P-0595-007
November 24, 2021

Mr. Dexter Legg, Chair
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Request for Site Review, & Conditional Use Permits
Proposed Mixed-Use Development, Raynes Avenue, Portsmouth, NH

Dear Chairman Legg:

On behalf of One Raynes Ave, LLC, 31 Raynes Ave, LLC & 203 Maplewood Ave, LLC (owners), and North Mill Pond Holdings, LLC (applicant), we are pleased to submit one (1) set of hard copies and one electronic file (.pdf) of the following information to support a request for a Site Review Permit, Conditional Use Permit for Shared Parking on Separate Lots, and a Wetland Conditional Use Permit for the above referenced project:

- One (1) 22x34 & one (1) 11x17 copy of the Site Plan Set, last revised October 20, 2021;
- TAC Stipulations Response Report, dated November 24, 2021;
- Drainage Analysis, last revised November 24, 2021;
- Long-Term Operation & Maintenance Plan, dated May 19, 2021;
- Grade Plane Exhibit, last revised November 24, 2021;
- Front Lot Line Buildout Exhibit, dated November 24, 2021;
- Colored Landscape Plan, last revised November 24, 2021;
- Landscape Precedent Images Plan, last revised November 24, 2021;
- Wetland and Buffer Report, last revised January 7, 2021;
- Wetland Buffer Impervious Surface Exhibit, last revised November 24, 2021;
- Community Space Exhibit, last revised November 24, 2021;
- Truck Turning Exhibit, last revised November 24, 2021;
- Traffic Impact Study, last revised August 2, 2021;
- Unitil Will Service Letter, dated February 22, 2021;
- Eversource Will Serve Letter, dated November 23, 2021;
- Green Building Statement, dated March 16, 2021;
- Site Review Checklist, last revised May 19, 2021;
- Parking Management Letter, dated May 20, 2021;
- Mitigation of Subsurface Environmental Conditions Memo by McPhail Associates, LLC, dated April 30, 2021;
- Conceptual Pier Plan, Sections & Details, July 21, 2021;
- Kayak Launch Rendering, dated April 24, 2021;
- Conservation Commission Staff Report, dated June 11, 2021;
- Conservation Commission Objection and Request for Reconsideration, dated June 22, 2021;
- Project Impacts Comparison Exhibit, dated November 24, 2021

PROJECT SUMMARY

Existing Conditions

The project is located at 1 Raynes Avenue, 31 Raynes Avenue & 203 Maplewood Avenue consisting of properties identified as Map 123 Lots 10, 12, 13 & 14. The existing parcels are bound by Raynes Avenue to south, Maplewood Avenue to the west, North Mill Pond to the north and the municipal land to the east, which is the future site of the North Mill Pond community park. The properties include 425+/- linear feet of tidal wetlands and buffers along the North Mill Pond. The limited functions and values of these areas are described in the enclosed Wetland and Buffer Report and Photograph Log.

The existing lots were found to have been highly disturbed and historically filled. Three existing buildings are located on the project properties including the former Cindy Ann Cleaners building, a vacant office building, and the Vanguard Gym. Each existing building includes paved parking areas and a maintained lawn area between the vacant office building and the Vanguard Gym. The northern portion of the site along the edge of North Mill Pond includes an old boat ramp, an old pier filled with sand and crushed stone, and culvert outlet and headwall. Much of the 100-foot tidal buffer is previously disturbed urban uplands consisting of maintained lawn, buildings and parking lots. There are some small patches of vegetation where the site abuts the Maplewood Ave bridge and north of the existing pier along the abutting parcel that is between the project site and future City park site. These pockets of vegetation are largely invasive species.

The properties in question include a portion of the City of Portsmouth's long planned improvements to the shoreline of the North Mill Pond, the concept of which has been a focus of the City's planning for years. It was included in the Portsmouth Bicycle and Pedestrian Plan in 2014 and the North End Vision Plan in 2015. Many of the stated goals set forth in the City's Master Plan in 2016 called for its creation. The Final Report on the North Mill Pond Greenway and Community Park was issued in 2019.

The Final Plan calls for "*a linear greenway and community park along the North Mill Pond which will create a new north-south pedestrian and bicycle connection from Bartlett Street to Market Street. This multi-use public path with civic amenities in envisioned to be constructed along the southeast shoreline of the pond, will include wetland restoration and pond edge stabilization and is anticipated and constructed through a series of public-private partnerships with private landowners.*"

Through a public process, the City of Portsmouth amended the City Zoning Ordinance in 2016 to create an overlay district specifically allowing the construction of taller buildings in the area as incentive for real estate developers to join in these important public private partnerships.

Proposed Redevelopment

The proposed project will include the construction of two (2) 5-story buildings. The first is a mixed-use residential building that has a first-floor residential lobby and two (2) commercial spaces, 32 upper floor residential units. The second is a hotel building with 124 rooms at the corner of Raynes Ave and Vaughan Street. The project includes associated site improvements that consist of screened parking management lift systems within the mixed-use building, surface parking, pedestrian and bicycle enhancements, emergency access, utilities, lighting, landscaping and stormwater management systems that provide treatment for runoff.

The existing condition of the development property does not provide any stormwater treatment. The proposed development will provide stormwater management improvements which are described in further detail in the enclosed Drainage Analysis. The following is a summary:

- Proposed treatment to runoff from the new buildings and surface parking will be provided via stormwater treatment units. In addition, underground detention systems have been incorporated into the design to address temperature of the runoff from the surface parking area. The underground detention systems will detain and slowly release runoff for a 24-hour draw down time in order regulate temperature of runoff before discharging it to the North Mill Pond. An additional benefit of the underground detention system is that it will also reduce peak rates of runoff to the North Mill Pond even though peak rate reduction is not required for direct discharges to tidal waters.
- A porous asphalt design has been incorporated into the stormwater design for North Mill Pond greenway trail at the direction of City staff. The path will be lined and underdrained as infiltration of stormwater is not permitted on this site per NHDES regulations.
- The existing stormwater runoff from the Vaughan Street neighborhood is conveyed through a culvert on the site discharging untreated to the North Mill Pond through the existing onsite outlet structure. The project will be replacing the existing drainage culvert on-site, as well as installing a Water Quality Unit, which will improve the water quality of the runoff from the City streets prior to discharging to North Mill Pond.

The proposed development will provide landscape improvements including an enhanced streetscape and plantings within the wetland buffer. The streetscape design includes a variety of vibrant site elements such as shade trees, foundation plantings, public benches, and retail spill out zones. Combined, these site features will create a friendly, safe pedestrian experience and connect users with first floor programs. The proposed wetland buffer and site plantings will enhance the ecological value of the upland edge and allow those on the multi-use path to connect with nature. The selected plant species will be coordinated to match the proposed planting plan of North Mill Pond Greenway and Community Park. A unified restoration approach along the pond will greatly enhance how the shoreline performs, encourage a healthy unified ecology, and create a local beautiful aesthetic. Along the head in parking will be a mix of hardy evergreens and deciduous trees and shrubs ranging in height and clustered in linear patterns to establish an organic edge. Where possible, landscape berms have been added to help buffer the seating niches and pedestrian recreational opportunities by the pond from the proposed building.

Open Space & Buffer Enhancement

The project is located in the North End incentive overlay district. The applicant will be providing 34,427 SF of community spaces, which will include 27,352 SF of Greenway Community Space located from the North Mill Pond mean high water line to the 50-foot wetland buffer setback. Providing this community space will contribute towards the City realizing a goal of the Master Plan to create public access along the North Mill pond with a multi-use trail. The applicant is also providing 2,920 SF of wide sidewalk community space and 4,155 SF of greenway connection community space as part of the project. The total Community Space is 31.2% of the development parcel exceeding the 20% required by the Zoning Ordinance to receive the incentive bonus for one additional story (10 ft) above the maximum height requirement. Overall, the project will be providing 35.0% open space on the development lot where only 10% is required by zoning.

Proposed work within the 100-foot Tidal Buffer and subject to conditional use approval includes demolition and construction activities. The 100-foot tidal buffer within the development area includes impervious parking surface, walkways and building and a maintained lawn area. The project will provide an overall improvement by reducing the impervious cover within the 100-foot tidal buffer. The impervious surface impacts from the design are shown in Table 1. In addition to the summary in Table 1 below, detailed calculations

of the impervious surfaces within the buffer for the existing and proposed condition are depicted in the enclosed Wetland Buffer Impervious Surface Exhibit.

The projects landscape plan proposes to replace existing maintained lawn with native grass mix and plant native trees in an effort to enhance the previously disturbed wetlands buffer. The work done by the proposed project within the 25-foot buffer to North Mill Pond is limited to the re-construction of the City's stormwater outlet.

