCE
L1	S 75°27'47" W	187.45
L2	N 05°38'52" E	78.07
L3	N 15°28'02" E	80.69
L4	N 76°23'57" E	111.18
L5	S 14°46'51" E	70.80
L6	S 21°33'57" E	71.07
L7	S 21°33'57" E	0.18(TIE)
L8	N 76°29'48" E	151.84



LEGEND:

- ..... GRANITE BOUND FOUND
- ..... IRON ROD (AS NOTED)
- ..... SURVEY NAIL SET
- ..... WOVEN VINYL FENCE
- ..... WOOD FENCE
- ..... CEMENT CONCRETE PAD
- ..... CRUSHED STONE
- ..... FLAG STONE
- ..... STONE RETAINING WALL
- ..... UTILITY POLE
- ..... UTILITY POLE W/TRANSFORMER
- ..... GUY
- —OHW— ..... OVERHEAD WIRES
- —OHE— ..... OVERHEAD ELECTRIC
- —OHC— ..... OVERHEAD COMMUNIUCATION WIRES
- RCRD ..... ROCKINGHAM COUNTY REGISTRY OF DEEDS
- 137-01 ..... TAX SHEET / LOT NO.
- EOP ..... EDGE OF PAVEMENT
- LA ..... LANDSCAPED AREA
- ..... CATCH BASIN
- ..... DRAIN MANHOLE
- ..... ROOF DOWNSPOUT
- ..... SEWER CLEAN OUT
- ..... SEWER MANHOLE
- ..... SEWER CLEAN OUT
- — W — ..... WATER LINE
- — S — ..... SEWER LINE
- —D— ..... DRAIN LINE
- — G — ..... GAS LINE
- ..... WATER GATE VALVE
- ..... WATER SHUT OFF VALVE
- ..... HYDRANT
- VGC ..... VERTICAL FACED GRANITE CURB
- RWG ..... GRANITE COBBLESTONE BORDER WALL
- PSNH ..... PUBLIC SERVICE CO. OF NH
- EVS ..... EVERSOURCE
- PP/PL ..... PLASTIC GAS LINE
- G ..... GAS METER
- NETT ..... NEW ENGLAND TELEPHONE AND TELEGRAPH CO.
- PSNH ..... PUBLIC SERVICE CO. OF NH
- E ..... ELECTRIC METER

NOTES:

1. OWNER OF RECORD.....DAVID A. SINCLAIR & NICOLE J. GIUSTO
   ADDRESS.....765 MIDDLE STREET, PORTSMOUTH, NH 03801
   DEED REFERENCE.....5543/442
   TAX SHEET / LOT.....148-37
2. ZONED:.....*GENERAL RESIDENCE A*
   MINIMUM LOT AREA...*7,500 S.F.* — FRONT YARD SETBACK....*15'*
   FRONTAGE.....*100'* — SIDE YARD SETBACK.....*10'*
   PARCEL AREA.....21,504 S.F, 0.49 ACRES — REAR YARD SETBACK.....*20'*
   HISTORIC OVERLAY DISTRICT
3. THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET.
4. *THE LOCATION OF ALL 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 COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.*
5. *HORIZONTAL DATUM: NAD 1983 ESTABLISHED BY SURVEY GRADE GPS OBSERVATION AND NGS "OPUS" SOLUTION. REFERENCE FRAME: NAD83 (2011)(EPOCH: 2010.0000), US SURVEY FOOT.*
   VERTICAL DATUM: NAVD 1988. PRIMARY BENCHMARK: CITY OF PORTSMOUTH "ROBE"
6. *CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE ESTABLISHMENT OF ANY GRADES OR ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOCIATES, INC..*
7. *THE PARCEL SHOWN HEREON LIES WITHIN ZONE X (AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS IDENTIFIED ON FLOOD INSURANCE RATE MAP, ROCKINGHAM COUNTY, NEW HAMPSHIRE, MAP NUMBER 33015C0259E, EFFECTIVE DATE MAY 17, 2005 BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.*
8. *DESCRIPTIONS OF THE SITE BENCHMARKS:*
   TBM"A": MARKED SE CORNER GARANITE BOUND ELEVATION=27.83
   TBM"B": SURVEY NAIL FOUND IN UTILITY POLE #PSNH 84/28 0.20' ABOVE GRADE ELEV.=27.63
   TBM"C": SURVEY NAIL SET IN UTILITY POLE #NETT 5 1.0' ABOVE GRADE ELEV=24.52
9. *THIS PARCEL IS SHOWN AS LOT PLAN 40, LOT 7 ON THE PORTSMOUTH TAX MAPS PREPARED BY JOHN W. DURGIN PRIOR TO 1979 & AS RCRD BK. 5543, PG. 442, PARCEL 2.*
10. *THIS PARCEL IS SHOWN AS LOT PLAN 40, LOT 1 ON THE PORTSMOUTH TAX MAPS PREPARED BY JOHN W. DURGIN PRIOR TO 1979 & AS RCRD BK. 5543, PG. 442, PARCEL 1.*

REFERENCE PLANS:

1. *SUBDIVISION OF LAND, PORSTMOUTH, NH. FOR EDWARD H. & EMMA L. PATERSON DATED MAY 1982 RCRD PLAN #C-11243*
2. *CONDOMINIUM SITE PLAN, 729-733 MIDDLE STREET CONDOMINIUM FOR PROPERTY AT 729&733 MIDDLE STREET, PORTSMOUTH, ROCKINGHAM COUNTY, NEW HAMPSHIRE OWNED BY SHAWN O. GORMAN & CARIANN M. GOODRICH-GORMAN DATED 12/17/02 RCRD PLAN #D-30540*
3. *CONDOMINIUM SITE PLAN FOR 605 LINCOLN AVENUE, A CONDOMINIUM, MARK MCNALLY DECLARANT, TAX MAP 148, LOT 41, PORTSMOUTH, NH DATED 11-8-2008 RCRD PLAN #D-35685.*



20 0 20 40 60 80 FEET
10 0 10 20 METERS

P5021

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

James Verra & Associates, Inc.
LAND SURVEYORS
101 SHATTUCK WAY - SUITE 8
NEWINGTON, N.H. 03801- 7876
603-436-3557

JOB NO: 23826

ISSUED FOR:
CLIENT REVIEW

ISSUE DATE:
3-2-2020

REVISIONS
NO. DESCRIPTION BY DATE

DRAWN BY: GTD
APPROVED BY: JV
DRAWING FILE: 23826.DWG

SCALE:
22" x 34" - 1" = 20'
11" x 17" - 1" = 40'

APPLICANT:
DAVID A. SINCLAIR
NICOLE J. GIUSTO
765 MIDDLE STREET
PORTSMOUTH, NH 03801

OWNER:
DAVID A. SINCLAIR &
NICOLE J. GIUSTO
765 MIDDLE STREET
PORTSMOUTH, NH 03801

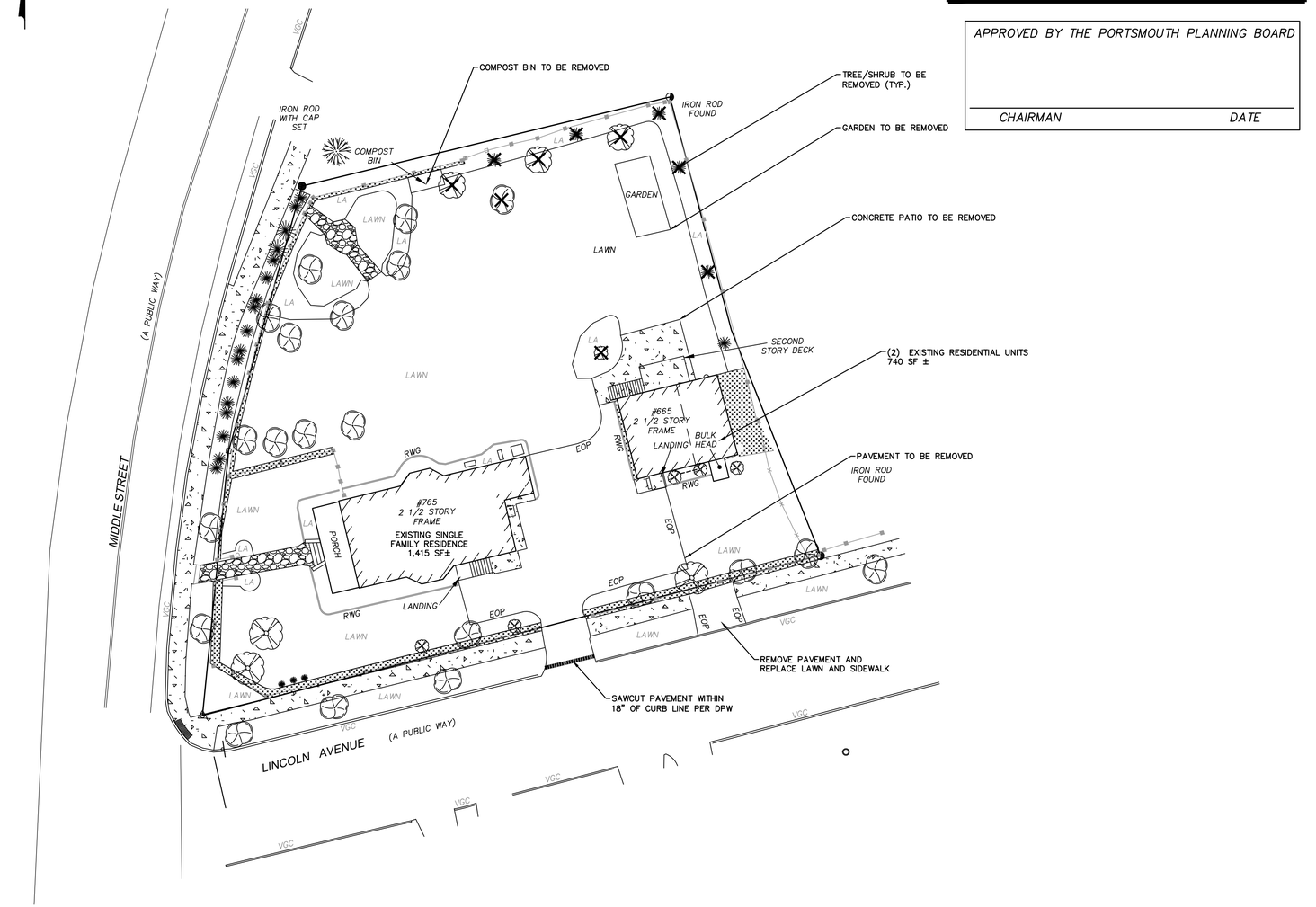
PROJECT:
EXISTING CONDITIONS PLAN
TAX MAP 148, LOT 37
765 MIDDLE STREET
PORTSMOUTH, NH

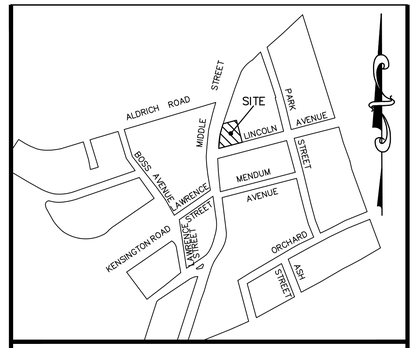
TITLE:
EXISTING CONDITIONS PLAN
765 MIDDLE STREET
PORTSMOUTH, NH

SHEET NUMBER:
EX-1

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. THIS DEMOLITION PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR THE DEMOLITION OF EXISTING SITE FEATURES AND TO SHOW THE MAJOR ITEMS OF WORK REQUIRED FOR PREPARING THE SITE FOR THE CONSTRUCTION OF THE PROPOSED PROJECT. UNLESS OTHERWISE NOTED TO REMAIN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL PAVEMENT, CONCRETE, CURBING, SIGNS, POLES, UTILITIES, FENCES, VEGETATION AND OTHER EXISTING FEATURES, AS NECESSARY TO FULLY CONSTRUCT THE PROJECT. THE CONTRACTOR SHALL INSPECT THE SITE PRIOR TO BIDDING AND BE RESPONSIBLE FOR PREPARING THE SITE FOR CONSTRUCTION AS NEEDED TO COMPLETE THE PROPOSED IMPROVEMENTS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR ANY DAMAGE DONE TO EXISTING UTILITIES AT NO EXTRA COST TO THE OWNER. UTILITY CONFLICTS SHALL BE RESOLVED WITH THE INVOLVEMENT OF THE ENGINEER, OWNER, AND APPROPRIATE UTILITY COMPANIES.
4. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
5. 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.
6. ALL UTILITY DISCONNECTIONS/DEMOLITIONS/RELOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED EXCAVATION, TRENCHING AND BACKFILLING.
7. 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.
8. NO BURNING SHALL BE PERMITTED PER LOCAL REGULATIONS.
9. HAZARDOUS MATERIALS ENCOUNTERED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE ABATED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS.
10. THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG THE PROPERTY LINE IN ALL AREAS WHERE SILT FENCING IS NOT OTHERWISE REQUIRED.
11. SEE EROSION CONTROL PLANS FOR EROSION CONTROL REQUIREMENTS TO BE IN PLACE PRIOR TO START OF DEMOLITION ACTIVITIES, INCLUDING, BUT NOT LIMITED TO; SEDIMENT BARRIERS, STABILIZED CONSTRUCTION SITE EXIT, AND STORM DRAIN INLET PROTECTION.
12. ALL DEMOLISHED MATERIAL OR MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.
13. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BE LEGALLY DISPOSED IN ACCORDANCE WITH ALL LOCAL, STATE & FEDERAL REGULATIONS AND CODES.
14. INSTALL STABILIZED CONSTRUCTION EXIT; MAINTAIN AND RELOCATE DURING CONSTRUCTION, AS NEEDED BASED ON ACTIVE CONSTRUCTION STAGES.





LOCUS NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN *DATE*

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P5021

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

12/16/22

NOT FOR CONSTRUCTION

ISSUED FOR: TECHNICAL ADVISORY COMMITTEE

ISSUE DATE: DECEMBER 16, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	12/16/22

DRAWN BY: MBS/RLH
APPROVED BY: EDW
DRAWING FILE: 5021–SITE.dwg

SCALE:
(22"x34") 1" = 20'
(11"x17") 1" = 40'

OWNER/APPLICANT:

NICOLE J. GIUSTO &
DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

765 MIDDLE STREET
PORTSMOUTH, NH

TITLE:

SITE PREPARATION PLAN

SHEET NUMBER:

C-1

SITE NOTES

1. DESIGN INTENT – THIS PLAN SET IS INTENDED TO DEPICT A CONSTRUCTION OF A DETACHED GARAGE WITH A DWELLING UNIT ON THE SECOND FLOOR.
2. APPROXIMATE LOT AREA: 21,504 SF
3. ZONE: GRA
4. ON OCTOBER 18, 2022, THE ZONING BOARD OF ADJUSTMENT APPROVED THE FOLLOWING VARIANCES:
   Section 10.513 TO ALLOW 3 PRINCIPAL DWELLINGS ON A LOT WHERE ONLY 1 IS ALLOWED.
   Section 10.521 TO ALLOW A LOT AREA OF 5,376 SF WHERE 7,500 SF IS REQUIRED PER DWELLING UNIT AND A REAR YARD WHERE 20–FEET IS REQUIRED.
5. PARKING REQUIREMENTS:
   RESIDENTIAL 1.3 SPACE PER DWELLING UNIT GFA OVER 750 SF
   4 DWELLING UNITS = 5.2 SPACES REQUIRED
   6 SPACES PROVIDED (UNSTRIPED)
6. ONSITE WETLANDS BUFFER ANALYSIS – NO WETLANDS ON THE PROPERTY OR WITHIN 75–FEET OF THE SITE
7. AREA OF DISTURBANCE UNDER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT NOT REQUIRED.
8. SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT, IN AREAS SHOWN HEREON, AND/OR TRUCKED OFF SITE AS APPROPRIATE.
9. PAVEMENT MARKINGS – RESIDENTIAL USE – STRIPING NOT PROPOSED.
10. ALL CONSTRUCTION SHALL MEET THE MINIMUM STANDARDS OF THE CITY OF PORTSMOUTH & NHDOT'S STANDARD SPECIFICATION FOR ROAD & BRIDGE CONSTRUCTION, LATEST EDITIONS. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
11. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINES WITH RS–1 IMMEDIATELY PRIOR TO PLACING NEW PAVER SURFACE.
12. ALL BONDS AND FEES SHALL BE PAID/POSTED PRIOR TO INITIATING CONSTRUCTION.
13. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS AND TOPOGRAPHY IN THE FIELD PRIOR TO CONSTRUCTION.
14. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER FOR RESOLUTION.
15. BUILDING AREA SHOWN IS BASED ON FOOTPRINT MEASURED TO THE EDGE OF FOUNDATIONS AND/OR SLABS. ACTUAL INTERIOR SPACE WILL DIFFER.
16. NO CHANGES TO THE DRIVEWAY WITHIN THE CITY RIGHT–OF–WAY IS PROPOSED.
17. TRASH AND RECYCLING TO BE STORED INSIDE BUILDINGS.
18. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS

153–09
MIDDLE STREET
TOWNHOUSE CONDOMINIUMS

UNIT 1
JORGENSEN FAMILY TRUST
NATHAN H. & KRISTIE L. JORGENSEN, TRUSTEES
774 MIDDLE STREET UNIT 1
PORTSMOUTH, NH 03801
5684/1841

UNIT 2
STACEY CARLA SIMONOFF
774 MIDDLE STREET UNIT 2
PORTSMOUTH, NH 03801
6155/990

UNIT 3
BRIAN T. &
MELLISSA J. MAGUIRE
774 MIDDLE STREET UNIT 3
PORTSMOUTH, NH 03801
5662/2283

UNIT 4
ALISON L. PYOTT &
CHRISTOPHER J. PYOTT
774 MIDDLE STREET UNIT 4
PORTSMOUTH, NH 03801
3295/1018

LEGEND

- PROPERTY LINE
- BUILDING SETBACK
- VGC SGC EXISTING PAVEMENT/CURB
- PROPOSED PAVEMENT
- PROPOSED SAWCUT
- EXISTING STONE WALKWAY
- EXISTING STONE WALL
- PROPOSED DRIPEDGE

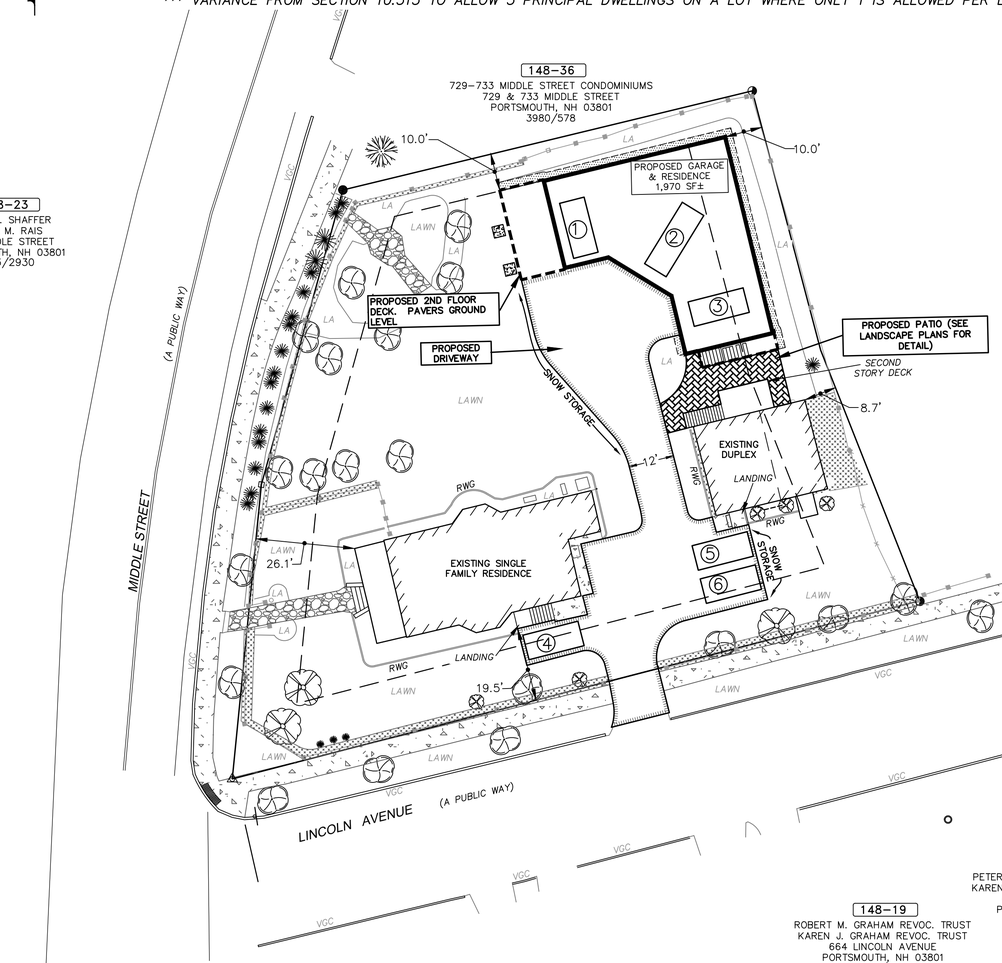
ZONING SUMMARY

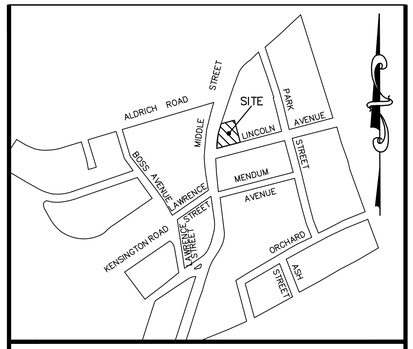
ZONE: GRA (GENERAL RESIDENCE A)
EXISTING LOT AREA: 0.49 AC±

DIMENSIONAL REQUIREMENTS

	REQUIRED	EXISTING	PROPOSED
MIN. LOT AREA:	7,500 S.F.	21,504 S.F.	21,504 S.F.
MIN. LOT AREA PER DWELLING UNIT:	7,500 S.F.	7,168 S.F.±	5,376 S.F.± **
DWELLING UNITS:	–	3	4 ***
MIN. STREET FRONTAGE:	100'	158' (MIDDLE ST.)	158'±
MIN. LOT DEPTH:	70'	111'±	111'±
FRONT SETBACK: *	15'	26.1'±(EX.)(MIDDLE ST.)	26.1'±
		19.5'±(EX.)(LINCOLN ST.)	19.5'±
SIDE SETBACK:	10'	74'±(EX.)	10.0' (NEW)**
REAR SETBACK:	20'	8.7'±(EX)	8.7'± (EX.)
			10.0' (NEW)
MAX. HEIGHT:	35'	<35' (EX.)	<35' (PROP.)
MAX. BUILDING COVERAGE:	25%	12.1%±(INCL. DECKS)	23.0%± (INCL. DECKS)
MIN. OPEN SPACE:	30%	70.6%±	55.4%±

* FRONT SETBACK IS FROM BOTH STREET ADDRESS STREET AND ACCESS STREET
** VARIANCES FROM SECTION 10.521 TO ALLOW 1) A LOT AREA PER DWELLING OF 5,376 S.F. WHERE 7,500 IS REQUIRED PER UNIT AND 2) A 10 FOOT REAR YARD WHERE 20 FEET IS REQUIRED
*** VARIANCE FROM SECTION 10.513 TO ALLOW 3 PRINCIPAL DWELLINGS ON A LOT WHERE ONLY 1 IS ALLOWED PER LOT





LOCUS NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

P5021

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
12/16/22

NOT FOR CONSTRUCTION

ISSUED FOR: TECHNICAL ADVISORY COMMITTEE

ISSUE DATE: DECEMBER 16, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	12/16/22

DRAWN BY: MBS/RLH
APPROVED BY: EDW
DRAWING FILE: 5021–SITE.dwg

SCALE:
(22"x34") 1" = 20'
(11"x17") 1" = 40'

OWNER/APPLICANT:

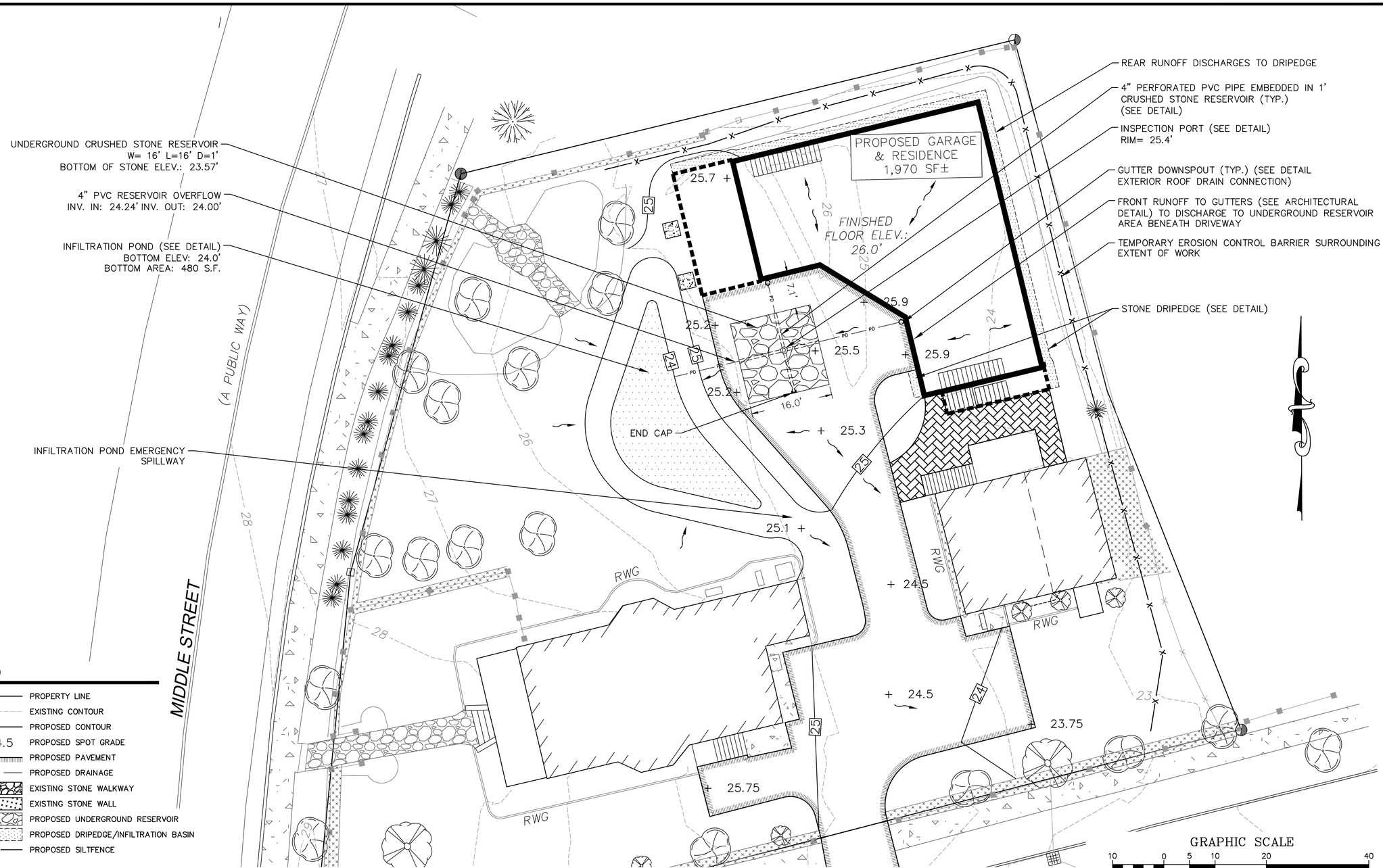
NICOLE J. GIUSTO &
DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:
RESIDENTIAL DEVELOPMENT EXPANSION
TAX MAP 148, LOT 37
765 MIDDLE STREET
PORTSMOUTH, NH

TITLE:
SITE PLAN

SHEET NUMBER:
C-2



LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- + 24.5 PROPOSED SPOT GRADE
- PROPOSED PAVEMENT
- PD PROPOSED DRAINAGE
- EXISTING STONE WALKWAY
- EXISTING STONE WALL
- PROPOSED UNDERGROUND RESERVOIR
- PROPOSED DRIPEDGE/INFILTRATION BASIN
- PROPOSED SILTFENCE

GRADING & STORMWATER MANAGMENT NOTES

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
3. UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBMS) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
4. PRIOR TO CONSTRUCTION, FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES. PRESERVE AND PROTECT LINES TO BE RETAINED.
5. NO EARTHWORK 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.
6. CONTRACTOR SHALL CONTROL DUST BY SPRAYING WATER, SWEEPING PAVED SURFACES, PROVIDING TEMPORARY VEGETATION, AND/OR MULCHING EXPOSED AREAS AND STOCKPILES.
7. ALL ROOF DRAIN RISERS SHALL BE LOCATED IN COORDINATION WITH THE ARCHITECTURAL PLANS TO MATCH GUTTER DOWNSPOUTS. RISERS SHALL BE SET TO FINISH GRADE PLUS 1' (MIN.).
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. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE SIX (6") INCHES OF LOAM, LIMESTONE, FERTILIZER, SEED, AND MULCH USING APPROPRIATE SOIL STABILIZATION TECHNIQUES. SEE DETAILS AND LANDSCAPE PLANS FOR ADDITIONAL INFORMATION.
10. ALL SPOT GRADES ARE AT FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
11. IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. SYMBOLS MAY NOT BE INDICATIVE OF THE CENTER OF A STRUCTURE, PARTICULARLY WHEN SHOWN ADJACENT TO A CURB LINE. 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. UPON COMPLETION OF CONSTRUCTION, ALL DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT.
13. UPON COMPLETION OF CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED AND ANY AREAS DISTURBED BY THE REMOVAL SMOOTHED AND REVEGETATED.

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ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
12/16/22

NOT FOR CONSTRUCTION

ISSUED FOR: TECHNICAL ADVISORY COMMITTEE

ISSUE DATE: DECEMBER 16, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	12/16/22

DRAWN BY: MBS/RLH
APPROVED BY: EDW
DRAWING FILE: 5021-SITE.dwg

SCALE:
(22"x34") 1" = 10'
(11"x17") 1" = 20'

OWNER/APPLICANT:

NICOLE J. GIUSTO &
DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

765 MIDDLE STREET
PORTSMOUTH, NH

TITLE:

GRADING & STORMWATER PLAN

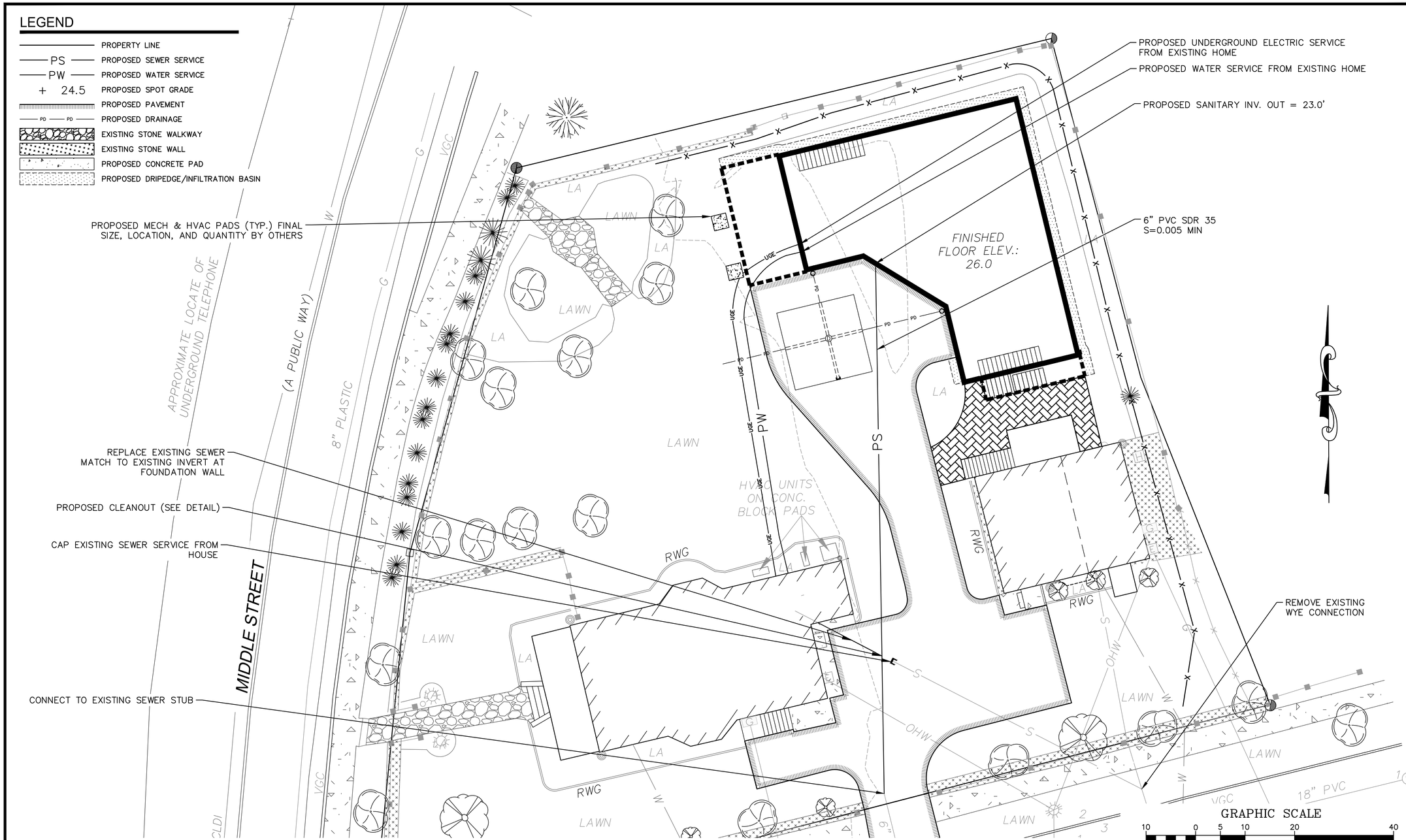
SHEET NUMBER:

C-3

P5021

LEGEND

- PROPERTY LINE
- PS — PROPOSED SEWER SERVICE
- PW — PROPOSED WATER SERVICE
- \+ 24.5 — PROPOSED SPOT GRADE
- PROPOSED PAVEMENT
- PD — PD — PROPOSED DRAINAGE
- EXISTING STONE WALKWAY
- EXISTING STONE WALL
- PROPOSED CONCRETE PAD
- PROPOSED DRIPEDGE/INFILTRATION BASIN



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 NHDOT, THE PORTSMOUTH POLICE DEPARTMENT AND DPW AT LEAST TWO WEEKS PRIOR TO COMMENCING RELATED CONSTRUCTION.
5. 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.
6. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL CONFORM TO FEDERAL OSHA AND CITY REGULATIONS.
7. 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.
8. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.
9. SEE ARCHITECTURAL/MECHANICAL DRAWINGS FOR EXACT LOCATIONS & ELEVATIONS OF UTILITY CONNECTIONS AT BUILDING. COORDINATE ALL WORK WITHIN FIVE (5) FEET OF BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL/MECHANICAL DRAWINGS. ALL CONFLICTS AND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND PRIOR TO COMMENCING RELATED WORK.
10. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE ARCHITECT, CONTRACTOR, APPROPRIATE UTILITY COMPANIES AND THE PORTSMOUTH DPW.
11. UTILITY PROVIDERS AND CONTACTS:
    - WATER & SEWER: PORTSMOUTH DPW, JIM TOW, (603) 427-1530.
    - GAS: UNITIL, DAVID BEAULIEU, (603) 294-5144.
    - TELECOMMUNICATIONS: CONSOLIDATED, JOE CONSIDINE, (603) 427-5525.
    - CABLE: COMCAST, MIKE COLLINS, (603) 679-5695, EXT. 1037.
    - 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.
12. CONTRACTOR TO PROVIDE BOLLARDS AT SERVICE ENTRANCES PER THE SPECIFICATIONS OF THE RESPECTIVE UTILITY PROVIDERS.
13. 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.
14. 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.
15. WATER AND SANITARY SEWER LINES SHALL BE LOCATED AT LEAST 10' HORIZONTALLY FROM EACH OTHER. WHERE CROSSING, 18" MINIMUM VERTICAL CLEARANCE SHALL BE PROVIDED WITH WATER INSTALLED OVER SEWER.
16. SEE ARCHITECTURAL/MECHANICAL DRAWINGS FOR EXACT LOCATIONS & ELEVATIONS OF UTILITY CONNECTIONS AT BUILDINGS. COORDINATE ALL WORK WITHIN FIVE (5) FEET OF BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL/MECHANICAL DRAWINGS. ALL CONFLICTS AND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY PRIOR TO COMMENCING RELATED WORK.
17. ALL MEANS, METHODS, MATERIALS AND INSTALLATION OF NEW SEWER LATERALS SHALL BE APPROVED AND WITNESSED BY PORTSMOUTH DPW PRIOR TO BACKFILLING.
18. THE CONTRACTOR SHALL CONFIRM ALL WATERLINE SIZES WITH THE MEP PLANS PRIOR TO INSTALLATION. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.

P5021

ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 - STATE OF NEW HAMPSHIRE - LICENSED PROFESSIONAL ENGINEER
12/16/22

NOT FOR CONSTRUCTION

ISSUED FOR: TECHNICAL ADVISORY COMMITTEE

ISSUE DATE: DECEMBER 16, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	12/16/22

DRAWN BY: MBS/RLH
APPROVED BY: EDW
DRAWING FILE: 5021-SITE.dwg

SCALE:
(22"x34") 1" = 10'
(11"x17") 1" = 20'

OWNER/APPLICANT:

NICOLE J. GIUSTO &
DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

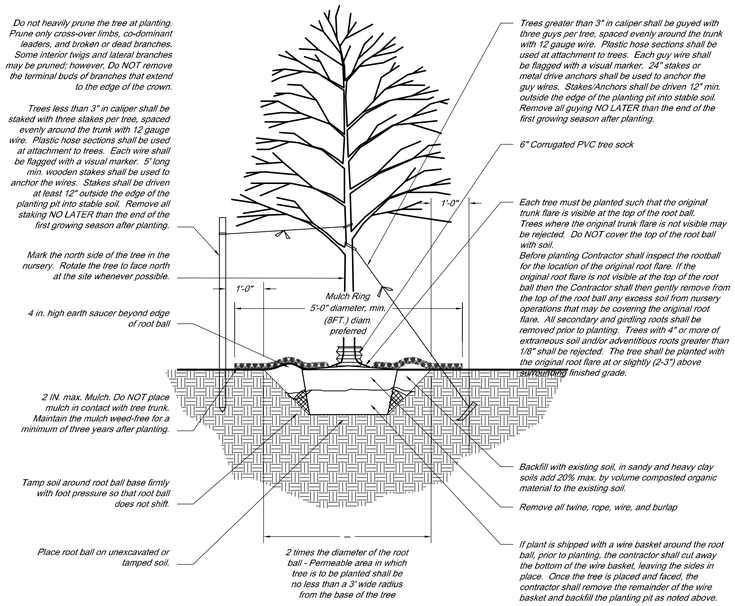
765 MIDDLE STREET
PORTSMOUTH, NH

TITLE:

UTILITY PLAN

SHEET NUMBER:

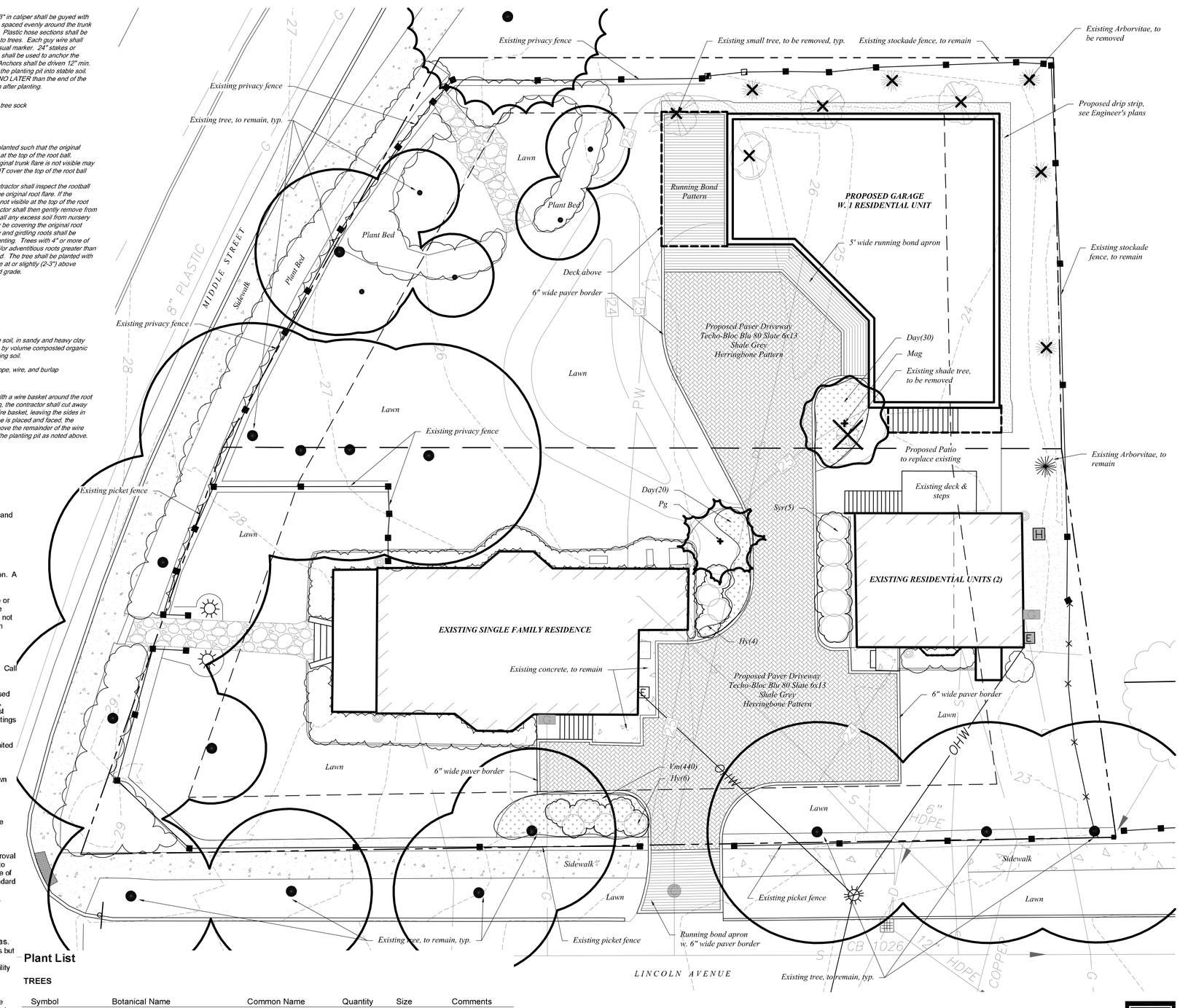
C-4



Tree Planting Detail

Landscape Notes

1. Design is based on drawings by Altus Engineering and may require adjustment due to actual field conditions.
2. The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion.
3. Erosion Control shall be in place prior to construction.
4. Erosion Control to consist of Hay Bales and Erosion Control Fabric shall be staked in place between the work and Water bodies, Wetlands and/or drainage ways prior to any construction.
5. The Contractor shall verify layout and grades and inform the Landscape Architect or Client's Representative of any discrepancies or changes in layout and/or grade relationships prior to construction.
6. It is the contractor's responsibility to verify drawings provided are to the correct scale prior to any bid, estimate or installation. A graphic scale bar has been provided on each sheet for this purpose. If it is determined that the scale of the drawing is incorrect, the landscape architect will provide a set of drawings at the correct scale, at the request of the contractor.
7. Trees to Remain within the construction zone shall be protected from damage for the duration of the project by snow fence or other suitable means of protection to be approved by Landscape Architect or Client's Representative. Snow fence shall be located at the drip line at a minimum and shall include any and all surface roots. Do not fill or mulch on the trunk flare. Do not disturb roots. In order to protect the integrity of the roots, branches, trunk and bark of the tree(s) no vehicles or construction equipment shall drive or park in or on the area within the drip line(s) of the tree(s). Do not store any refuse or construction materials or portalets within the tree protection area.
8. Location, support, protection, and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor.
9. The Contractor shall verify exact location and elevation of all utilities with the respective utility owners prior to construction. Call DIGSAFE at 1-888-344-7233.
10. The Contractor shall procure any required permits prior to construction.
11. Prior to any landscape construction activities Contractor shall test all existing loam and loam from off-site intended to be used for lawns and plant beds using a thorough sampling throughout the supply. Soil testing shall indicate levels of pH, nitrates, macro and micro nutrients, texture, soluble salts, and organic matter. Contractor shall provide Landscape Architect with test results and recommendations from the testing facility along with soil amendment plans as necessary for the proposed plantings to thrive. All loam to be used on site shall be amended as approved by the Landscape Architect prior to placement.
12. Contractor shall notify landscape architect or owner's representative immediately if at any point during demolition or construction a site condition is discovered which may negatively impact the completed project. This includes, but is not limited to, unforeseen drainage problems, unknown subsurface conditions, and discrepancies between the plan and the site. If a contractor is aware of a potential issue, and does not bring it to the attention of the landscape architect or owner's representative immediately, they may be responsible for the labor and materials associated with correcting the problem.
13. The Contractor shall furnish and plant all plants shown on the drawings and listed thereon. All plants shall be nursery-grown under climatic conditions similar to those in the locality of the project. Plants shall conform to the botanical names and standards of size, culture, and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc. in the American Standard of Nursery Stock, American Standards Institute, Inc. 230 Southern Building, Washington, D.C. 20005.
14. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
15. All plants shall be legibly tagged with proper botanical name.
16. The Contractor shall guarantee all plants for not less than one year from time of acceptance.
17. Owner or Owner's Representative will inspect plants upon delivery for conformity to Specification requirements. Such approval shall not affect the right of inspection and rejection during or after the progress of the work. The Owner reserves the right to inspect and/or select all trees at the place of growth and reserves the right to approve a representative sample of each type of shrub, herbaceous perennial, annual, and ground cover at the place of growth. Such sample will serve as a minimum standard for all plants of the same species used in this work.
18. No substitutions of plants may be made without prior approval of the Owner or the Owner's Representative for any reason.
19. All landscaping shall be provided with the following:
    a. Outside hose attachments spaced a maximum of 150 feet apart, and
    b. An underground irrigation system, or
    c. A temporary irrigation system designed for a two-year period of plant establishment.
20. If an automatic irrigation system is installed, all irrigation valve boxes shall be located within planting bed areas.
21. The contractor is responsible for all plant material from the time their work commences until final acceptance. This includes but is not limited to maintaining all plants in good condition, the security of the plant material once delivered to the site, and watering of plants. Plants shall be appropriately watered prior to, during and after planting. It is the contractor's responsibility to provide clean water suitable for plant health from off site, should it not be available on site.
22. All disturbed areas will be dressed with 6" of topsoil and planted as noted on the plans or seeded except plant beds. Plant beds shall be prepared to a depth of 12" with 75% loam and 25% compost.
23. Trees, ground cover, and shrub beds shall be mulched to a depth of 2" with one-year-old, well-composted, shredded native bark not longer than 4" in length and ½" in width, free of woodchips and sawdust. Mulch for ferns and herbaceous perennials shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 5' diameter min. saucer. Color of mulch shall be black.
24. Drip strip shall extend to 6" beyond roof overhang and shall be edged with 3/16" thick metal edger.
25. In no case shall mulch touch the stem of a plant nor shall mulch ever be more than 3" thick total (including previously applied mulch) over the root ball of any plant.
26. Secondary lateral branches of deciduous trees overhanging vehicular and pedestrian travel ways shall be pruned up to a height of 6' to allow clear and safe passage of vehicles and pedestrians under tree canopy. Within the sight distance triangles at vehicle intersections the canopies shall be raised to 8' min.
27. Snow shall be stored a minimum of 5' from shrubs and trunks of trees.
28. Landscape Architect is not responsible for the means and methods of the contractor.



0 2 5 10 20

Plant List

TREES

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Pg	*Picea orientalis 'Gowdy'*	Gowdy Oriental Spruce	1	8-10' Ht	B&B
Mag	*Magnolia 'Betty'*	Betty Magnolia	1	8-10' Ht	B&B

SHRUBS

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Hy	*Hydrangea arborescens 'Incrediball'*	Incrediball Hydrangea	10	5 gal	
Syr	*Syringa meyeri 'Palibin'*	Dwarf Korean Lilac	5	3-4' Ht	B&B

PERENNIALS, GROUNDCOVERS, VINES and ANNUALS

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Day	*Hemerocallis 'Siloam Double Classic'*	Siloam Double Classic Daylily	50	1 gal	
Vm	*Vinca minor 'Bowles'*	Bowles Periwinkle	440	2.5" pots	

woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

Residential Development Expansion

LANDSCAPE PLAN

765 Middle Street Portsmouth, New Hampshire

Drawn By: VM
Checked By: RW
Scale: 1" = 10' - 0"
Date: September 28, 2022
Revisions:
December 16, 2022
For PB Submission

L-1

Sheet 1 of 1

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SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

RESIDENTIAL DEVELOPMENT EXPANSION
NICOLE J. GIUSTO & DAVID A. SINCLAIR
765 MIDDLE STREET
PORTSMOUTH, NEW HAMPSHIRE
TAX MAP 418, LOT 37

LONGITUDE: 70°46'00" W
LATITUDE: 43°04'01" N

OWNER / APPLICANT:

NICOLE J. GIUSTO & DAVID A. SINCLAIR
765 MIDDLE STREET
PORTSMOUTH, NH 03801

DESCRIPTION

The project consists of the development of the lot for the construction of a three–bay garage with a second story apartment along with associated site improvements.

DISTURBED AREA

The total area to be disturbed for the redevelopment improvements is approximately 8,000 S.F. (±0.18 acres).