Table 1. Raynes Avenue, Wetland Buffer Impervious Surfaces

Buffer Segment	Existing Impervious (SF)	Final Impervious (SF)
0-25 feet	848	0
25-50 feet	3,006	67
50-100 feet	24,473	21,190
Total	28,327	21,257
Net Impervious Surface	**-7,070**	

Section 10.1017.24 of the Zoning Ordinance which indicates "Where feasible, the application shall include removal of impervious surfaces at least equal in area to the area of impervious surface impact. The intent of this provision is that the project will not result in a net loss of pervious surface within a jurisdictional wetland buffer." As shown in Table 1, the proposed project exceeds this requirement by providing a 7,070 SF reduction in impervious surface. If the reserve parking spaces, described below, are not constructed in the future, the project will result in a 10,107 SF net impervious surface reduction in the buffer.

LAND-USE PERMIT APPLICATIONS

Local Permitting Timeline

The applicant is pleased to provide the enclosed information to support requests to the Planning Board to grant the following land-use permits:

- Site Plan Review
- Conditional Use Permit for Shared Parking on Separate Lots
- Wetland Conditional Use Permit

The enclosed information has been prepared and/or revised in response to comments and feedback received over the past 12 months from the Planning Board, Technical Advisory Committee (TAC), Conservation Commission and public comment during the local land-use permitting process. The following is a summary of meetings with the various land use-boards and public:

1. December 8, 2020 – Technical Advisory Committee Work Session
2. December 9, 2020 – Conservation Commission Work Session
3. December 17, 2020 – Planning Board Conceptual Consultation
4. March 25, 2021 – Planning Board Design Review
5. April 6, 2021 - Technical Advisory Committee Meeting

6. April 12, 2021 – Conservation Commission Site Walk
7. April 14, 2021 – Conservation Commission Regular Meeting
8. May 4, 2021 - Technical Advisory Committee Meeting
9. May 12, 2021 – Conservation Commission Regular Meeting
10. June 1, 2021 - Technical Advisory Committee Meeting
11. June 9, 2021 – Conservation Commission Regular Meeting
12. August 3, 2021 – Technical Advisory Committee Meeting
13. September 7, 2021 – Technical Advisory Committee Meeting
14. November 2, 2021 – Technical Advisory Committee Meeting

Response to Land-Use Board & Public Comments

As noted above, the last time the project was before the Planning Board was on March 25, 2021 for Preliminary Design Review. The following is summary of improvements to design made in response to feedback from the various land-use boards and public since that time:

- Reduced density of the residential building from 60 dwelling units to 32 dwelling units.
- Reduced density of the hotel building from 128 rooms to 124 rooms.
- Reduced surface parking on the lot from 111 to 59 spaces. This further reducing buffer impact and pulling the surface parking further from the North Mill Pond trail.
- Re-aligned the path by pulling it away from the North Mill Pond and out of the 25 vegetated foot buffer, except where the it connects to the kayak launch. In addition, the path has been designed as porous asphalt to provide stormwater treatment to runoff on the path.
- The pier and kayak launch are proposed as a public amenity that would be provided beyond the community space requirement the project is fulfilling with the North Mill Pond Greenway. At this time, design intent would be to replace the pier and kayak ramp in-kind. A Conceptual Pier Plan and Sections have been provided as part of this submission which show the design intent for the pier.
- Provided additional buffer enhancement measures with additional native plantings and groundcovers, incorporated invasive species removal measures and planted the 25-foot vegetated buffer along the North Mill Pond with a native seed mix that is only mowed periodically.
- Winter maintenance provisions have been added to the Operation and Maintenance (O&M) plan in response to feedback from the Conservation Commission. The O&M plan requires the applicant's snow removal operations to haul snow off-site site and legally disposed of it. The O&M plan also prohibits salt storage withing the 100' wetland buffer.

Site Plan Review Permit

The project will require a Site Plan Review Permit for the site improvements described above in the project summary. The project has previously been before the Planning Board for Conceptual Consultation and Preliminary Design Review. In addition, the project has been before the Technical Advisory Committee (TAC) seven (7) times. On November 2, 2021, TAC recommended to the Planning Board that a Site Plan Review Permit be granted with stipulations. Enclosed with this package is a Stipulation Report addressing each of the TAC stipulations of approval.

Conditional Use Permit for Shared Parking

Parking Demand Summary

A Conditional Use Permit for parking on a separate lot is requested for the project. For this project, off-street parking requirements were reviewed for the proposed multi-family and hotel uses using the City of Portsmouth Zoning Ordinance, Section 10.1115.20, Number of Required Off-Street Parking Spaces. For a 124-key hotel in the Downtown Overlay District (DOD), peak parking demand is 93 parking spaces. For residential use, Section 10.1115.21 requires that parking demand be calculated using Section 10.1112.30 of the Zoning Ordinance. For the proposed 32 dwelling unit multi-family use, peak parking demand was calculated based on the proposed unit sizes of over 750 SF, and results in 42 parking spaces. Section 10.1112.312 requires that one visitor parking space be provided for every five dwelling units for a total of 7 parking spaces. As allowed under Section 10.1115.23 of the Zoning Ordinance, the project is allowed to reduce the number of spaces calculated under Section 10.1115.21 by 4 parking spaces. Thus, based on the City of Portsmouth Zoning Ordinance, the total parking demand for the project is 138 spaces.

The total parking provided on the proposed site plan is 138 spaces. This includes 41 on-site surface parking spaces, 54 puzzle lift spaces, 25 shared parking spaces on a separate lot, and 18 future reserve parking spaces. The puzzle lift spaces are proposed to be used as valet spaces as part of the managed parking for both the residential and hotel uses with a valet parking operator that will operate and manage the parking 24/7/365. The puzzle lifts will be screened so that the puzzle systems will not be visible from Maplewood Avenue.

Shared Parking on Separate Lots

The applicant will have the ability to share private parking with the office building that was recently constructed across the street at 145 Maplewood Avenue. With the off-setting peaks of these complimenting uses, the applicant intends to enter into a shared parking agreement with 145 Maplewood Avenue LLC for the use of 25 parking spaces on the 145 Maplewood parcel. The hotel and residential uses on the development parcel are complimentary to the office use on the 145 Maplewood Parcel, a use that does not have a parking requirement in the DOD. With the 25 shared parking spaces, the project is providing a total of 138 parking spaces which meets the parking demand of 138 spaces.

Per Article 11 Section 10.1112.62 the shared parking arrangement shall be secured by a covenant acceptable to the City and recorded at the Rockingham County Registry of Deeds. The applicant understands that should the Planning Board grant the shared parking CUP, as a condition of approval the applicant will be required to record the agreement. The applicant the shared parking analysis with the Kane Company / 145 Maplewood LLC and they support the analysis and have committed to entering into a shared parking agreement to be secured with a covenant acceptable to the City and recorded at the RCRD.

The applicant will manage the parking for both the residential and hotel uses with a valet parking operator that will operate and manage the parking 24/7/365 onsite as well as on the separate lot to optimize the use of the available parking.

In addition to seeking the Conditional Use Permit for shared parking on separate lot, the applicant has explored creative parking solutions to achieve the City's parking requirements. The applicant has designed the mixed-use building parking layout such that 18 future reserved surface parking spaces can be constructed utilizing the proposed drive aisle layout and the proposed drainage system has been sized to account for the additional area. The future reserve parking spaces would provide an additional 18 parking spaces bringing the total number of on-site parking spaces to 113. These 113 on-site parking spaces and 25 shared spaces on a separate lot, brings the total parking provided to 138 spaces. The applicant

proposes to include these surface spaces as "reserve spaces" to not be built at this time, but that could be constructed in the future if the applicant deems that this additional parking is in fact needed to support the developments building program.

Conditional Use Permit of Wetland Buffer

Through the course of the land-use permitting process, the applicant has continued to be responsive to comments regarding buffer impact and concerns with density. The applicant has submitted four (4) versions of the Site Plan to the Conservation Commission for review from the Conceptual Site Plan reviewed at the December 2020 Work Session through the last Conservation Commission meeting on June 9, 2021. Additionally, since the project was last before the Conservation Commission, impacts to the buffer have been further reduced while addressing TAC comments.

The following includes a summary of four prior (4) iterations of the Site Plan previously submitted to the Conservation Commission and the latest enclosed package as it relates to improvement in the buffer and reduction in density.