PROJECT PHASING

The proposed project will be completed in one phase.

NAME OF RECEIVING WATER

The site drains overland onto adjacent properties.

SEQUENCE OF MAJOR ACTIVITIES

1. Install temporary erosion control measures including silt fences, 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. Strip loam and stockpile.
3. Site features as shown on plan.
4. Rough grade site including placement of borrow materials.
5. Construct drainage structures, culverts, utilities, swales & pavement base course materials.
6. Loam (6" min) and seed all disturbed areas not paved or otherwise stabilized.
7. Install pavement.
8. 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, the silt fences 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, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, & level spreaders prior to directing flow to them.

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 silt fence or other barriers when it has reached one–third the height of the fence or bale, 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.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

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 shrub plantings.
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. * Particle size by weight is 100% passing a 6" screen and a minimum of 70 % maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * 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. TEMPORARY GRASS COVER

1. Seedbed Preparation –
   Apply fertilizer at the rate of 600 pounds per acre of 10–10–10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre.

2. Seeding –
   a. Utilize annual rye grass at a rate of 40 lbs/acre.
   b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
   c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

3. Maintenance –
   Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

1. Sequence of Installation –
   Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

2. Maintenance –
   a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.
   b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.
   a. Sediment deposits must be removed when deposits reach approximately one–third (1/3) the height of the barrier.
   b. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.
   c. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.

E. PERMANENT SEEDING –

1. Bedding – stones larger than $1\frac{1}{2}$", 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 fertiliizer 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 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 fertilizer @ 12 lbs. per 1,000 s.f.

3. Seed Mixture (recommended):

Type	Lbs. / Acre	Lbs. / 1,000 sf
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Seed Mixture (For slope embankments):
Grass Seed: Provide fresh, clean, new–crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified:

Type	Min. Purity (%)	Min. Germination (%)	Kg./Hectare (Lbs/Acre)
Creeping Red Fescue (c)	96	85	45 (40)
Perennial Rye Grass (a)	98	90	35 (30)
Redtop	95	80	5 (5)
Alsike Clover	97	90(e)	5 (5)
		Total	90 (80)

a. Ryegrass shall be a certified fine–textured variety such as Pennfine, Fiesta, Yorktown, Diplomat, or equal.
b. Fescue varieties shall include – Creeping Red and/or Hard Reliant, Scaldis, Koket, or Jamestown.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

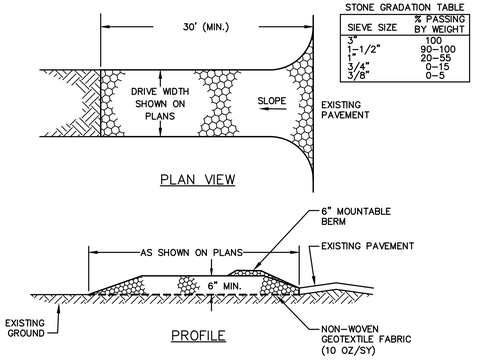
4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

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.



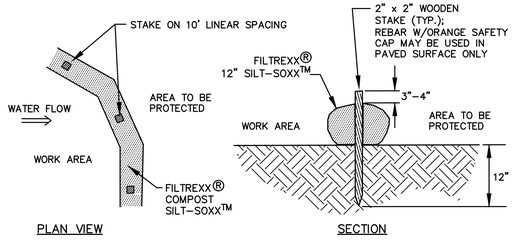
STONE GRADATION TABLE

SIEVE SIZE	% PASSING BY WEIGHT
3"	100
1–1/2"	90–100
1"	20–55
3/4"	0–15
3/8"	0–5

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – NHDOT STANDARD STONE SIZE #4 – SECTION 703 OF NHDOT STANDARD.
2. LENGTH – DETAILED ON PLANS (50 FOOT MINIMUM).
3. THICKNESS – SIX (6) INCHES (MINIMUM).
4. WIDTH – FULL DRIVE WIDTH UNLESS OTHERWISE SPECIFIED.
5. FILTER FABRIC – MIRAFI 600X OR EQUAL APPROVED BY ENGINEER.
6. SURFACE WATER CONTROL – 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. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AT ALL ENTRANCES TO PUBLIC RIGHTS–OF–WAY, AT LOCATIONS SHOWN ON THE PLANS, AND/OR WHERE AS DIRECTED BY THE ENGINEER.

STABILIZED CONSTRUCTION EXIT — NOT TO SCALE

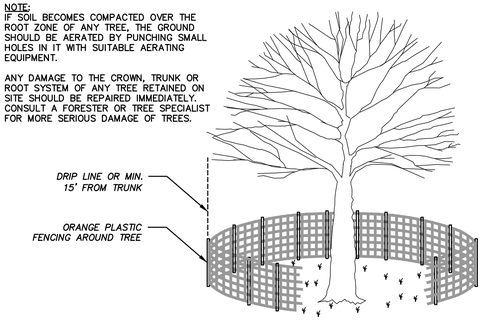


NOTES:
1. SILTSOXX MAY BY USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY SILTSOXX SHALL BE DISPOSED OF PROPERLY.

TUBULAR SEDIMENT BARRIER — NOT TO SCALE

NOTE:
IF SOIL BECOMES COMPACTED OVER THE ROOT ZONE OF ANY TREE, THE GROUND SHOULD BE AERATED BY PUNCHING SMALL HOLES IN IT WITH SUITABLE AERATING EQUIPMENT.

ANY DAMAGE TO THE CROWN, TRUNK OR ROOT SYSTEM OF ANY TREE RETAINED ON SITE SHOULD BE REPAIRED IMMEDIATELY. CONSULT A FORESTER OR TREE SPECIALIST FOR MORE SERIOUS DAMAGE OF TREES.



TREE PROTECTION DETAIL — NOT TO SCALE

P5021

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ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
12/16/22

NOT FOR CONSTRUCTION

ISSUED FOR: TECHNICAL ADVISORY COMMITTEE

ISSUE DATE: DECEMBER 16, 2022

REVISIONS

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SCALE: NOT TO SCALE

OWNER/APPLICANT:

NICOLE J. GIUSTO &
DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

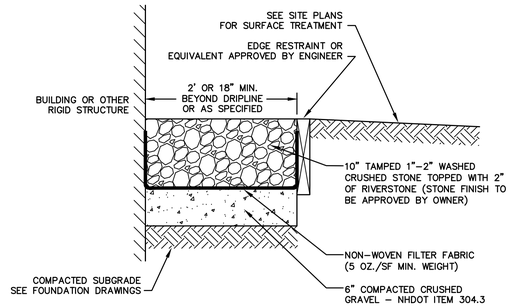
765 MIDDLE STREET
PORTSMOUTH, NH

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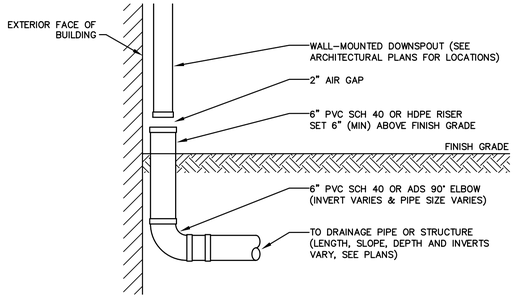
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SHEET NUMBER:

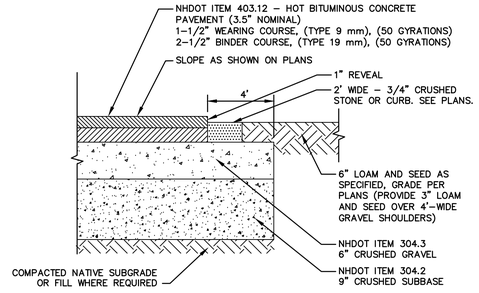
D-1



STONE DRIP EDGE NOT TO SCALE



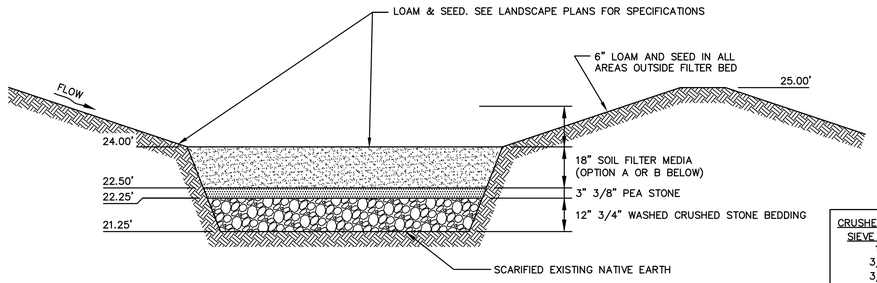
EXTERIOR ROOF DRAIN CONNECTION NOT TO SCALE



NOTES:

1. INSTALL TACK COAT TO BINDER COURSE PAVEMENT PRIOR TO INSTALLING WEARING COURSE.
2. REMOVE LEDGE WITHIN 30" OF SURFACE.
3. ALL LOAM, CLAY, MUCK, ORGANIC AND/OR YIELDING MATERIAL SHALL BE REMOVED TO A DEPTH OF NO LESS THAN 18.5" BELOW FINISH GRADE. INSTALL COMPACTED SAND OR GRAVEL BORROW TO SUBGRADE, AS NECESSARY.
4. SUBGRADE SHALL BE FREE OF VOIDS THAT ALLOW MOVEMENT/SETTLEMENT OF MATERIALS.
5. SUBGRADE SHALL BE PROOF ROLLED WITH A FULLY LOADED DUMP TRUCK PRIOR TO PLACEMENT OF GRAVEL. PROOF ROLLING TO BE VIEWED AND APPROVED BY ENGINEER.

PAVEMENT CROSS SECTION NOT TO SCALE



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 NHDOT STANDARD SPECIFICATIONS

NOTES

1. WHEN CONTRACTOR EXCAVATES INFILTRATION POND AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL FILTER MEDIA SHALL EITHER OPTION A OR OPTION B AT CONTRACTOR'S DISCRETION.
3. DO NOT PLACE INFILTRATION POND INTO SERVICE UNTIL IT HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS STABILIZED.
4. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES TO THE INFILTRATION POND DURING ANY STAGE OF CONSTRUCTION.
5. DO NOT TRAFFIC EXPOSED SURFACES OF INFILTRATION POND WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION ACTIVITIES WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE BASIN.

MAINTENANCE REQUIREMENTS

- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 2.5 INCHES IN A 24–HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.
- PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
- AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72–HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
- VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

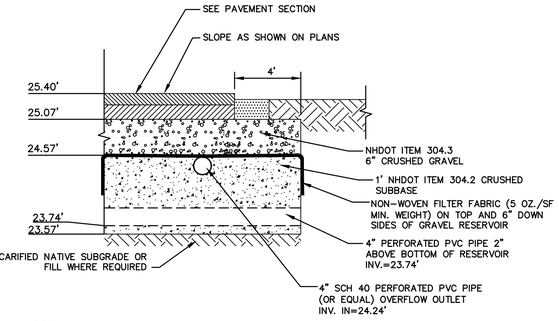
DESIGN REFERENCES

- UNH STORMWATER CENTER
- EPA (1999A)
- NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

FILTER MEDIA MIXTURES

Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Filter Media Option A			
ASTM C–33 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

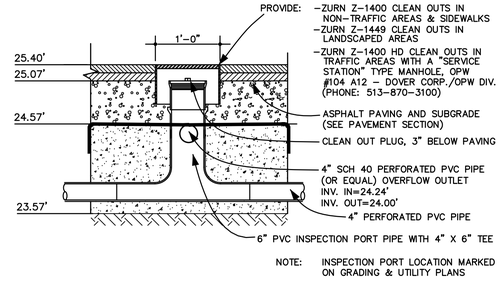
INFILTRATION POND NOT TO SCALE



NOTES:

1. INSTALL TACK COAT TO BINDER COURSE PAVEMENT PRIOR TO INSTALLING WEARING COURSE.
2. REMOVE LEDGE WITHIN 30" OF SURFACE.
3. ALL LOAM, CLAY, MUCK, ORGANIC AND/OR YIELDING MATERIAL SHALL BE REMOVED TO A DEPTH OF NO LESS THAN 18.5" BELOW FINISH GRADE. INSTALL COMPACTED SAND OR GRAVEL BORROW TO SUBGRADE, AS NECESSARY.
4. SUBGRADE SHALL BE FREE OF VOIDS THAT ALLOW MOVEMENT/SETTLEMENT OF MATERIALS.
5. SUBGRADE SHALL BE SCARIFIED TO PROMOTE RUNOFF. MECHANICAL SHALL NOT BE PLACED WITHIN BASIN AREA.

UNDERGROUND RESERVOIR NOT TO SCALE



INSPECTION PORT NOT TO SCALE

P5021

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SCALE:
(22"x34") 1" = 10'
(11"x17") 1" = 20'

OWNER/APPLICANT:

NICOLE J. GIUSTO &
DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

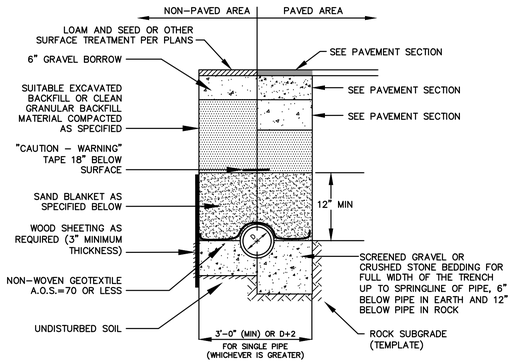
765 MIDDLE STREET
PORTSMOUTH, NH

TITLE:

DETAIL SHEET

SHEET NUMBER:

D-2



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

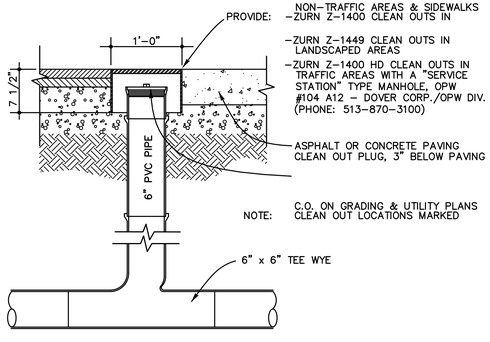
* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

DRAINAGE, SEWER & FORCEMAIN TRENCH

NOT TO SCALE

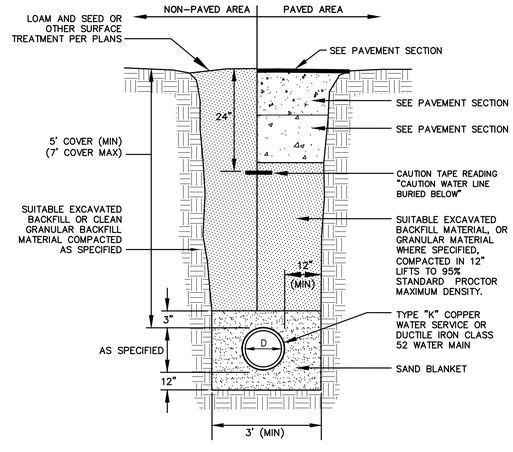
STANDARD TRENCH NOTES

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWING.
2. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2 INCH TO 1/2 INCH SHALL BE USED.
3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. BLANKET MAY BE REPLACED WITH BEDDING MATERIAL FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE AND THE GEOTEXTILE IS RELOCATED ACCORDINGLY.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT, OR CLAY, ALL EXCAVATED LEDGE MATERIAL, ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. 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 SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION WILL BE PRESERVED.
5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
6. 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 1 FOOT ABOVE THE TOP OF 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 THAT 1 FOOT ABOVE THE TOP OF THE PIPE.
7. 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 IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.) ALSO, W SHALL BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
8. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL, FILL AND/OR LOAM SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATION REQUIREMENTS FOR CLASS A (3000#)
   CONCRETE AS FOLLOWS:
   CEMENT: 6.0 BAGS PER CUBIC YARD
   WATER: 5.75 GALLONS PER BAG
   CEMENT MAXIMUM SIZE OF AGGREGATE: 1 INCH
   CONCRETE ENCASEMENT IS NOT ALLOWED FOR PVC PIPE.
10. CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
11. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE TEN FEET (10') SEPARATION BETWEEN WATER AND SEWER. REFER TO TOWN'S STANDARD SPECIFICATIONS FOR METHODS OF PROTECTION IN AREAS THAT CANNOT MEET THESE REQUIREMENTS.



SEWER CLEANOUT

NOT TO SCALE



SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

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. ALL WATER MAIN INSTALLATIONS SHALL BE ENCASED IN 8 MIL POLYETHYLENE.