Table 2 – Overall Project Buffer Impact Reduction

Submission Date	Existing Condition Buffer Impact (SF)	Overall Project Buffer Impact (SF)	Net Buffer Impact (SF)
12/1/2020	28,327	32,393	4,066
3/22/2021	28,327	24,595	(3,732)
4/28/2021	28,327	24,595	(3,732)
5/19/2021	28,327	24,527	(3,800)
11/22/2021	28,327	21,257	**(7,070)(1)**

(1) Total net reduction includes impervious surfaces for reserve parking spaces if constructed. If the reserve spaces are not constructed, total reduction of impervious surface will be 10,107 SF.

As depicted in Table 2, the applicant has continued to make a good faith effort to be responsive to comments from the local land-use boards and public by conceding allowed density and further improving buffer impact for the overall project that far exceeds the net zero requirements of Section 10.1017.24.

Based on the above described and enclosed materials, the following addresses how the proposed project warrants the granting of a Wetland Conditional Use Permit by satisfying the following six (6) criteria for approval in Section 10.1017.50 of the Zoning Ordinance:

(1) The land is reasonably suited to the use, activity or alteration.

The land is currently a previously disturbed site which consists of the former Cindy Ann Cleaners building, a vacant office building, the Vanguard Gym and parking lots and is suited for enhancement. Section 10.5A41.10D of the Zoning Ordinance defines the CD4 district as consisting "of medium-to-high density transitional area with a mix of building types and residential, retail and other commercial uses". The proposed project design is consistent with the descriptions of uses in these zoning districts. Additionally, the proposed project site consists of previously

disturbed tidal buffer area which has historically been used as a commercial area. The proposed project will result in impervious surface reduction in the buffer, buffer enhancement, and will provide public access along North Mill Pond which is a goal of the City's Master Plan.

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

The placement of the proposed buildings and parking areas were done in a way to reduce the areas of impervious surface within the 25-, 50-, and 100-foot tidal buffers. The proposed project design reduces the impervious surface within the 25-, 50-, and 100' buffers and proposes to replace existing maintained lawn with native grass mix and plant native trees and shrubs.

(3) There will be no adverse impact on the wetland functional values of the site or surrounding properties;

There will be no adverse impact on the wetland functional values of the site as the existing condition is previously disturbed and consists of buildings, maintained lawn, parking area and minor scrub at the water's edge. There is no real functional wetland buffer area on the project site. The proposed project designs site and landscape plans enhance the previously disturbed tidal buffer area given the existing condition and provide added value by creating public open space for recreation along the North Mill Pond.

(4) Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals; and

The proposed project design proposes no alteration to any natural woodland or wetlands area. The area impacted consists of impervious surfaces and maintained lawn. Any temporary disturbances of the wetland buffer for re-construction of the stormwater outlet will be restored following construction.

(5) The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.

The proposed project design is not an adverse impact to the site as it would enhance the buffer by reducing overall impervious surface on the site, improve water quality through stormwater treatment and provide public access to the North Mill Pond which is a goal of the City's master plan. Impervious surfaces have been reduced by eliminating buildings and parking within the 25-, 50-foot tidal buffers. The proposed project will reduce the impervious area within the 25, 50, and 100-foot tidal buffers.

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

The proposed project design within the vegetated buffer strip is limited to the removal of impervious parking area, construction of the porous paved North Mill Pond greenway trail and the replacement of the existing stormwater outlet. The existing outlet conveys runoff from the Vaughan Street neighborhood as the property has no stormwater treatment measures. The proposed project will collect and treat the onsite impervious surfaces prior to discharging to North Mill Pond. Implementing these treatment measures will help improve the water quality in North Mill Pond. In order for this system to work, disturbances with the buffer strip are necessary. Areas temporarily disturbed for the construction of the outlet will be restored following construction. The landscape plan proposes replacing the

existing lawn within the 25' foot wetland buffer with a native grass mix, mown as required to keep the space open and avoid incursions of invasive species, and the addition of several native trees and shrubs on the water side of the path.

Conclusion

We trust the above described and enclosed materials address the criteria and requirements for the Planning Board to grant a Site Plan Review Permit, Conditional Use Permit for Shared Parking and Wetland Conditional Use Permit for the proposed project. The proposed project meets requirements of the Zoning Ordinance. The proposed project achieves the goals of City's Master Plan to provide public access along the North Mill Pond with a Greenway Community Space and to provide buffer enhancement.

In the past 12 months, the applicant has in good faith, continued to respond to feedback from the community and local land-use boards. As shown in the enclosed information, the latest proposal will provide additional housing stock for the City but will reduce density from earlier proposals, reduce buffer area impacts, improve stormwater management, enhance the North Mill Pond tidal wetland buffer, and provide public benefit in the form of open space along the North Mill Pond. Based on this, the applicant respectfully requests approval for the various land-use permits noted above.

We respectfully request to be placed on the Planning Board agenda for December 16, 2021. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 988-8066 or by email at pmcrimmins@tighebond.com.

Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Senior Project Manager

Neil A. Hansen, PE
Project Engineer

Copy: North Mill Pond Holdings, LLC (via E-mail)

PROPOSED MIXED USE DEVELOPMENT

RAYNES AVENUE
PORTSMOUTH, NEW HAMPSHIRE

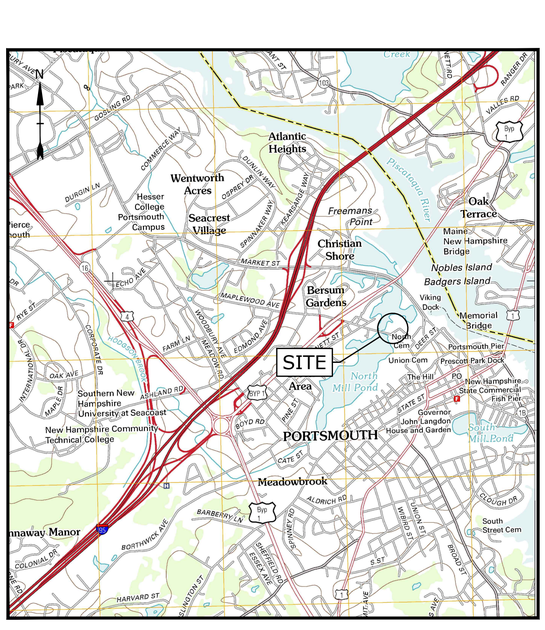
MARCH 22, 2021

LAST REVISED: NOVEMBER 24, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	11/24/2021
G-100	GENERAL NOTES AND LEGEND	11/24/2021
1 OF 3	EXISTING CONDITIONS PLAN	5/17/2021
2 OF 3	EXISTING CONDITIONS PLAN	5/17/2021
3 OF 3	EXISTING CONDITIONS PLAN	5/17/2021
C-101	DEMOLITION PLAN	11/24/2021
C-102	OVERALL SITE PLAN	11/24/2021
C-102.1	SITE PLAN	11/24/2021
C-102.2	NEIGHBORHOOD SIGNAGE PLAN	11/24/2021
C-103	GRADING, DRAINAGE AND EROSION CONTROL PLAN	11/24/2021
C-104	UTILITIES PLAN	11/24/2021
C-201	EASEMENT PLAN	11/24/2021
L-100	LANDSCAPE MATERIAL PLAN LEGEND AND NOTES	11/24/2021
L-101	LANDSCAPE PLANTING PLAN	11/24/2021
L-102	LANDSCAPE DETAILS	11/24/2021
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	11/24/2021
C-502	DETAILS SHEET	11/24/2021
C-503	DETAILS SHEET	11/24/2021
C-504	DETAILS SHEET	11/24/2021
C-505	DETAILS SHEET	11/24/2021
C-506	DETAILS SHEET	11/24/2021
C-507	DETAILS SHEET	11/24/2021
C-508	DETAILS SHEET	11/24/2021
A3.00	EXTERIOR ELEVATIONS	11/24/2021
1 of 1	LIGHTING PLAN	4/21/2021

LIST OF PERMITS		
LOCAL	STATUS	DATE
SITE PLAN REVIEW PERMIT		
CONDITIONAL USE PERMIT- WETLAND BUFFER		
CONDITIONAL USE PERMIT- PARKING		
STATE		
NHDES - ALTERATION OF TERRAIN PERMIT		
NHDES - WETLAND PERMIT		
NHDES - SEWER CONNECTION PERMIT		

T & B PROJECT NO: P-0595-007



LOCATION MAP
SCALE: 1" = 2,000'

PREPARED BY:
Tighe&Bond
177 CORPORATE DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801
603-433-8818

APPLICANT:
NORTH MILL POND HOLDINGS LLC
1359 HOOKSETT ROAD
HOOKSETT, NEW HAMPSHIRE 03106

OWNERS:
TAX MAP 123, LOT 10 & 13
31 RAYNES LLC C/O
PORTSMOUTH CHEVROLET
549 ROUTE 1 BYPASS
PORTSMOUTH, NEW HAMPSHIRE 03801