WATER MAIN TRENCH

NOT TO SCALE

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OWNER/APPLICANT:

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765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

765 MIDDLE STREET
PORTSMOUTH, NH

TITLE:

DETAIL SHEET

SHEET NUMBER:

D-3

P5021

NORTH ELEVATION



EAST ELEVATION



GARAGE

765 MIDDLE STREET, PORTSMOUTH, NH

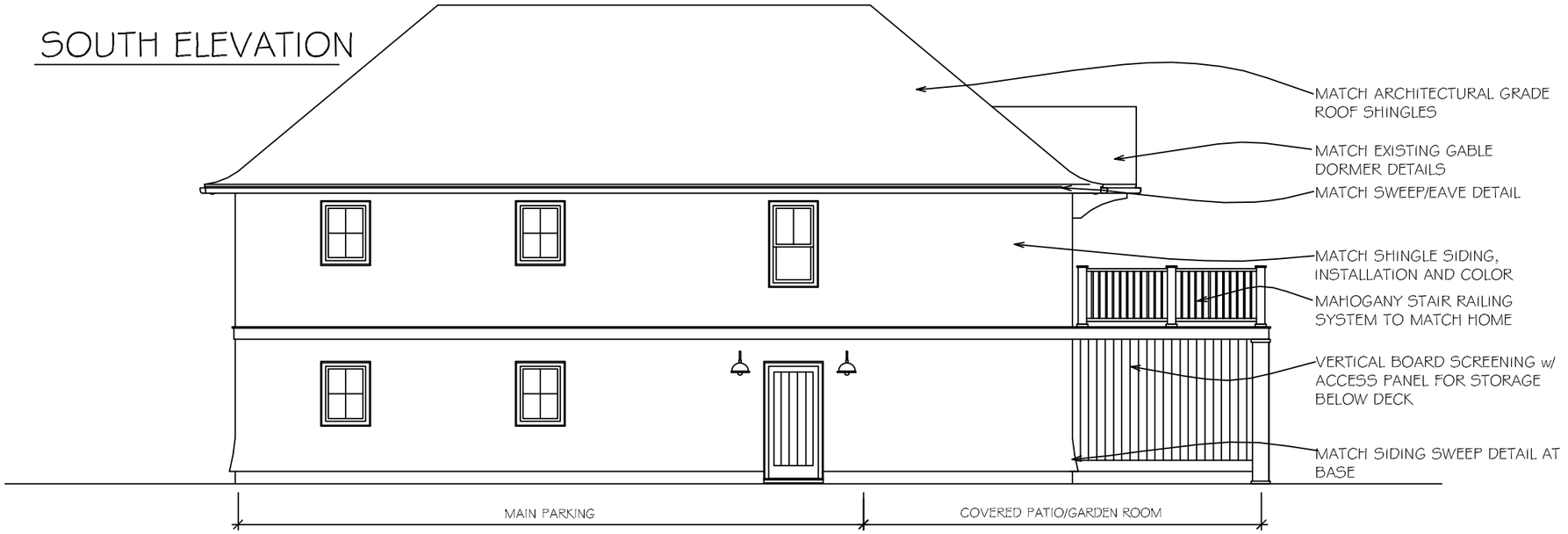
PROPOSED ELEVATIONS

$\frac{1}{8}$" = 1'-0"

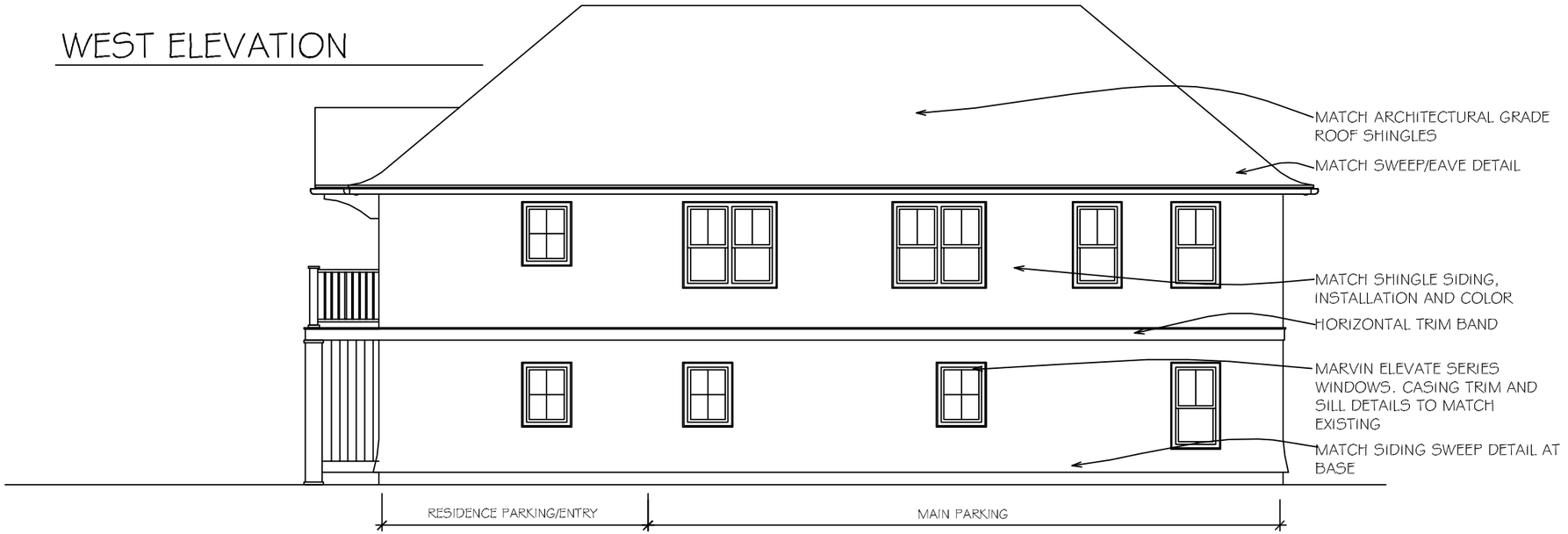
DEC 2022 WS

SOMMA STUDIOS

SOUTH ELEVATION



WEST ELEVATION



GARAGE

765 MIDDLE STREET, PORTSMOUTH, NH

PROPOSED ELEVATIONS

$\frac{1}{8}" = 1'-0"$

DEC 2022 WS

SOMMA STUDIOS

NORTHEAST ELEVATION

(DOES NOT SHOW DECKS)



GARAGE

765 MIDDLE STREET, PORTSMOUTH, NH

PROPOSED ELEVATIONS

$\frac{1}{8}$" = 1'-0"

DEC 2022 WS

SOMMA STUDIOS

RESIDENTIAL DEVELOPMENT EXPANSION

765 Middle Street
Portsmouth, NH
Tax Map 148, Lot 37

DRAINAGE ANALYSIS

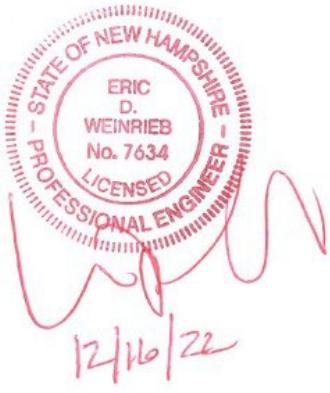
December 2022

Prepared for:

Nicole J. Giusto & David A. Sinclair
765 Middle Street
Portsmouth, NH 03801

Prepared By:

ALTUS ENGINEERING
133 Court Street
Portsmouth, NH 03801
Phone: (603) 433-2335



765 Middle Street
Portsmouth, NH
Tax Map 148, Lot 37

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2) Site Location Plan (USGS Map)
3) Soil Data
   - Web Soil Survey
4) Drainage Analysis
   - Extreme Precipitation Table
   - Pre-Development
   - Post Development

Appendix: Plans: WS-1: Pre-Development Watershed Plan *(11" x 17")*
WS-2: Post Development Watershed Plan *(11" x 17")*

Project Plans *(22" x 34") (project plans under separate attachment)*

Project Narrative

765 Middle Street
Portsmouth, NH
Tax Map 148, Lot 37
Altus Project P5021

PROJECT DESCRIPTION

Nicole J. Giusto & David A. Sinclair are proposing a residential development expansion on the site located at 765 Middle Street in Portsmouth, New Hampshire. The property is identified on the Portsmouth Assessors Map as Tax Map 148, Lot 37 and is approximately 21,504 s.f. with three existing residences on the site to remain. The applicant proposes to construct a three-bay garage with a second-floor apartment along with site improvements to the lot. The property access will remain off Lincoln Avenue.

Zoning relief was acquired in October 2022 to add the additional dwelling unit. The lot is currently serviced by municipal sewer and water. The driveway will be repaved and extended between the two existing structures to access the proposed unit.

Stormwater from impervious and other developed areas on the property will be treated using stormwater best management practices (BMPs) designed to remove fine particulates and suspended sediments. Roof gutters routed to an underground reservoir, roofline drip strips, an infiltration pond and other practices will be utilized to achieve the required stormwater management.

The original site had approximately 5,420 s.f. of impervious cover. The proposed project has a total impervious area of approximately 8,300 s.f. resulting in a net increase of 3,060 s.f. of impervious.

The proposed improvements will treat approximately 4,300 s.f. of impervious on site. Of the 4,300 s.f. impervious area being treated, 3,200 s.f. are new proposed impervious. This means that the proposed improvements will treat all impervious area being added to the site as well as 1,100 s.f. of existing impervious area.

CALCULATION METHODS

The drainage analysis was completed using HydroCAD v.10. The program generates runoff hydrographs for specified storm distributions and performs reservoir routing using the storage indication method. The criteria used for this drainage analysis are the 2-year, 10-year, 25-year, and 50-year 24-hour Type III frequency storm events based on the Northeast Regional Climate Center "extreme precipitation tables" for the Portsmouth, New Hampshire.

Recommended erosion control measures are based upon the "*New Hampshire Stormwater Manual"*, developed in 2008.

The following modeling conservative data and assumptions were incorporated into the analysis:

- Model based on 1.15% of the extreme precipitation values published by Cornell/UNH for coastal communities.
- Project area soils and hydrological group are based on NRCS Soils mapping.
- Minimum Tc of 6 minutes SCS TR-55 Urban Hydrology for Small Watersheds indicates that the minimum Tc is 0.1 hour or 6 minutes. The Federal Highway Administration Hydraulic Engineering and NHDOT Drainage Design for Highways states that minimum time of concentration (Tc) for urbanized areas should not be less than 5-minutes. Extremely short Tc times can lead to improbable runoff values and is not appropriate for design.

Disclaimer

Altus Engineering notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

DRAINAGE ANALYSIS

The NRCS web soils survey indicates the site consists of Urban land-Canton complex soils, a well-drained soil.

The pre-development watershed is delineated on the accompanying Sheet W-1, Pre-Development Watershed Plan. The runoff from watershed 10 flows off the roofs and pavement and sheet flows off the eastern side of the property represented as Point of Analysis (POA) 1. The runoff from watershed 20 consists mainly of runoff across the lawn. The lawn runoff sheets towards the eastern edge of the property represented as POA 2.

The post-development conditions were analyzed using the same Points of Analyses indicated in the pre-development watershed conditions. The post-development watersheds are delineated on the accompanying sheet WS-2, Post-Development Watershed Plan. Modifications to the delineated watersheds and associated groundcover were made to sub-catchments according to the improvements proposed for the property. Watershed 10 remains largely the same and still discharges to POA 1. Watershed 20 was split into multiple watersheds to account for the roof runoff from the proposed structure as well as the proposed pavement and grading improvements. Watershed 22 represents the back of the proposed structure which drains to a drip-edge. Watershed 23 represents the front of the proposed structure which drains to gutters that are routed to an underground reservoir. Watershed 21 still sends runoff to POA 2. Watershed 20 channels most runoff from the remaining lawn and proposed pavement to infiltration pond 20. The three proposed stormwater retention structures significantly reduce the amount of stormwater routed to POA 2 resulting in the reduction of runoff from the pre-development to post-development conditions.

A complete summary of the drainage model is included in the appendix of this report. The following table compares pre- and post-development peak rates at the two Points of Analyses identified on the plans for the 2, 10, 25, and 50 year storm events:

Stormwater Modeling Summary
Peak Q (cfs) for Type III 24-Hour Storm Events

	2-Yr Storm (3.69 inch)	10-Yr Storm (5.60 inch)	25-Yr Storm (7.10 inch)	50-Yr Storm (8.50 inch)
POA #100				
Pre	0.24	0.54	0.79	1.04
Post	0.21	0.52	0.78	1.04
Net Change	**-0.03 (12.5%)**	**-0.02 (3.7%)**	**-0.01 (1.3%)**	**0.00 (0.0%)**
POA #200				
Pre	0.02	0.24	0.53	0.86
Post	0.01	0.07	0.15	0.23
Net Change	**-0.01 (50.0%)**	**-0.17 (70.8%)**	**-0.38 (71.7%)**	**-0.63 (73.3%)**

As the above table demonstrates, the proposed peak rates of runoff will be reduced from the existing conditions for all the analyzed storm events.

CONCLUSION

The proposed 3-bay garage will not have an adverse effect on abutting properties and infrastructure as a result of stormwater runoff. The proposed residential development will provide stormwater treatment and retention for the new structure, extended driveway, and other associated improvements with the construction of a stormwater infiltration pond, stone dripedge, and underground reservoir system. The analysis of the site shows that the peak runoff rates for the site will be reduced for all storm events up to and including the 50-year storm. Appropriate steps will be taken during construction to properly mitigate erosion and sedimentation using Best Management Practices for sediment and erosion control.

OPERATION AND MAINTENANCE

- **Manicured Landscaped Areas (Infiltration Pond)** - litter control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from the driveway, lawn, and other landscaped areas before materials are transported into surface waters.

- **Fertilizer Management –** fertilizer management includes controlling the rate, timing, and method of fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting surface and ground waters. Fertilizer will not be applied to frozen ground. Fertilizer spills will be cleaned up in a timely manner. Fertilizer will not be allowed to be broadcasted into water bodies. When fertilizing a lawn; it will be watered thoroughly but not so much that water runs off the surface of the lawn and transports fertilizer to water bodies.

- **De-Icing Chemical Use and Storage –** salt will be stored inside a building to avoid contamination of wetlands and other sensitive areas. When the driveway and walkways are free of snow and ice, they shall be swept clean at least once annually. Disposal of sweepings shall be at a solid waste facility.

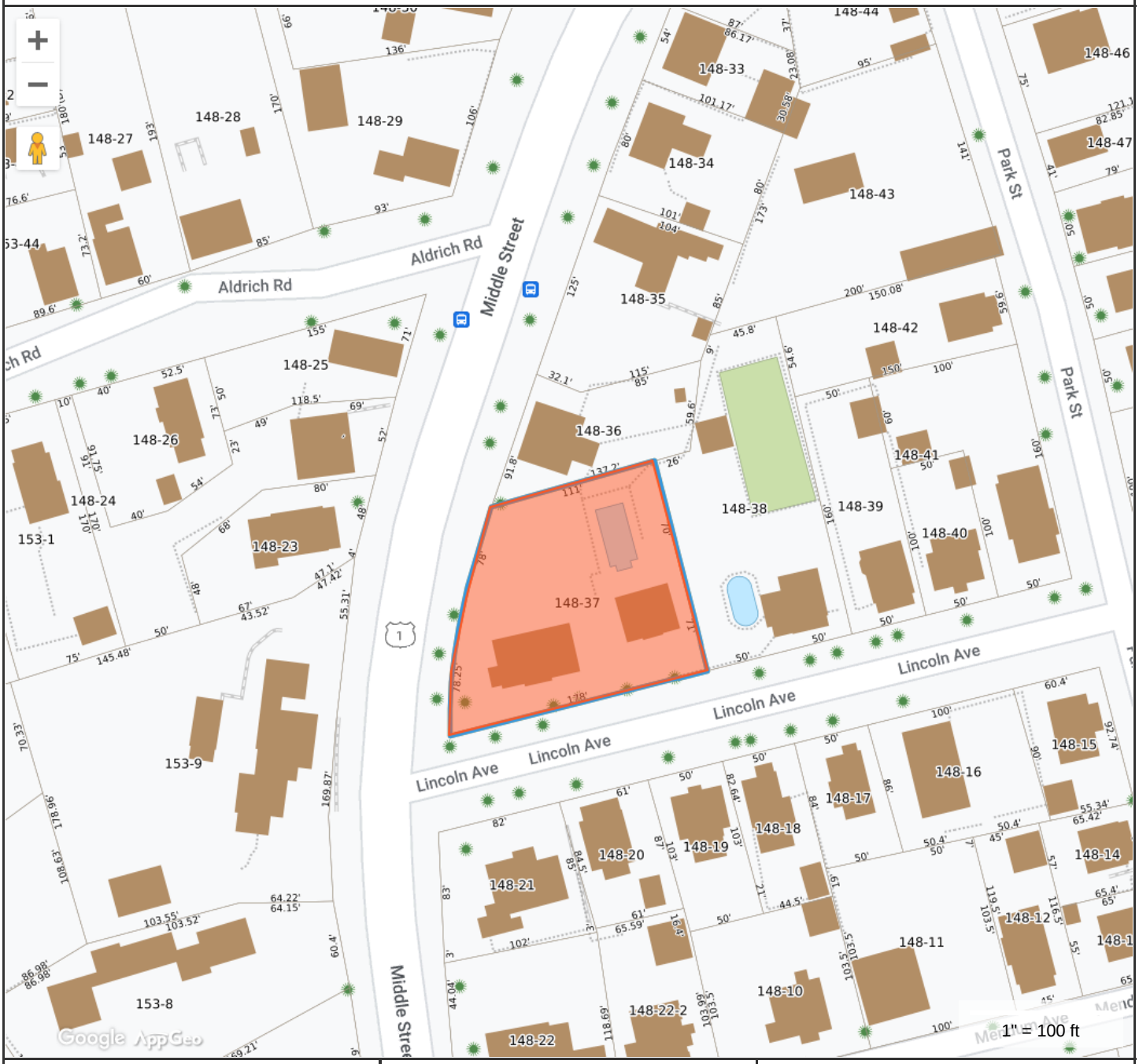
- **Gutters, Downspouts, and Drainage Pipes –** gutters and drainage pipes will be inspected semi-annually, or more often as need for accumulation of debris and structural integrity. Leaves and other debris will be removed to insure the functionality of the gutters and drainage pipes.

- **Underground Reservoir –** the underground reservoir will be inspected using the inspection port in the driveway semi-annually, or more often as needed, for the accumulation of debris, structural integrity, and to insure water is being infiltrated properly.

- **Stone Drip Edge –** the stone drip edge should be observed periodically during rain events for proper infiltration into the system and inspected at least once per year to verify water flow and exfiltration.

- **Trash & Recycling -** trash and recycling will be stored indoors to reduce the possibility of polluting surface and groundwaters.

765 Middle Street Portsmouth, NH



Property Information

Property ID	0148-0037-0000
Location	765 MIDDLE ST
Owner	SINCLAIR DAVID A

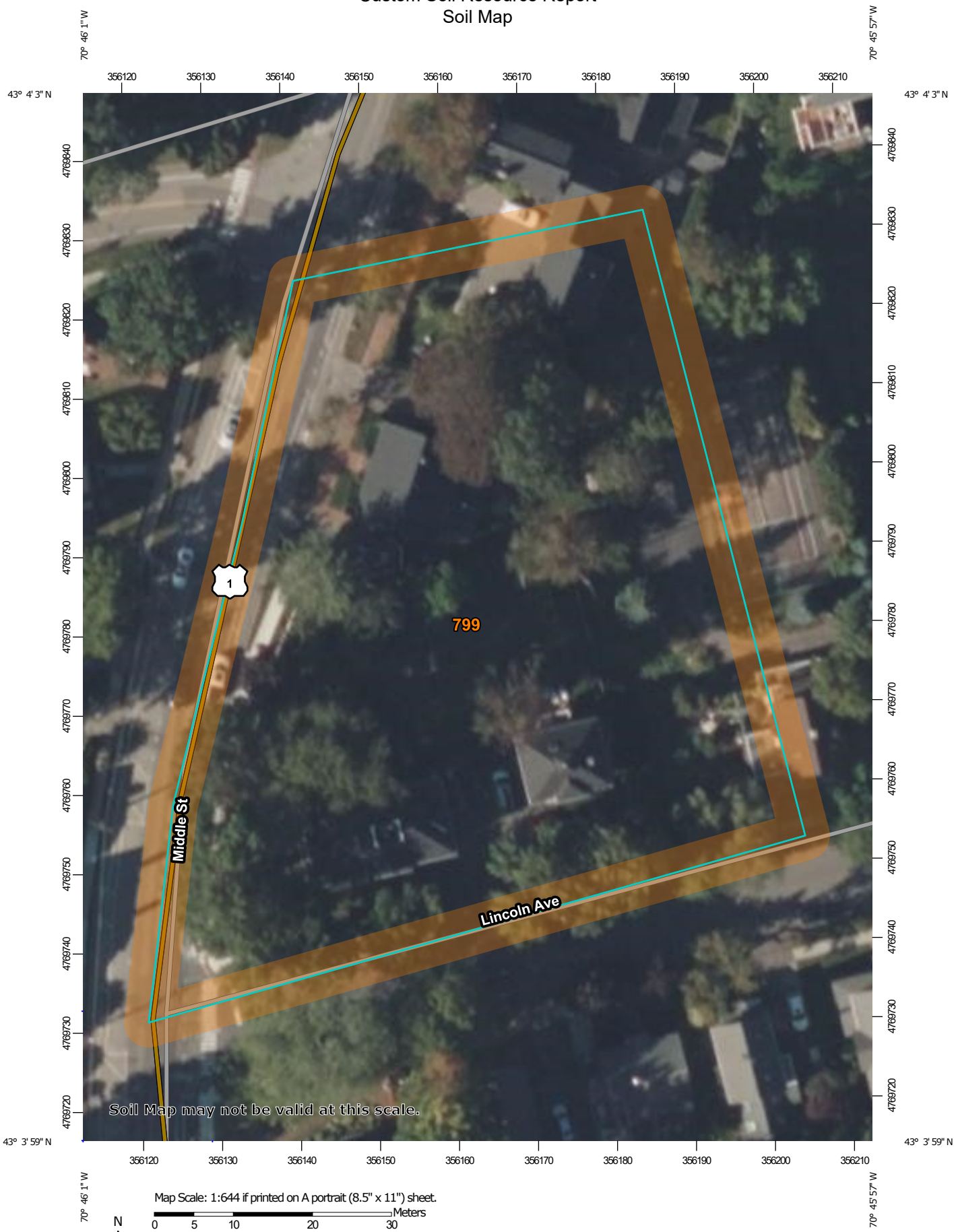
MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 09/21/2022
Data updated 3/9/2022

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Custom Soil Resource Report
Soil Map



Map Scale: 1:644 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

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
799	Urban land-Canton complex, 3 to 15 percent slopes	1.4	100.0%
Totals for Area of Interest		**1.4**	**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

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.767 degrees West
Latitude	43.067 degrees North
Elevation	0 feet
Date/Time	Wed, 09 Nov 2022 17:10:37 -0500

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	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
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	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.73	0.97	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.07	4.58	**5yr**	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.72	2.23	2.89	3.75	4.87	5.53	**10yr**	4.31	5.32	6.08	7.11	7.98	**10yr**
25yr	0.48	0.76	0.97	1.33	1.77	2.33	**25yr**	1.53	2.14	2.77	3.63	4.74	6.17	7.10	**25yr**	5.46	6.83	7.80	9.02	10.05	**25yr**
50yr	0.53	0.86	1.10	1.53	2.07	2.75	**50yr**	1.78	2.52	3.28	4.32	5.66	7.39	8.58	**50yr**	6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	0.59	0.96	1.24	1.77	2.41	3.25	**100yr**	2.08	2.97	3.90	5.15	6.77	8.85	10.38	**100yr**	7.84	9.98	11.38	12.96	14.28	**100yr**
200yr	0.67	1.10	1.42	2.04	2.82	3.83	**200yr**	2.43	3.51	4.61	6.12	8.08	10.61	12.55	**200yr**	9.39	12.07	13.75	15.55	17.03	**200yr**
500yr	0.80	1.31	1.71	2.48	3.47	4.75	**500yr**	2.99	4.37	5.75	7.69	10.21	13.49	16.15	**500yr**	11.93	15.53	17.67	19.78	21.50	**500yr**

Lower Confidence Limits

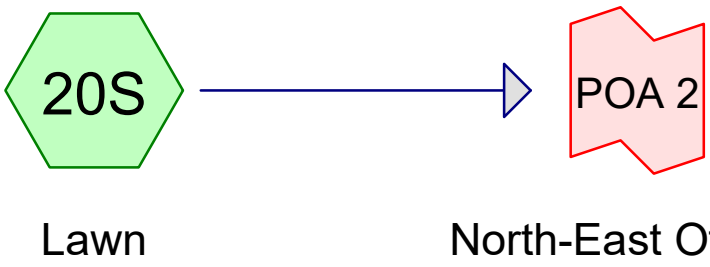
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.88	**1yr**	0.63	0.86	0.92	1.33	1.68	2.23	2.50	**1yr**	1.98	2.40	2.86	3.17	3.89	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	5.08	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.79	4.19	**5yr**	3.35	4.03	4.72	5.54	6.24	**5yr**
10yr	0.39	0.59	0.73	1.03	1.32	1.60	**10yr**	1.14	1.56	1.81	2.39	3.06	4.37	4.87	**10yr**	3.87	4.68	5.45	6.42	7.20	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.76	3.54	4.71	5.90	**25yr**	4.17	5.68	6.66	7.80	8.69	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.52	2.12	2.35	3.08	3.94	5.32	6.82	**50yr**	4.71	6.56	7.74	9.06	10.03	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.47	**100yr**	1.74	2.41	2.63	3.42	4.36	5.98	7.87	**100yr**	5.29	7.57	9.00	10.53	11.58	**100yr**
200yr	0.59	0.89	1.13	1.63	2.28	2.82	**200yr**	1.97	2.75	2.93	3.79	4.80	6.70	9.09	**200yr**	5.93	8.74	10.46	12.25	13.39	**200yr**
500yr	0.69	1.02	1.31	1.91	2.71	3.37	**500yr**	2.34	3.29	3.41	4.33	5.47	7.79	10.98	**500yr**	6.89	10.56	12.75	14.99	16.21	**500yr**

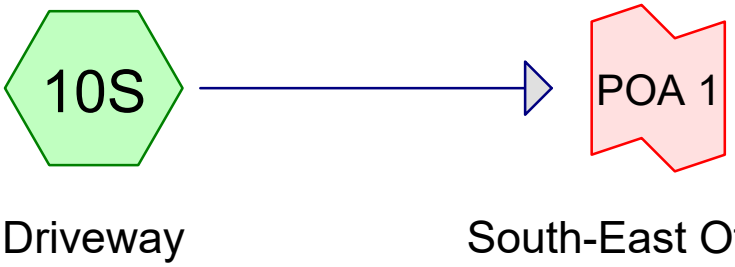
Upper Confidence Limits

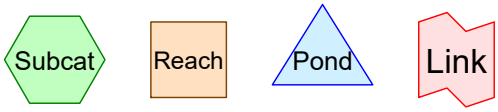
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.99	3.16	**1yr**	2.64	3.04	3.58	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.43	3.70	**2yr**	3.03	3.56	4.09	4.84	5.63	**2yr**
5yr	0.40	0.62	0.76	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.34	4.96	**5yr**	3.84	4.77	5.38	6.37	7.15	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.10	3.95	5.34	6.19	**10yr**	4.72	5.96	6.81	7.83	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.56	**25yr**	1.76	2.51	2.95	4.07	5.14	7.79	8.33	**25yr**	6.90	8.01	9.13	10.33	11.40	**25yr**
50yr	0.67	1.02	1.27	1.82	2.45	3.12	**50yr**	2.12	3.05	3.59	4.99	6.30	9.76	10.44	**50yr**	8.64	10.03	11.41	12.71	13.95	**50yr**
100yr	0.79	1.19	1.49	2.15	2.95	3.80	**100yr**	2.55	3.72	4.37	6.15	7.74	12.22	13.07	**100yr**	10.81	12.57	14.25	15.67	17.07	**100yr**
200yr	0.92	1.39	1.76	2.54	3.55	4.64	**200yr**	3.06	4.54	5.33	7.57	9.50	15.33	16.40	**200yr**	13.57	15.77	17.84	19.31	20.90	**200yr**
500yr	1.14	1.70	2.19	3.18	4.52	6.02	**500yr**	3.90	5.88	6.91	10.00	12.50	20.72	22.13	**500yr**	18.34	21.28	24.00	25.46	27.31	**500yr**

Powered by ACIS
Northeast Regional Climate Center

PRE-DEVELOPMENT







Routing Diagram for 5021-PRE
Prepared by Altus Engineering, Inc., Printed 12/15/2022
HydroCAD® 10.00-26 s/n 01222 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.346	39	>75% Grass cover, Good, HSG A (10S, 20S)
0.026	96	Gravel surface, HSG A (10S, 20S)
0.069	98	Paved parking, HSG A (10S, 20S)
0.055	98	Roofs, HSG A (10S, 20S)
0.496	**57**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.496	HSG A	10S, 20S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.496		**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
0.346	0.000	0.000	0.000	0.000	0.346	>75% Grass cover, Good	10S, 20S
0.026	0.000	0.000	0.000	0.000	0.026	Gravel surface	10S, 20S
0.069	0.000	0.000	0.000	0.000	0.069	Paved parking	10S, 20S
0.055	0.000	0.000	0.000	0.000	0.055	Roofs	10S, 20S
0.496	**0.000**	**0.000**	**0.000**	**0.000**	**0.496**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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 10S: Driveway Runoff Area=7,515 sf 46.64% Impervious Runoff Depth>2.67"
Tc=6.0 min CN=72 Runoff=0.54 cfs 0.038 af

Subcatchment 20S: Lawn Runoff Area=14,092 sf 13.57% Impervious Runoff Depth>0.89"
Flow Length=167' Tc=6.0 min CN=49 Runoff=0.24 cfs 0.024 af

Link POA 1: South-East Off-Site Inflow=0.54 cfs 0.038 af
Primary=0.54 cfs 0.038 af

Link POA 2: North-East Off-Site Inflow=0.24 cfs 0.024 af
Primary=0.24 cfs 0.024 af

Total Runoff Area = 0.496 ac Runoff Volume = 0.062 af Average Runoff Depth = 1.51"
74.93% Pervious = 0.372 ac 25.07% Impervious = 0.124 ac

Summary for Subcatchment 10S: Driveway

Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.038 af, Depth> 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
1,941	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
3,345	39	>75% Grass cover, Good, HSG A
665	96	Gravel surface, HSG A
1,195	98	Roofs, HSG A
369	98	Paved parking, HSG A
7,515	72	Weighted Average
4,010		53.36% Pervious Area
3,505		46.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 20S: Lawn

Runoff = 0.24 cfs @ 12.11 hrs, Volume= 0.024 af, Depth> 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
170	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
11,727	39	>75% Grass cover, Good, HSG A
453	96	Gravel surface, HSG A
1,198	98	Roofs, HSG A
544	98	Paved parking, HSG A
14,092	49	Weighted Average
12,180		86.43% Pervious Area
1,912		13.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	19	0.0278	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.69"
1.8	144	0.0345	1.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	4	0.2252	3.32		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	167	Total, Increased to minimum Tc = 6.0 min			

Summary for Link POA 1: South-East Off-Site

Inflow Area = 0.173 ac, 46.64% Impervious, Inflow Depth > 2.67" for 10-yr event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.038 af
Primary = 0.54 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link POA 2: North-East Off-Site

Inflow Area = 0.324 ac, 13.57% Impervious, Inflow Depth > 0.89" for 10-yr event
Inflow = 0.24 cfs @ 12.11 hrs, Volume= 0.024 af
Primary = 0.24 cfs @ 12.11 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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 10S: Driveway Runoff Area=7,515 sf 46.64% Impervious Runoff Depth>1.25"
Tc=6.0 min CN=72 Runoff=0.24 cfs 0.018 af

Subcatchment 20S: Lawn Runoff Area=14,092 sf 13.57% Impervious Runoff Depth>0.21"
Flow Length=167' Tc=6.0 min CN=49 Runoff=0.02 cfs 0.006 af

Link POA 1: South-East Off-Site Inflow=0.24 cfs 0.018 af
Primary=0.24 cfs 0.018 af

Link POA 2: North-East Off-Site Inflow=0.02 cfs 0.006 af
Primary=0.02 cfs 0.006 af

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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 10S: Driveway Runoff Area=7,515 sf 46.64% Impervious Runoff Depth>3.91"
Tc=6.0 min CN=72 Runoff=0.79 cfs 0.056 af

Subcatchment 20S: Lawn Runoff Area=14,092 sf 13.57% Impervious Runoff Depth>1.63"
Flow Length=167' Tc=6.0 min CN=49 Runoff=0.53 cfs 0.044 af

Link POA 1: South-East Off-Site Inflow=0.79 cfs 0.056 af
Primary=0.79 cfs 0.056 af

Link POA 2: North-East Off-Site Inflow=0.53 cfs 0.044 af
Primary=0.53 cfs 0.044 af