TAX MAP 123, LOT 12
203 MAPLEWOOD AVENUE LLC
549 HIGHWAY 1 BYPASS
PORTSMOUTH, NH 03801

TAX MAP 123, LOT 14
ONE RAYNES AVE LLC
1359 HOOKSETT RD
HOOKSETT, NEW HAMPSHIRE 03106

SURVEYOR:
DOUCET SURVEY, LLC
102 KENT PLACE
NEWMARKET, NH 03857

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 09830 LICENSED PROFESSIONAL ENGINEER – 11/24/21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 11/24/21

PB SUBMISSION
COMPLETE SET 25 SHEETS

Last Saved 10/19/2021
Plotted: Nov 24, 2021 - 1:09pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P-0595-007_C-COVER.dwg

GENERAL 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. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
3. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
4. 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.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR AND COMPLY WITH 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.
7. 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.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
9. 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.
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. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
12. SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.
13. APPLICANT SHALL SUBMIT, AS PART OF THE FINAL POST APPROVAL PROCEDURES, RELEVANT PTAP INFORMATION USING THE MOST RECENT ONLINE DATA PORTAL CURRENTLY MANAGED BY THE UNH STORMWATER CENTER. THE PLANNING DEPARTMENT SHALL BE NOTIFIED AND COPIED OF THE PTAP DATA SUBMITTAL.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. 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.
3. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
4. 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.
5. 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.
6. 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.
7. ALL UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY OF PORTSMOUTH STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED.
8. 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.
9. 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.
10. 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, LIGHTING, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, STAIRS, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, BUILDING SLABS, FOUNDATION, TREES AND LANDSCAPING.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. THE CONTRACTOR SHALL REMOVE AND SALVAGE EXISTING GRANITE CURB FOR REUSE.
17. DEMOLITION OF DRAINAGE DOWNSTREAM OF DMH 4839 SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH AND SHALL BE DEMOLISHED BY THE CITY OF PORTSMOUTH.

SITE NOTES:

1. PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, FIRE LANES, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES. ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS AND STOP BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT MARKINGS INCLUDING CENTERLINES, LANE LINES AND PAINTED MEDIANS 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 PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES.
5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
6. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM TO CURRENT MUTCD STANDARDS.
7. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
8. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
9. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
10. ALL LIGHT POLE BASES NOT PROTECTED BY A RAISED CURB SHALL BE PAINTED YELLOW.
11. COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
12. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
13. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
14. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
15. THE APPLICANT SHALL HAVE A SITE SURVEY CONDUCTED BY A RADIO COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATIONS DIVISION. THE RADIO COMMUNICATIONS CARRIER MUST BE FAMILIAR AND CONVERSANT WITH THE POLICE AND RADIO CONFIGURATION. IF THE SITE SURVEY INDICATES IT IS NECESSARY TO INSTALL A SIGNAL REPEATER EITHER ON OR NEAR THE PROPOSED PROJECT, THOSE COSTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY.
16. THE PROPOSED LOADING ZONE ON RAYNES AVE SHALL BE REVIEWED BY THE PARKING & TRAFFIC SAFETY COMMITTEE. ANY ADDITIONAL LOADING ZONES WILL REQUIRE THE APPROVAL OF THE PARKING & TRAFFIC SAFETY COMMITTEE.
17. RAYNES AVE LAYOUT DESIGNED AS PART OF THE CITY OF PORTSMOUTH'S COMPLETE STREETS IMPROVEMENT PROJECT THAT IS BEING DESIGNED BY THE CITY'S CONSULTANT.
18. ALL TREES PLANTED ARE TO BE INSTALLED UNDER THE SUPERVISION OF THE CITY OF PORTSMOUTH DPW USING STANDARD INSTALLATION METHODS.
19. THE APPLICANT SHALL PREPARE A CONSTRUCTION MANAGEMENT AND MITIGATION PLAN (CMMP) FOR REVIEW AND APPROVAL BY THE CITY'S LEGAL AND PLANNING DEPARTMENTS.
20. A TEMPORARY SUPPORT OF EXCAVATION (SOE) PLAN SHALL BE PREPARED BY THE APPLICANT'S CONTRACTOR TO CONFIRM ANY TEMPORARY ENCUMBRANCES OF THE CITY'S RIGHT-OF-WAY. IF LICENSES ARE REQUIRED FOR THE SOE, THE APPLICANT WILL BE REQUIRED TO OBTAIN THESE FROM THE CITY PRIOR TO CONSTRUCTION.
21. APPLICANT SHALL COMPLETE FINAL PAVING AND PAVEMENT STRIPING PER DPW REQUIREMENTS FOR THE ENTIRE WIDTH OF RAYNES AVENUE FROM VAUGHAN STREET TO MAPLEWOOD AVENUE.
22. THE PROPERTY MANAGER WILL BE RESPONSIBLE FOR TIMELY SNOW REMOVAL FROM ALL PRIVATE SIDEWALKS, DRIVEWAYS, AND PARKING AREAS. ALL SNOW REMOVAL WILL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF.

GRADING AND DRAINAGE 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. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
4. 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.
5. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
6. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
7. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.
10. 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.
11. FINAL DESIGN OF DRAINAGE DOWNSTREAM OF PDMH 9 AND DOWNSTREAM DEFENDER SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH AND SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.
12. CHECK VALVES SHALL BE INSTALLED ON THE INLET PIPES FROM BOTH JELLYFISH FILTERS.

EROSION CONTROL NOTES:

1. SEE SHEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

UTILITY NOTES:

2. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL
   - WATER/SEWER - CITY OF PORTSMOUTH
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - COMCAST/CONSOLIDATED COMMUNICATIONS/FIRST LIGHT
2. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
3. 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.
4. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
9. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
10. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH 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. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
15. 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.
16. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
17. 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.
18. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
19. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
20. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
21. ALL SEWER PIPE WITH LESS THAN 6' OF COVER IN PAVED AREAS OR LESS THAT 4' OF COVER IN UNPAVED AREAS SHALL BE INSULATED.
22. 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.
23. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
24. CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
25. FINAL LOCATIONS OF ALL UTILITY LINES SHALL BE APPROVED BY THE CITY OF PORTSMOUTH DPW PRIOR TO CONSTRUCTION.
26. EXISTING SEWER LINE IN RAYNES AVENUE IS AC PIPE. CONTRACTOR SHALL TAKE PROPER PRECAUTIONS WHEN CUTTING INTO EXISTING PIPE.
27. THE APPLICANT SHALL COORDINATE WITH THE CITY OF PORTSMOUTH DPW ON THE FINAL SCOPE OF WORK FOR THE REPAIR OR REPLACEMENT OF THE RAYNES AVENUE WATER MAIN.
28. 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.
29. CONTRACTOR SHALL PERFORM TEST PITS TO VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER IF LOCATIONS DIFFER FROM PLAN.

LANDSCAPE NOTES:

1. SEE SHEET L-100 FOR LANDSCAPE NOTES.

EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY PERFORMED BY DOUCET SURVEY INC. SEE REFERENCE PLAN #1.
2. FLOOD HAZARD ZONE BASED ON REFERENCE PLAN #1.
3. HORIZONTAL DATUM BASED ON REFERENCE PLAN #2.
4. VERTICAL DATUM BASED ON REFERENCE PLAN #1.

REFERENCE PLANS:

1. ""EXISTING CONDITIONS PLAN OF TAX MAP 123, LOT 10, 12, 13 & 14" PREPARED BY DOUCET SURVEY INC., DATED JUNE 17, 2020.
2. "SITE PLAN PLAN FOR 111 MAPLEWOOD AVENUE" PREPARED BY TIGHE & BOND INC., DATED MARCH 18, 2019, LAST REVISED NOVEMBER 21, 2019.
3. "EXISTING CONDITIONS PLAN OF TAX MAP 123, LOT 15 & TAX MAP 124, LOTS 10 & 11" PREPARED BY DOUCET SURVEY INC., DATED FEBRUARY 3, 2016.
4. "UTILITIES PLAN" AC HOTEL AND COMMUNITY SPACE, PREPARED BY TIGHE & BOND INC., DATED JULY 23, 2018
5. "DISPOSITION PLAN PARCEL 3" DATED 6/73 BY ANDERSON-NICHOLS & CO., INC., R.C.R.D. PLAN #D-4019.
6. "PLAN OF LAND, VAUGHAN AND GREEN STREETS, PORTSMOUTH NH" DATED JULY 1955 BY JOHN W. DURGIN R.C.R.D. PLAN #02541.
7. "SEVERINO TRUCKING CO., INC. ELECTRIC DUCT BANK LOCATION PLAN" DATED MARCH 25, 2014.
8. "EXISTING FEATURES PLAN, TAX MAP 118 - LOT 28, TAX MAP 119 - LOT 4, TAX MAP 124 - LOT 12 & TAX MAP 125 LOT 21" DATED NOVEMBER 27, 2013, REVISED 1/16/15 BY MSC CIVIL ENGINEERS & LAND SURVEYORS, INC.
9. "FIGURE 1 AREA OF INVESTIGATION WITH EMI", 111 MAPLEWOOD AVENUE, DATED JULY 2019, PREPARED BY RADAR SOLUTIONS INTERNATIONAL, INC.
10. "VAUGN ST. BNDER ELEVATIONS AS BUILT DRAWING" BY S.U.R. CONSTRUCTION, INC. DATED 8/12/2019.
11. COMPLETE STREETS CONCEPTUAL DESIGN BY SEBAGO TECHNICS. DATED 05/31/2019.

ABBREVIATIONS

TBR	TO BE REMOVED
BLDG	BUILDING
TYP	TYPICAL
COORD	COORDINATE
30'R	CURB RADIUS
SWL	SOLID WHITE LINE
VGC	VERTICAL GRANITE CURB
SGC	SLOPED GRANITE CURB
MVGC	MOUNTABLE VERTICAL GRANITE CURB
TC	TOP OF CURB
BC	BOTTOM OF CURB
TW	TOP OF WALL
BW	BOTTOM OF WALL
TS	TOP OF STEP
BS	BOTTOM OF STEP
HDPE	HIGH-DENSITY POLYETHYLENE
FF	FINISH FLOOR
VIF	VERIFY IN FIELD

LEGEND

- APPROXIMATE LIMIT OF PROPOSED SAW CUT
- LIMIT OF WORK
- PROPOSED SILT SOCK
- APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED
- PROPOSED CONSTRUCTION EXIT
- BUILDING TO BE REMOVED
- LOCATION OF PROPOSED BUILDING
- INLET PROTECTION SILT SACK
- PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED CURB
- PROPOSED BUILDING
- PROPOSED PAVEMENT SECTION
- PROPOSED CONCRETE SIDEWALK
- PROPOSED BRICK SIDEWALK
- PROPOSED BOLLARD
- PROPOSED MAJOR CONTOUR LINE (10)
- PROPOSED MINOR CONTOUR LINE (9)
- PROPOSED DRAIN LINE (TYP)
- PROPOSED SILT SOCK
- INLET PROTECTION SILT SACK
- PROPOSED CATCHBASIN
- PROPOSED DOUBLE GRATE CATCHBASIN
- PROPOSED DRAIN MANHOLE
- PROPOSED YARD DRAIN
- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER TO BE REMOVED
- EXISTING UNDERGROUND TELECOMMUNICATION
- EXISTING WATER
- EXISTING GAS
- EXISTING UNDERGROUND ELECTRIC
- EXISTING OVERHEAD UTILITY
- PROPOSED SANITARY SEWER
- PROPOSED WATER
- PROPOSED GAS
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED UNDERGROUND TELECOMMUNICATION
- PROPOSED UNDERGROUND COMBINED ELECTRIC & TELECOMMUNICATION
- EXISTING CATCHBASIN
- EXISTING DRAIN MANHOLE
- EXISTING SEWER MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING ELECTRIC MANHOLE
- EXISTING TELEPHONE MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED DRAIN MANHOLE
- PROPOSED SEWER MANHOLE
- PROPOSED WATER VALVE
- PROPOSED HYDRANT
- PROPOSED GAS VALVE
- PROPOSED ELECTRIC MANHOLE
- PROPOSED LIGHT POLE BASE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 – LICENSED PROFESSIONAL ENGINEER – 11-24-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 – LICENSED PROFESSIONAL ENGINEER – 11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

GENERAL NOTES AND LEGEND

SCALE: AS SHOWN

G-100

Last Saved: 11/18/2021
Plotted: Nov 19, 2021-1:15pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\SheetVP-0595-007-C-DSGN.dwg

NOTES:

1. REFERENCE: TAX MAP 123, LOT 10
TAX MAP 123, LOT 12
TAX MAP 123, LOT 13
TAX MAP 123, LOT 14
RAYNES AVENUE &
MAPLEWOOD AVENUE
PORTSMOUTH, NEW HAMPSHIRE
D.S. PROJECT NO. 6082

2. TOTAL PARCEL AREA: 71,149 SQ. FT. OR 1.633 AC. (COMBINED LOTS 10, 12 & 13)
39,459 SQ. FT. OR 0.906 AC. (LOT 14)

3. OWNER OF RECORD:
TAX MAP 123, LOTS 10 & 13
31 RAYNES LLC
C/O PORTSMOUTH CHEVROLET
549 ROUTE 1 BYPASS
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 4676, PAGE 654
R.C.R.D. BOOK 4676, PAGE 657

TAX MAP 123 LOT 12
203 MAPLEWOOD AVENUE LLC
C/O PORTSMOUTH CHEVROLET
549 ROUTE 1 BYPASS
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5621, PAGE 420

TAX MAP 123, LOT 14
ONE RAYNES AVENUE LLC
1359 HOOKSETT ROAD
HOOKSETT, NH 03106
R.C.R.D. BOOK 6088, PAGE 1268

4. ZONE: CD4 OVERLAY DISTRICTS
-DOWNTOWN OVERLAY DISTRICT
-HISTORIC DISTRCIT

5. ZONING DISTRICTS BASED ON THE CITY OF PORTSMOUTH ZONING MAP DATED 11/12/15 AS AVAILABLE ON THE CITY WEBSITE ON 11/18/19. SEE CITY OF PORTSMOUTH ZONING ORDINANCE ARTICLE 5A, SECTION 10.5A40 FOR DIMENSIONAL REGULATIONS. THE LAND OWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, STATE AND FEDERAL REGULATIONS.

THE SITE IS SUBJECT TO THE STATE OF NH SHORELAND WATER QUALITY PROTECTION ACT. SEE NHDES WEBSITE FOR SPECIFIC DIMENSIONAL REQUIREMENT.

6. FIELD SURVEY PERFORMED BY D.C.B. & K.J.L. DURING NOVEMBER 2019 & BY G.M.E. & J.P.E. DURING JUNE 2020 USING A TRIMBLE S7 TOTAL STATION AND A TRIMBLE R8 SURVEY GRADE GPS WITH A TRIMBLE TSC3 DATA COLLECTOR AND A TRIMBLE DINI DIGITAL LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

FIELD SURVEY PERFORMED BY M.J.C. ON OCTOBER 2019 USING A LEICA HDS SCANNER. REGISTRATION ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

7. JURISDICTIONAL WETLANDS DELINEATED BY TIGHE & BOND, DURING OCTOBER 2019 IN ACCORDANCE WITH 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1 AND THE INTERIM REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION (OCTOBER, 2009).

8. VERTICAL DATUM IS BASED ON NGVD29 PER DISK B2 1923.

9. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.

10. 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, INC. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.

11. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVABLE PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON-SITE.

12. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.

13. WATER BOUNDARIES ARE DYNAMIC IN NATURE AND ARE SUBJECT TO CHANGE DUE TO NATURAL CAUSES SUCH AS EROSION OR ACCRETION.

14. MEAN HIGH WATER (EL. 3.0' NGVD1929) AND HIGHEST OBSERVABLE TIDE (EL. 4.3' NGVD1929) ELEVATIONS PER "MAPLEWOOD AVENUE CULVERT REPLACEMENT AND NORTH MILL POND RESTORATION, WATERFRONT/STRUCTURAL BASIS OF DESIGN, BY WATERFRONT ENGINEERS, LLC, DATED DECEMBER 30, 2009", PROVIDED BY TIGHE & BOND ON 11-30-15.

15. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

16. 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 GREEN STREET AS DEPICTED HEREON IS/ARE BASED ON RESEARCH CONDUCTED AT THE CITY OF PORTSMOUTH CITY HALL, THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS & THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

EDGE OF RIGHT OF WAY BASED ON HOLDING 52 FOOT WIDE RIGHT OF WAY ALONG RAYNES AVENUE PER REFERENCE PLANS #10 & #11. THE GEOMETRY FROM REFERENCE PLAN #11 WAS THEN ALIGNED TO THE REBAR SHOWN ON THE NORTHERLY SIDE OF MAPLEWOOD AVENUE.

17. 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.