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

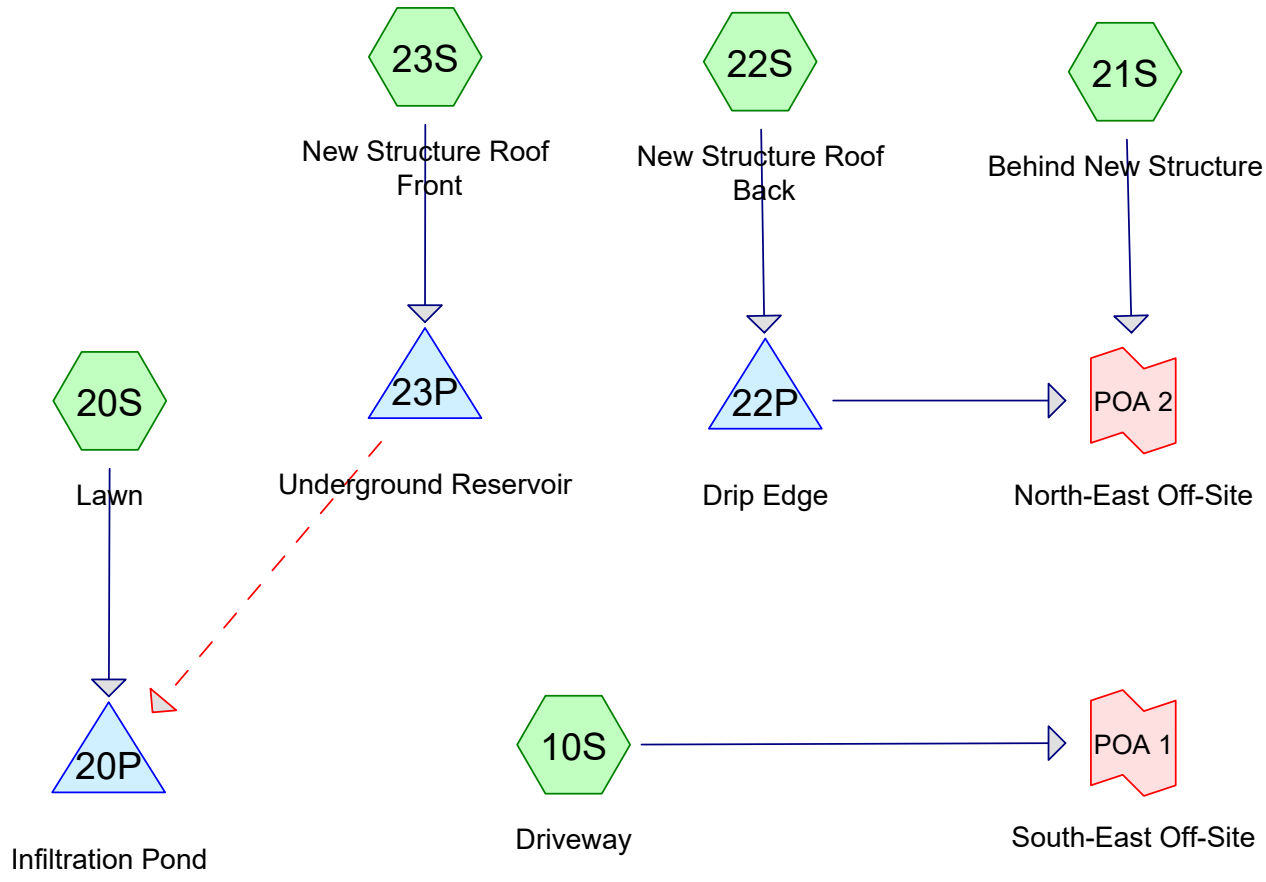
Subcatchment 10S: Driveway Runoff Area=7,515 sf 46.64% Impervious Runoff Depth>5.13"
Tc=6.0 min CN=72 Runoff=1.04 cfs 0.074 af

Subcatchment 20S: Lawn Runoff Area=14,092 sf 13.57% Impervious Runoff Depth>2.44"
Flow Length=167' Tc=6.0 min CN=49 Runoff=0.86 cfs 0.066 af

Link POA 1: South-East Off-Site Inflow=1.04 cfs 0.074 af
Primary=1.04 cfs 0.074 af

Link POA 2: North-East Off-Site Inflow=0.86 cfs 0.066 af
Primary=0.86 cfs 0.066 af

POST-DEVELOPMENT



Subcat Reach Pond Link

Routing Diagram for 5021-POST
Prepared by Altus Engineering, Inc., Printed 12/15/2022
HydroCAD® 10.00-26 s/n 01222 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.275	39	>75% Grass cover, Good, HSG A (10S, 20S, 21S)
0.031	96	Gravel surface, HSG A (10S, 20S, 21S, 22S)
0.090	98	Paved parking, HSG A (10S, 20S, 21S)
0.100	98	Roofs, HSG A (10S, 20S, 21S, 22S, 23S)
0.496	**65**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.496	HSG A	10S, 20S, 21S, 22S, 23S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.496		**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
0.275	0.000	0.000	0.000	0.000	0.275	>75% Grass cover, Good	10S, 20S, 21S
0.031	0.000	0.000	0.000	0.000	0.031	Gravel surface	10S, 20S, 21S, 22S
0.090	0.000	0.000	0.000	0.000	0.090	Paved parking	10S, 20S, 21S
0.100	0.000	0.000	0.000	0.000	0.100	Roofs	10S, 20S, 21S, 22S, 23S
0.496	**0.000**	**0.000**	**0.000**	**0.000**	**0.496**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	23P	24.24	24.00	21.4	0.0112	0.010	4.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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 10S: Driveway Runoff Area=8,067 sf 42.98% Impervious Runoff Depth>2.40"
Tc=6.0 min CN=69 Runoff=0.52 cfs 0.037 af

Subcatchment 20S: Lawn Runoff Area=8,085 sf 27.74% Impervious Runoff Depth>1.44"
Flow Length=97' Tc=6.0 min CN=57 Runoff=0.28 cfs 0.022 af

Subcatchment 21S: Behind New Structure Runoff Area=3,205 sf 16.88% Impervious Runoff Depth>1.08"
Flow Length=112' Tc=6.0 min CN=52 Runoff=0.07 cfs 0.007 af

Subcatchment 22S: New Structure Roof Runoff Area=1,338 sf 84.23% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 23S: New Structure Roof Runoff Area=926 sf 100.00% Impervious Runoff Depth>5.36"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.009 af

Pond 20P: Infiltration Pond Peak Elev=22.33' Storage=207 cf Inflow=0.28 cfs 0.022 af
Outflow=0.07 cfs 0.022 af

Pond 22P: Drip Edge Peak Elev=0.57' Storage=137 cf Inflow=0.17 cfs 0.014 af
Discarded=0.03 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.014 af

Pond 23P: Underground Reservoir Peak Elev=24.15' Storage=62 cf Inflow=0.12 cfs 0.009 af
Discarded=0.04 cfs 0.009 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.009 af

Link POA 1: South-East Off-Site Inflow=0.52 cfs 0.037 af
Primary=0.52 cfs 0.037 af

Link POA 2: North-East Off-Site Inflow=0.07 cfs 0.007 af
Primary=0.07 cfs 0.007 af

Total Runoff Area = 0.496 ac Runoff Volume = 0.089 af Average Runoff Depth = 2.15"
61.59% Pervious = 0.306 ac 38.41% Impervious = 0.191 ac

Summary for Subcatchment 10S: Driveway

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.037 af, Depth> 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
1,882	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
3,935	39	>75% Grass cover, Good, HSG A
665	96	Gravel surface, HSG A
1,195	98	Roofs, HSG A
390	98	Paved parking, HSG A
8,067	69	Weighted Average
4,600		57.02% Pervious Area
3,467		42.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 20S: Lawn

Runoff = 0.28 cfs @ 12.10 hrs, Volume= 0.022 af, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
1,162	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
5,588	39	>75% Grass cover, Good, HSG A
254	96	Gravel surface, HSG A
983	98	Roofs, HSG A
98	98	Paved parking, HSG A
8,085	57	Weighted Average
5,842		72.26% Pervious Area
2,243		27.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	19	0.0268	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.69"
0.9	78	0.0385	1.37		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	97	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 21S: Behind New Structure

Runoff = 0.07 cfs @ 12.11 hrs, Volume= 0.007 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
46	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
2,465	39	>75% Grass cover, Good, HSG A
199	96	Gravel surface, HSG A
145	98	Roofs, HSG A
350	98	Paved parking, HSG A
3,205	52	Weighted Average
2,664		83.12% Pervious Area
541		16.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	3	0.0333	0.90		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
1.4	109	0.0321	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	112	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 22S: New Structure Roof Back

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.014 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
0	39	>75% Grass cover, Good, HSG A
211	96	Gravel surface, HSG A
1,127	98	Roofs, HSG A
0	98	Paved parking, HSG A
1,338	98	Weighted Average
211		15.77% Pervious Area
1,127		84.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 23S: New Structure Roof Front

Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.009 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	30	Woods, Good, HSG A
0	39	>75% Grass cover, Good, HSG A
0	96	Gravel surface, HSG A
926	98	Roofs, HSG A
0	98	Paved parking, HSG A
926	98	Weighted Average
926		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 20P: Infiltration Pond

Inflow Area = 0.186 ac, 27.74% Impervious, Inflow Depth > 1.44" for 10-yr event
Inflow = 0.28 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.07 cfs @ 11.96 hrs, Volume= 0.022 af, Atten= 76%, Lag= 0.0 min
Discarded = 0.07 cfs @ 11.96 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.33' @ 12.56 hrs Surf.Area= 479 sf Storage= 207 cf

Plug-Flow detention time= 18.8 min calculated for 0.022 af (100% of inflow)
Center-of-Mass det. time= 18.5 min (893.7 - 875.2)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	1,071 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.25	479	0.0	0	0
22.25	479	40.0	192	192
22.50	479	40.0	48	240
24.00	479	5.0	36	275
24.50	773	100.0	313	588
25.00	1,158	100.0	483	1,071

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.25'	**6.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 11.96 hrs HW=21.29' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.07 cfs)

Summary for Pond 22P: Drip Edge

Inflow Area = 0.031 ac, 84.23% Impervious, Inflow Depth > 5.36" for 10-yr event
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 0.014 af
Outflow = 0.03 cfs @ 11.72 hrs, Volume= 0.014 af, Atten= 80%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.72 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 0.57' @ 12.51 hrs Surf.Area= 242 sf Storage= 137 cf

Plug-Flow detention time= 21.1 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 20.9 min (766.5 - 745.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	484 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	242	0	0
2.00	242	484	484

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**6.000 in/hr Exfiltration over Surface area**
#2	Primary	2.00'	**59.0' long x 5.0' breadth Broad-Crested Rectangular Weir** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.03 cfs @ 11.72 hrs HW=0.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: Underground Reservoir

Inflow Area = 0.021 ac,100.00% Impervious, Inflow Depth > 5.36" for 10-yr event
Inflow = 0.12 cfs @ 12.08 hrs, Volume= 0.009 af
Outflow = 0.04 cfs @ 11.81 hrs, Volume= 0.009 af, Atten= 70%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.81 hrs, Volume= 0.009 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.15' @ 12.39 hrs Surf.Area= 256 sf Storage= 62 cf

Plug-Flow detention time= 7.2 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 7.2 min (752.8 - 745.6)

Volume	Invert	Avail.Storage	Storage Description
#1	23.57'	101 cf	**16.00'W x 16.00'L x 1.00'H Prismatoid** 256 cf Overall - 3 cf Embedded = 253 cf x 40.0% Voids
#2	23.74'	3 cf	**4.0" Round Pipe Storage** Inside #1 L= 32.0'
		104 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	23.57'	**6.000 in/hr Exfiltration over Surface area**
#2	Secondary	24.24'	**4.0" Round Culvert** L= 21.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.24' / 24.00' S= 0.0112 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.04 cfs @ 11.81 hrs HW=23.58' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.57' (Free Discharge)
↑**2=Culvert** (Controls 0.00 cfs)

Summary for Link POA 1: South-East Off-Site

Inflow Area = 0.185 ac, 42.98% Impervious, Inflow Depth > 2.40" for 10-yr event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.037 af
Primary = 0.52 cfs @ 12.09 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link POA 2: North-East Off-Site

Inflow Area = 0.104 ac, 36.72% Impervious, Inflow Depth > 0.76" for 10-yr event
Inflow = 0.07 cfs @ 12.11 hrs, Volume= 0.007 af
Primary = 0.07 cfs @ 12.11 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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 10S: Driveway Runoff Area=8,067 sf 42.98% Impervious Runoff Depth>1.07"
Tc=6.0 min CN=69 Runoff=0.21 cfs 0.016 af

Subcatchment 20S: Lawn Runoff Area=8,085 sf 27.74% Impervious Runoff Depth>0.49"
Flow Length=97' Tc=6.0 min CN=57 Runoff=0.06 cfs 0.008 af

Subcatchment 21S: Behind New Structure Runoff Area=3,205 sf 16.88% Impervious Runoff Depth>0.31"
Flow Length=112' Tc=6.0 min CN=52 Runoff=0.01 cfs 0.002 af

Subcatchment 22S: New Structure Roof Runoff Area=1,338 sf 84.23% Impervious Runoff Depth>3.45"
Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

Subcatchment 23S: New Structure Roof Runoff Area=926 sf 100.00% Impervious Runoff Depth>3.45"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.006 af

Pond 20P: Infiltration Pond Peak Elev=21.28' Storage=6 cf Inflow=0.06 cfs 0.008 af
Outflow=0.06 cfs 0.008 af

Pond 22P: Drip Edge Peak Elev=0.26' Storage=62 cf Inflow=0.11 cfs 0.009 af
Discarded=0.03 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.009 af

Pond 23P: Underground Reservoir Peak Elev=23.78' Storage=22 cf Inflow=0.08 cfs 0.006 af
Discarded=0.04 cfs 0.006 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.006 af

Link POA 1: South-East Off-Site Inflow=0.21 cfs 0.016 af
Primary=0.21 cfs 0.016 af

Link POA 2: North-East Off-Site Inflow=0.01 cfs 0.002 af
Primary=0.01 cfs 0.002 af

Total Runoff Area = 0.496 ac Runoff Volume = 0.041 af Average Runoff Depth = 0.99"
61.59% Pervious = 0.306 ac 38.41% Impervious = 0.191 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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 10S: Driveway Runoff Area=8,067 sf 42.98% Impervious Runoff Depth>3.59"
Tc=6.0 min CN=69 Runoff=0.78 cfs 0.055 af

Subcatchment 20S: Lawn Runoff Area=8,085 sf 27.74% Impervious Runoff Depth>2.38"
Flow Length=97' Tc=6.0 min CN=57 Runoff=0.49 cfs 0.037 af

Subcatchment 21S: Behind New Structure Runoff Area=3,205 sf 16.88% Impervious Runoff Depth>1.90"
Flow Length=112' Tc=6.0 min CN=52 Runoff=0.15 cfs 0.012 af

Subcatchment 22S: New Structure Roof Runoff Area=1,338 sf 84.23% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.018 af

Subcatchment 23S: New Structure Roof Runoff Area=926 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

Pond 20P: Infiltration Pond Peak Elev=24.35' Storage=482 cf Inflow=0.49 cfs 0.037 af
Outflow=0.10 cfs 0.037 af

Pond 22P: Drip Edge Peak Elev=0.83' Storage=202 cf Inflow=0.21 cfs 0.018 af
Discarded=0.03 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.018 af

Pond 23P: Underground Reservoir Peak Elev=24.36' Storage=82 cf Inflow=0.15 cfs 0.012 af
Discarded=0.04 cfs 0.012 af Secondary=0.03 cfs 0.001 af Outflow=0.07 cfs 0.012 af

Link POA 1: South-East Off-Site Inflow=0.78 cfs 0.055 af
Primary=0.78 cfs 0.055 af

Link POA 2: North-East Off-Site Inflow=0.15 cfs 0.012 af
Primary=0.15 cfs 0.012 af

Total Runoff Area = 0.496 ac Runoff Volume = 0.134 af Average Runoff Depth = 3.23"
61.59% Pervious = 0.306 ac 38.41% Impervious = 0.191 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 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 10S: Driveway Runoff Area=8,067 sf 42.98% Impervious Runoff Depth>4.77"
Tc=6.0 min CN=69 Runoff=1.04 cfs 0.074 af

Subcatchment 20S: Lawn Runoff Area=8,085 sf 27.74% Impervious Runoff Depth>3.36"
Flow Length=97' Tc=6.0 min CN=57 Runoff=0.72 cfs 0.052 af

Subcatchment 21S: Behind New Structure Runoff Area=3,205 sf 16.88% Impervious Runoff Depth>2.78"
Flow Length=112' Tc=6.0 min CN=52 Runoff=0.23 cfs 0.017 af

Subcatchment 22S: New Structure Roof Runoff Area=1,338 sf 84.23% Impervious Runoff Depth>8.25"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 23S: New Structure Roof Runoff Area=926 sf 100.00% Impervious Runoff Depth>8.25"
Tc=6.0 min CN=98 Runoff=0.18 cfs 0.015 af

Pond 20P: Infiltration Pond Peak Elev=24.72' Storage=779 cf Inflow=0.72 cfs 0.053 af
Outflow=0.13 cfs 0.053 af