18. TAX MAP 123, LOTS 10, 12, 13 & 14 IS/ARE EITHER SUBJECT TO OR IN BENEFIT OF, BUT NOT LIMITED TO, THE FOLLOWING EASEMENTS/RIGHTS OF RECORD:
A) 12' WIDE RIGHT OF WAY, SEE R.C.R.D. BOOK 4676, PAGE 657 AND REFERENCE PLAN #11.
B) RIGHT OF WAY, SEE R.C.R.D. BOOK 4676, PAGE 657 & BOOK 5621, PAGE 420.
C) SEWER RIGHTS, SEE R.C.R.D. BOOK 4676, PAGE 657 (LOCATION UNKNOWN).
D) 15' WIDE WALKWAY & LANDSCAPE EASEMENT, SEE R.C.R.D. BOOK 4676, PAGE 657.
E) ELECTRIC EASEMENT, SEE R.C.R.D. BOOK 3205, PAGE 1449.
F) TAX MAP 123, LOT 14 IS SUBJECT TO LEASEHOLD RIGHTS AS LISTED IN R.C.R.D. BOOK 6088, PAGE 1267.

REFERENCE PLANS:

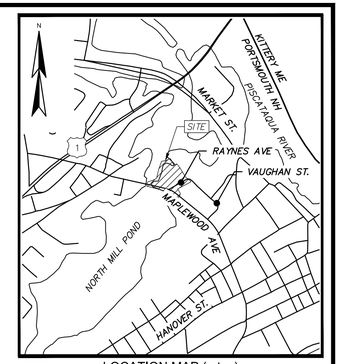
1. "STANDARD BOUNDARY SURVEY, TAX MAP 123 – LOT 15 & TAX MAP 124 LOT 10" DATED JULY 2008, REVISED 4/25/13 BY AMBIT ENGINEERING, INC. R.C.R.D. PLAN #D-37722.
2. "PROPERTY STAKEOUT SKETCH, PORTSMOUTH PROPERTY TRUST, PE SPAULDING REVOCABLE TRUST", BY AMBIT ENGINEERING, INC., DATED JANUARY 30, 2007, NOT RECORDED.
3. "VAUGHAN STREET URBAN RENEWAL PROJECT N.H. R-10 PORTSMOUTH, NH, CONDEMNATION MAP", BY ANDERSON-NICHOLS & CO., INC., DATED FEBRUARY 1971, R.C.R.D. PLAN D-2425.
4. "STANDARD BOUNDARY SURVEY, TAX MAP 123, LOTS 10 & 13 FOR RAYNES, LLC", BY AMBIT ENGINEERING, INC., NOT RECORDED.
5. "EASEMENT PLAN, EGRESS EASEMENT TO 319 VAUGHAN STREET CENTER, LLC, TAX MAP 124, LOT 9 & TAX MAP 123, LOT 15, PROPERTY OF 299 VAUGHAN STREET, LLC C/O CATHARTES PRIVATE INVESTMENTS", BY AMBIT ENGINEERING, INC., DATED MARCH 2014, R.C.R.D. PLAN #D-38358.
6. "EASEMENT PLAN SIDEWALK EASEMENT TO CITY OF PORTSMOUTH, TAX MAP 124, LOT 9 PROPERTY OF 319 VAUGHAN STREET CENTER, LLC", BY AMBIT ENGINEERING, INC., DATED FEBRUARY 2014, R.C.R.D. PLAN #D-38315.
7. "PLAN OF LAND PORTSMOUTH, NH FOR WILLIAM A. HYDER", BY JOHN W. DURGIN, DATED JUNE 1955, ON FILE AT JAMES VERRA & ASSOCIATES.
8. "STANDARD PROPERTY SURVEY FOR PROPERTY AT 111 MAPLEWOOD AVENUE", BY EASTERLY SURVEYING, INC., DATED 1/31/06, R.C.R.D. PLAN #D-33786.
9. "VAUGHAN STREET URBAN RENEWAL PROJECT N.H. R-10 PORTSMOUTH, NH, DISPOSITION PLAN PARCEL 3", BY ANDERSON-NICHOLS & CO., INC., DATED JUNE 1973, R.C.R.D. PLAN D-4019.
10. "VAUGHAN STREET URBAN RENEWAL PROJECT N.H. R-10 PORTSMOUTH, NH, DISPOSITION MAP", BY ANDERSON-NICHOLS & CO., INC., DATED NOVEMBER 1969, R.C.R.D. PLAN D-2408
11. "LAND OF HEIRS OF JOHN AUGUST HETT", BY JOHN W. DURGIN, DATED APRIL 1938, ON FILE AT JAMES VERRA AND ASSOCIATES.
12. "LAND IN PORTSMOUTH, NH OWNED BY ARMOUR & CO.", BY JOHN W. DURGIN DATED OCTOBER 1938, ON FILE AT JAMES VERRA AND ASSOCIATES.
13. "LAND ON VAUGHAN STREET PORTSMOUTH, NH ESTATE OF CARRIE HAM TO LAWRENCE V. REGAN", BY JOHN W. DURGIN, DATED AUGUST 1937, ON FILE AT JAMES VERRA AND ASSOCIATES.
14. "SKETCH TO RALPH SPINNEY", DATED APRIL 23, 1936, ON FILE AT JAMES VERRA AND ASSOCAIATES.
15. "PLOT PLAN OF LAND PORTSMOUTH, NH FOR JOHN R. AND WINNFIELD R. WELCH", BY JOHN W. DURGIN., DATED APRIL 1973, ON FILE AT JAMES VERRA AND ASSOCIATES.
16. "PLAN OF PROPERTY IN PORTSMOUTH, NH OWNED BY R.I. SUGDEN", BY WM A. GROVER, DATED APRIL 15, 1919, ON FILE AT JAMES VERRA AND ASSOCIATES.
17. "PLAN OF LAND PORTSMOUTH, NH FOR WILLIAM A. HYDER", BY JOHN W. DURGIN, DATED JUNE 1955, ON FILE AT JAMES VERRA AND ASSOCIATES.
18. "PROPERTY OF ELDRED V. AND BARBARA J. STRAW", BY C.RE. LAWSON, DATED JUNE 1971, R.C.R.D. PLAN C-3277.
19. "SUBDIVISION PLAN OF TAX MAP 123, LOT 15 FOR 299 VAUGHAN STREET, LLC", BY DOUCET SURVEY, INC., DATED MAY 19, 2017, R.C.R.D. PLAN D-40759.
20. "LICENSE, EASEMENT & LAND TRANSFER PLAN FOR 299 VAUGHAN STREET, LLC & VAUGHAN STREET HOTEL, LLC", BY DOUCET SURVEY INC., DATED AUGUST 2017, R.C.R.D. PLAN D-40760.

LEGEND

- APPROXIMATE ABUTTERS LOT LINE
- CHAIN LINK FENCE
- SEWER LINE
- DRAIN LINE
- GAS LINE
- UNDERGROUND ELECTRIC LINE
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- OVERHEAD WIRE
- TREE LINE
- SHRUB LINE
- GUARDRAIL
- EDGE OF WETLAND AREA (SEE NOTE #7)
- CONCRETE
- RIP RAP
- LANDSCAPED AREA
- UTILITY POLE & GUY WIRE
- LIGHT POLE W/ARM
- SIGN
- BOUND FOUND
- IRON PIPE/ROD FOUND
- POST
- FIRE HYDRANT
- WATER GATE VALVE
- WATER SHUTOFF VALVE
- GAS GATE VALVE
- PAD MOUNTED TRANSFORMER
- AIR CONDITIONING UNIT
- CATCH BASIN
- DRAIN MANHOLE
- MANHOLE
- ELECTRIC MANHOLE
- SEWER MANHOLE
- HAND HOLE
- CONIFEROUS TREE
- DECIDUOUS TREE
- MONITORING WELL LOCATION
- ROCK/BOULDER
- ×100.0 SPOT GRADE
- BND. FND. BOUND FOUND
- CONC. CONCRETE
- EP EDGE OF PAVEMENT
- VGC VERTICAL GRANITE CURB
- VCC VERTICAL CONCRETE CURB
- SWL SINGLE WHITE LINE
- EM ELECTRIC METER
- GM GAS METER
- PM PARKING METER
- 5/8" REBAR W/ID CAP TO BE SET

DRAINAGE STRUCTURES		
DMH 1096	CB 4243	DMH 4827
RIM ELEV.=8.2'	RIM ELEV.=12.9'	RIM ELEV.=10.4'
OUTSIDE OF SCOPE	(4241) 12" CLAY INV.=10.1'	(4046) 24" DIP INV.=2.7' (RECESSED)
		(A) 18" RCP INV.=2.4'
DMH 1099	CB 4270	(OUTLET NOT FOUND)
RIM ELEV.=8.2'	RIM ELEV.=11.7'	(B) 18" RCP INV.=2.3'
OUTSIDE OF SCOPE	(A) 10" CLAY INV.=8'	(C) 12" RCP INV.=6.2'
	SUMP ELEV.=6.9'	
MH 4046		DMH 4829
RIM ELEV.=11.8'	DMH 4275	RIM ELEV.=15.8'
(4275) 12" UNKN INV.=3.2'	RIM ELEV.=13.4'	(A) 12" CLAY INV.=12'
(4827) 24" DIP INV.=2.5'	(4099) 12" CLAY INV.=10.9'	(B) 12" CLAY INV.=11.9'
(4839) 24" DIP INV.=2.3'	(4408) 12" CLAY INV.=9.7'	(C) UNKN INV.=9.2'
	(4046) 12" CLAY INV.=5.6'	(4241) UNKN INV.=9.2'
CB 4099	(4241) 12" CLAY INV.=0.5'	
RIM ELEV.=13.3'		DMH 4839
(4275) 12" RCP INV.=11.1'	MH 4290	RIM ELEV.=9.8'
SUMP ELEV.=10.3'	RIM ELEV.=13.8'	(4046) 24" RCP INV.=1.8'
	NOT OPENED	(4840) 24" RCP INV.=1.7'
CB 4237		
RIM ELEV.=12.9'	CB 4408	DMH 4840
(4241) 12" CLAY INV.=10.1'	RIM ELEV.=12.6'	RIM ELEV.=9.4'
SUMP ELEV.=9.3'	(4275) 12" RCP INV.=10.0'	(4839) 24" RCP INV.=1.6'
	SUMP ELEV.=9.5'	(OUTFALL) 24" RCP INV.=1.6'
DMH 4241		
RIM ELEV.=13.3'	CB 4410	CB 5564
(4243) 12" CLAY INV.=9.8'	RIM ELEV.=11.6'	RIM ELEV.=10.1'
(4237) 12" CLAY INV.=9.5'	(4270) 10" CLAY INV.=6.8'	(A) 12" RCP INV.=6.3'
(4275) 12" CLAY INV.=7.0'	SUMP ELEV.=6.1'	
(4829) 12" CLAY INV.=7.0'		

SEWER STRUCTURES	
SMH 4242	SMH 4831
RIM ELEV.=13.4'	RIM ELEV.=18.2'
(4276) 12" DIP INV.=5.1'	(A) 8" CLAY INV.=12.4'
(4830) 12" DIP INV.=5.1'	(B) 10" PVC INV.=10.2'
	(4271) 24" DIP INV.=2.7'
SMH 4271	(C) 24" DIP INV.=2.6'
RIM ELEV.=13.2'	
(A) 12" CLAY TOP OF PIPE=7.2'	SMH 5419
(4411) 24" CLAY INV.=3.0'	RIM ELEV.=10.7'
(4831) 24" CLAY INV.=3.0'	(4276) 10" PVC INV.=4.2'
	(A) 12" PVC INV.=3.7'
SMH 4276	
RIM ELEV.=13.3'	
(5419) 10" PVC INV.=5.5'	
(4242) 10" CLAY INV.=4.9'	
SMH 4411	
RIM ELEV.=12.0'	
(4412) 24" CLAY INV.=3.5'	
(4271) 24" CLAY INV.=3.5'	
SMH 4412	
RIM ELEV.=12.0'	
NOT OPENED	
SMH 4830	
RIM ELEV.=18.2'	
(A) 12" DIP INV.=10.4'	
(4242) 12" DIP INV.=10.2'	



LOCATION MAP (n.t.s.)

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE (NHRSA TITLE LXIV) 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 SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

L.L.S. #989

5/17/21
DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — NO. 989 — MATTHEW W. FAGGINGER-AUER — SIGNATURE

20 0 20 40
SCALE: 1 INCH = 20 FT.

EXISTING CONDITIONS PLAN

FOR
TIGHE & BOND
LAND OF
31 RAYNES LLC
(TAX MAP 123, LOTS 10 & 13)
203 MAPLEWOOD AVENUE LLC
(TAX MAP 123, LOT 12)
&
ONE RAYNES AVENUE LLC
(TAX MAP 123, LOT 14)
MAPLEWOOD AVENUE & RAYNES AVENUE
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

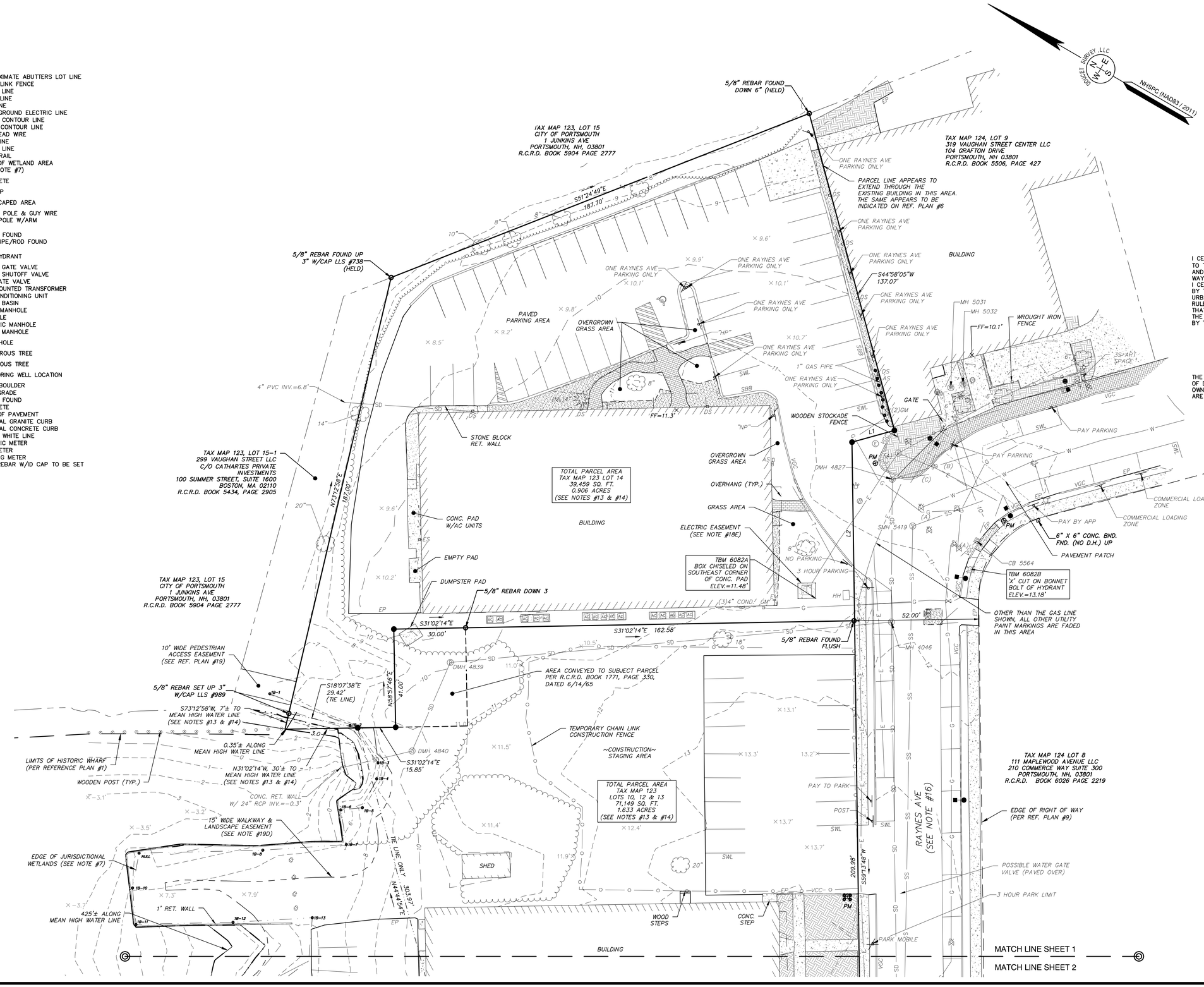
DRAWN BY:	E.D.P.	DATE:	JUNE 17, 2020
CHECKED BY:	M.W.F.	DRAWING NO.	6082B
JOB NO.	6082	SHEET	1 OF 3

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: N:\PROJECTS\6082 CD\DWG\6082B ECS.dwg LAYOUT NAME: TOPO PLAN (1) PLOTTED: Monday, May 17, 2021 - 4:07pm