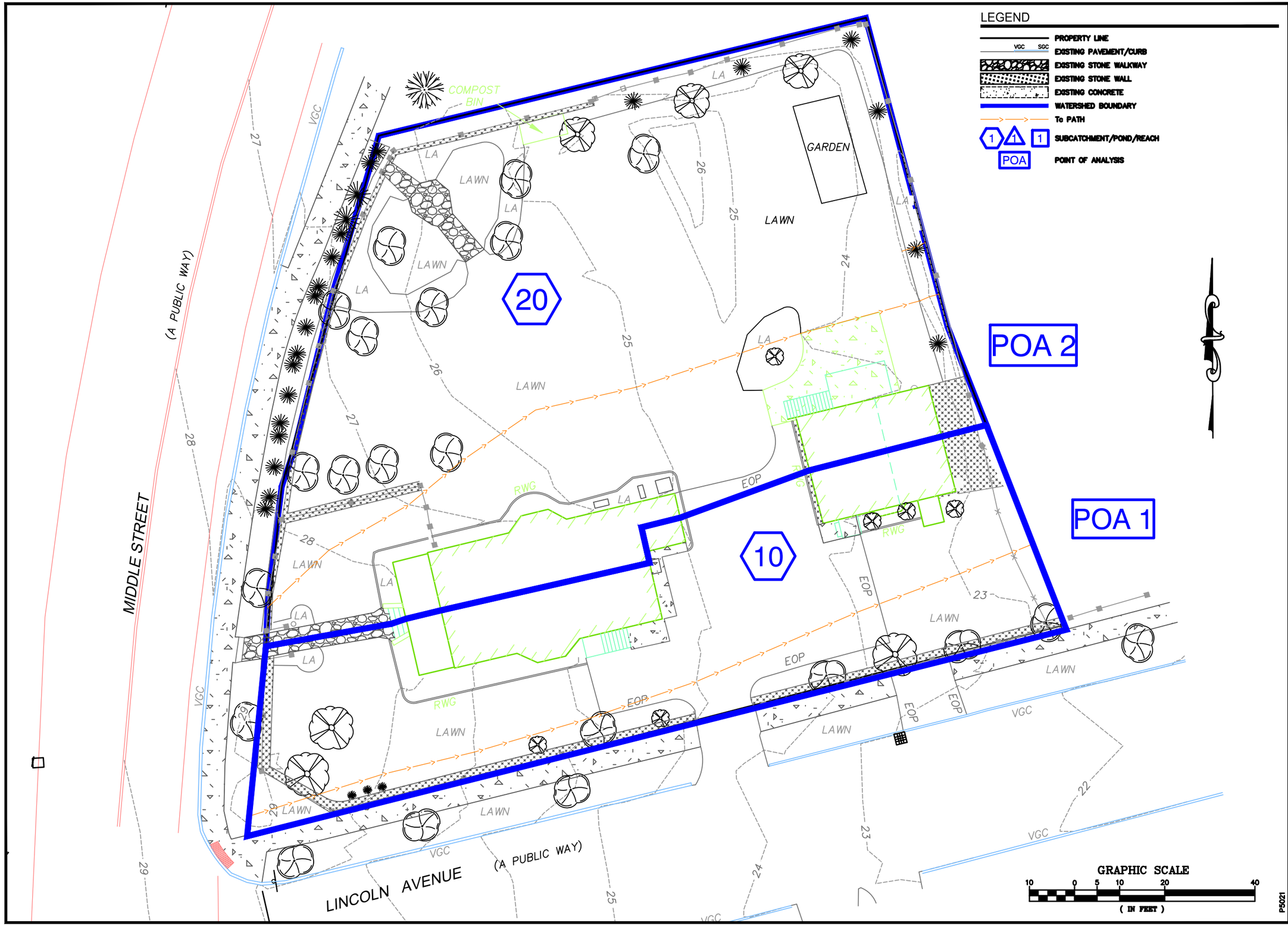
Pond 22P: Drip Edge Peak Elev=1.09' Storage=265 cf Inflow=0.26 cfs 0.021 af
Discarded=0.03 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.021 af

Pond 23P: Underground Reservoir Peak Elev=24.44' Storage=90 cf Inflow=0.18 cfs 0.015 af
Discarded=0.04 cfs 0.013 af Secondary=0.08 cfs 0.002 af Outflow=0.12 cfs 0.015 af

Link POA 1: South-East Off-Site Inflow=1.04 cfs 0.074 af
Primary=1.04 cfs 0.074 af

Link POA 2: North-East Off-Site Inflow=0.23 cfs 0.017 af
Primary=0.23 cfs 0.017 af

Total Runoff Area = 0.496 ac Runoff Volume = 0.178 af Average Runoff Depth = 4.31"
61.59% Pervious = 0.306 ac 38.41% Impervious = 0.191 ac



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
12/16/22

NOT FOR CONSTRUCTION

ISSUED FOR: TECHNICAL ADVISORY COMMITTEE

ISSUE DATE: DECEMBER 16, 2022

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	12/16/22

DRAWN BY: MBS
APPROVED BY: EDW
DRAWING FILE: 5021-SITE.dwg

SCALE:
(22"x34") 1" = 10'
(11"x17") 1" = 20'

OWNER/APPLICANT:

NICOLE J. GIUSTO & DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

765 MIDDLE STREET
PORTSMOUTH, NH

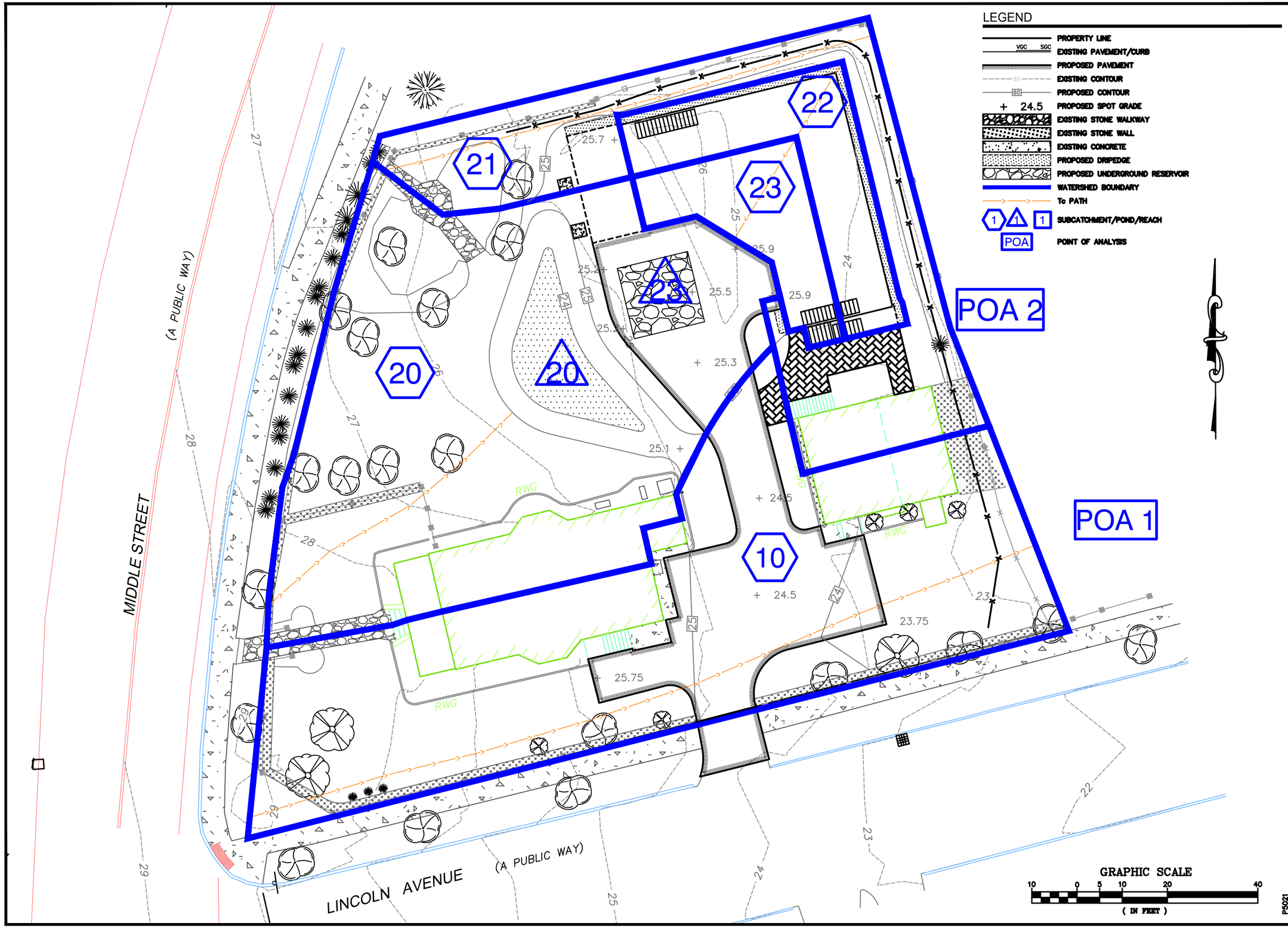
TITLE:

PRE-DEVELOPMENT WATERSHED PLAN

SHEET NUMBER:

WS-1

P5021



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APPROVED BY: EDW
DRAWING FILE: 5021-SITE.dwg

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OWNER/APPLICANT:

NICOLE J. GIUSTO &
DAVID A. SINCLAIR

765 MIDDLE STREET
PORTSMOUTH, NH 03801
TAX MAP 148 PARCEL 37

PROJECT:

RESIDENTIAL DEVELOPMENT EXPANSION

TAX MAP 148, LOT 37

765 MIDDLE STREET
PORTSMOUTH, NH

TITLE:

POST-DEVELOPMENT WATERSHED PLAN

SHEET NUMBER:

WS-2

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: Nicole J. Giusto & David A. Sinclair Date Submitted: 12/16/22

Application # (in City's online permitting): To Be Determined

Site Address: 765 Middle Street Portsmouth, NH Map: 148 Lot: 37

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)**	Viewpoint	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)**	Viewpoint	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)**	Green Statement	
☒	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)**	Site Prep Plan - Sheet C-1, Site Plan - Sheet C-2	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	Site Plan - Sheet C-1/ Zoning Summary	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, Letter of Authorization	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)**	Existing Conditions Plan - Sheet EX-1	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Cover Sheet	N/A
☒	List of reference plans. **(2.5.3.1H)**	Existing Conditions Plan - Sheet EX-1	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	Utility Plan - Sheet C-4/Note 11	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)**	Existing Conditions Plan - Sheet EX-1/Note #5	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)**	Cover Sheet, Site Plan - Sheet C-2	N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Title Block	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)**	Title Block	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)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Existing Conditions Plan -Sheet EX-1, Site Preparation Plan - Sheet C-1, Site Plan - Sheet C-2	
☒	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Site Plan - Sheet C-2, Architectural - Proposed Elevations	
☒	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Site Plan - Sheet C-2	
☒	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	Site Plan - Sheet C-2	
☒	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	Utility Plan - Sheet C-4	
☒	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	Utility Plan - Sheet C-4	

☒	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	Grading & Stormwater Plan - Sheet C-3, Utility Plan - Sheet C-4	
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
	• The size, type and location of solid waste facilities.	N/A	
☒	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	Site Plan - Sheet C-1, Grading & Stormwater Plan - Sheet C-3, Stormwater Inspection and Maintenance Manual	
☒	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	Architectural - Proposed Elevations	
☒	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	Architectural - Proposed Elevations	
☒	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	Landscape Plan - Sheet L-1	
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Grading & Stormwater Plan - Sheet C-3	
☒	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	Site Plan - Sheet C-2	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	Existing Conditions Plan - Sheet EX-1	
☐	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	N/A	
☐	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • 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)**	N/A	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Green Statement	
☐	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)**	Notes Sheet - Sheet D-1	
☒	Inspection and Maintenance Plan **(7.6.5)**	Stormwater Inspection and Maintenance Manual	

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: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	Site Plan - Sheet C-2/Note #4	
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Drainage Report, Stormwater Inspection and Maintenance Manual	
☐	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. **(2.5.3.2D)**	N/A	

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)**	N/A	
☒	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)**	Site Plan - Sheet C-2/Note #18	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: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." 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: Eric D. Weinrieb, PE **Date:** 12/16/22

ALTUS ENGINEERING

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

"Green" Statement
3-BAY GARAGE AND APARTMENT
Assessor's Map 148, Lot 37
765 Middle Street
Altus Project 5021
December 2022

Pursuant to Section 2.5.3.1(a) of the Site Plan Review Regulations, Altus Engineering, Inc. respectfully submits the following list of the project's "green" components for the construction of a new garage and apartment at 765 Middle Street.

- The project is infill in a suburban area. The additional density in a developed landscape that does impact wetlands or wetland buffer is a green site design approach.
- The residential site was developed long before stormwater management was a consideration. A rain garden/bioretention basin and an infiltration basin will mitigate any runoff impacts and will provide treatment and groundwater recharge.
- A robust landscape planting plant with shade trees will reduce the heat island effect.
- The proposed 3-bay garage reduces the site impervious and improves stormwater runoff quality.
- The proposed site lighting will have LED fixtures. The lighting will be mounted at a maximum height of 14-feet. The lights will be dark sky friendly and will exceed the minimum City requirements.
- The existing mature trees along Middle Street and Lincon Avenue will be preserved.
- The new building will be code compliant building with components that will meet or exceed all applicable energy codes.
- The garage will be access via the existing driveway to avoid access on Middle Street and to minimize impervious coverage.

Tel: (603) 433-2335 E-mail: Altus@altus-eng.com

ALTUS ENGINEERING, INC.

Civil 133 Court Street
Site Planning Portsmouth, NH
Environmental 03801-4413
Engineering (603) 433-2335

Residential Development Expansion

765 Middle Street
Portsmouth, NH
Cost Estimate - Site Work

DATE: December 16, 2022
PROJECT: 5021

ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL COST
SITEWORK DEMOLITION				
UTILITIES (ALLOWANCE)	1	LS	$1,000.00	$1,000.00
PAVEMENT SAWCUT	15	LF	$5.00	$75.00
CLEARING AND GRUBBING				
VEGETATION REMOVAL AND LOAM STRIPPING	1	LS	$1,000.00	$1,000.00
WATER SUPPLY				
2" DOMESTIC WATER SERVICE	75	LF	$60.00	$4,500
SEWER SERVICE				
6" SDR 35 SEWER PIPE	140	LF	$60.00	$8,400
ELECTRIC/PHONE/CABLE SERVICES				
SCH 40 CONDUIT (x4 PER TRENCH)	75	LF	$30.00	$2,250
STORM DRAINAGE SYSTEM				
4" CPP PERFORATED DRAINAGE PIPE	30	LF	$15.00	$450
4" CPP DRAINAGE PIPE	40	LF	$25.00	$1,000
6" CPP DRAINAGE PIPE	0	LF	$40.00	$0
RIP RAP/STONE DRIP EDGE	1	LS	$650.00	$650
SEDIMENT AND EROSION CONTROL				
TEMPORARY EROSION CONTROL	1	LS	$2,000.00	$2,000
CONCRETE FLATWORK				
CONCRETE PADS	1	LS	$250.00	$250
SIDEWALKS				
PATIO PAVERS	60	SY	$18.00	$1,080
AGGREGATE BASE COURSES				
CRUSHED GRAVEL (NHDOT 304.3)	170	CY	$35.00	$5,950
HOT BITUMINOUS PAVEMENT				
WEARING AND BINDER COURSE	60	TON	$85.00	$5,100
LANDSCAPING				
PATIOS	1	LS	$25,000.00	$25,000
LANDSCAPING (ALLOWANCE)	1	LS	$14,400.00	$14,400
SUBTOTAL				**$73,105**

TOTAL: ***$73,105***

EXCLUSIONS:
ITEMS EXCLUDED FROM THIS ESTIMATE INCLUDE, BUT ARE NOT LIMITED TO, THOSE ITEMS SPECIFIED ABOVE AS BEING NOT INCLUDED IN THIS ESTIMATE AND THE FOLLOWING:
INSPECTION FEES, MONUMENTATION, HVAC PADS, TEMPORARY FENCING AND BARRICADES, TRAFFIC CONTROL, MATERIALS AND COMPACTION TESTING, BUILDING FOUNDATION, BUILDING FOUNDATION EXCAVATION, BUILDING MOUNTED EXTERIOR LIGHTING, BUILDINGS (INCLUDING MODIFICATIONS TO EXISTING BUILDINGS), TEMPORARY STABILIZATION, STAGING, MOBILIZATION, TEMPORARY CONSTRUCTION FACILITIES, SWPPP REQUIREMENTS, UNFORESEEN CONDITIONS, PRICE ESCALATION, ETC.

THIS ESTIMATE IS FOR PERMIT APPLICATION PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION, CONSTRUCTION BIDDING, CONTRACTING OR SUBCONTRACTING.