LEGEND

- APPROXIMATE ABUTTERS LOT LINE
- CHAIN LINK FENCE
- SS — SEWER LINE
- SD — DRAIN LINE
- G — GAS LINE
- E — UNDERGROUND ELECTRIC LINE
- 100 — MAJOR CONTOUR LINE
- 98 — MINOR CONTOUR LINE
- OHW — OVERHEAD WIRE
- TREE LINE
- SHRUB LINE
- GUARDRAIL
- EDGE OF WETLAND AREA (SEE NOTE #7)
- CONCRETE
- RIP RAP
- LANDSCAPED AREA
- UTILITY POLE & GUY WIRE
- LIGHT POLE W/ARM
- SIGN
- BOUND FOUND
- IRON PIPE/ROD FOUND
- POST
- FIRE HYDRANT
- WATER GATE VALVE
- WATER SHUTOFF VALVE
- GAS GATE VALVE
- PAD MOUNTED TRANSFORMER
- AIR CONDITIONING UNIT
- CATCH BASIN
- DRAIN MANHOLE
- MANHOLE
- ELECTRIC MANHOLE
- SEWER MANHOLE
- HAND HOLE
- CONIFEROUS TREE
- DECIDUOUS TREE
- MONITORING WELL LOCATION
- ROCK/BOULDER
- ×100.0 — SPOT GRADE
- BND. FND. — BOUND FOUND
- CONC. — CONCRETE
- EP — EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- VCC — VERTICAL CONCRETE CURB
- SWL — SINGLE WHITE LINE
- EM — ELECTRIC METER
- GM — GAS METER
- PM — PARKING METER
- 5/8" REBAR W/ID CAP TO BE SET



LINE TABLE		
LINE	BEARING	DISTANCE
L1	N45°28'14"W	18.36'
L2	S59°09'46"W	74.62'

STATE OF NEW HAMPSHIRE — No. 989 — MATTHEW W. FAGGINGER-AUER — LICENSED LAND SURVEYOR — SIGNATURE

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE (NHRSA TITLE LXIV) 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 SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

L.L.S. #989

5/17/21
DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

20 0 20 40
SCALE: 1 INCH = 20 FT.

EXISTING CONDITIONS PLAN

FOR

TIGHE & BOND

LAND OF

31 RAYNES LLC

(TAX MAP 123, LOTS 10 & 13)

203 MAPLEWOOD AVENUE LLC

(TAX MAP 123, LOT 12)

&

ONE RAYNES AVENUE LLC

(TAX MAP 123, LOT 14)

MAPLEWOOD AVENUE & RAYNES AVENUE

PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	E.D.P.	DATE:	JUNE 17, 2020
CHECKED BY:	M.W.F.	DRAWING NO.	6082B
JOB NO.	6082	SHEET	2 OF 3

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: T:\PROJECTS\6082 CAD\DWG\6082B (ECS).dwg LAYOUT NAME: TOPO PLAN (2) PLOTTED: Monday, May 17, 2021 - 4:08pm

DOUCET SURVEY, LLC

NHSPC (NAD83 / 2011)

MATCH LINE SHEET 1

MATCH LINE SHEET 2

BUILDING

GARAGE DOOR

AC UNITS (ENCLOSED)

TIMBER EDGING

4" X 4" CONC. BND. FND. W/ D.H. FLUSH

~PAVED SIDEWALK~

MEAN HIGH WATER ELEV. 3.0 FT NGVD1929 (SEE NOTES #13 & #14)

HIGHEST OBSERVABLE TIDE LINE ELEV. 4.3 FT NGVD1929 (SEE NOTES #13 & #14)

EDGE OF JURISDICTIONAL WETLANDS (SEE NOTE #7)

15' WIDE WALKWAY & LANDSCAPE EASEMENT (SEE NOTE #19D)

HIGHEST OBSERVABLE TIDE LINE ELEV. 4.3 FT NGVD1929 (SEE NOTES #13 & #14)

MEAN HIGH WATER ELEV. 3.0 FT NGVD1929 (SEE NOTES #13 & #14)

425'± ALONG MEAN HIGH WATER LINE

NO EASEMENT FOUND.

BOULDER REVETMENT

N14°59'52"W, 75'± TO MEAN HIGH WATER LINE (SEE NOTES #13 & #14)

APPROX. INTERIOR LOT LINE, NOT SURVEYED AS PART OF THIS PROJECT

5/8" REBAR DOWN 6

3/4" REBAR DOWN 4

5/8" REBAR FLUSH 0

TOTAL PARCEL AREA
TAX MAP 123
LOTS 10, 12 & 13
71,149 SQ. FT.
1.633 ACRES
(SEE NOTES #13 & #14)

L=44.00'
R=60.00'
Δ=042°01'01"
CB=N80°14'18"E
CL=43.02'

MW NH BORING

MW DAMAGED – NONE VISIBLE

1/2" IRON UP 2

5/8" REBAR UP 2

1/2" IRON UP 2
RIGHT OF WAY
(SEE NOTE #18A)

RIGHT OF WAY
(SEE NOTE #18B)

5/8" REBAR FLUSH NO

N44°44'54"E 303.97' TIE LINE ONLY

N78°45'12"W 74.00'

N78°45'12"W 12.00'

N77°09'12"W 58.00'

N14°59'52"E 27.55'

263B

MAPLEWOOD AVE (SEE NOTE #16)

MAPLEWOOD AVE

TBM 6082B
MAG NAIL SET UP 20"
IN UPOLE 263/12
ELEV.=14.77'

10" CLAY INV.=7.1'

TAX MAP 124 LOT 6
DONNA P. PANTELOKOS
PANTELOKOS G. REV. TRUST
T & DP TRUSTEES
138 MAPLEWOOD AVE
PORTSMOUTH, NH, 03801
R.C.R.D. BOOK 5807 PAGE 1

TAX MAP 124 LOT 7-1
GIDEON WALKER HOUSE TRUST
JAMES H HOMES JR. TRUSTEE
154 MAPLEWOOD AVE
PORTSMOUTH, NH, 03801

CB 4408 · CB 4237 · CB 4099 · CB 4243 · CB 4410 · CB 4270 · DMH 4829 · DMH 4830 · DMH 4831 · DMH 4241 · DMH 4275 · SMH 4276 · SMH 4242 · SMH 4271 · SMH 4411 · SMH 4412 · MH 4290 · PM · PAY METER · NO SIGN · BUILDING

LEGEND

- APPROXIMATE ABUTTERS LOT LINE
- CHAIN LINK FENCE
- SEWER LINE
- DRAIN LINE
- GAS LINE
- UNDERGROUND ELECTRIC LINE
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- OVERHEAD WIRE
- TREE LINE
- SHRUB LINE
- GUARDRAIL
- EDGE OF WETLAND AREA (SEE NOTE #7)
- CONCRETE
- RIP RAP
- LANDSCAPED AREA
- UTILITY POLE & GUY WIRE
- LIGHT POLE W/ARM
- SIGN
- BOUND FOUND
- IRON PIPE/ROD FOUND
- POST
- FIRE HYDRANT
- WATER GATE VALVE
- WATER SHUTOFF VALVE
- GAS GATE VALVE
- PAD MOUNTED TRANSFORMER
- CATCH BASIN
- DRAIN MANHOLE
- MANHOLE
- ELECTRIC MANHOLE
- SEWER MANHOLE
- HAND HOLE
- CONIFEROUS TREE
- DECIDUOUS TREE
- MONITORING WELL LOCATION
- ROCK/BOULDER
- ×100.0 SPOT GRADE
- BND. FND. BOUND FOUND
- CONC. CONCRETE
- EP EDGE OF PAVEMENT
- VGC VERTICAL GRANITE CURB
- VCC VERTICAL CONCRETE CURB
- SWL SINGLE WHITE LINE
- EM ELECTRIC METER
- GM GAS METER
- PM PARKING METER
- AC AIR CONDITIONING UNIT
- 5/8" REBAR W/ID CAP TO BE SET

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE (NHRSA TITLE LXIV) 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 SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

L.L.S. #989

5/17/21
DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

STATE OF NEW HAMPSHIRE — No. 989 — MATTHEW W. FAGGINGER-AUER — LICENSED LAND SURVEYOR

SIGNATURE

20 0 20 40

SCALE: 1 INCH = 20 FT.

EXISTING CONDITIONS PLAN

FOR

TIGHE & BOND

LAND OF

31 RAYNES LLC

(TAX MAP 123, LOTS 10 & 13)

203 MAPLEWOOD AVENUE LLC

(TAX MAP 123, LOT 12)

&

ONE RAYNES AVENUE LLC

(TAX MAP 123, LOT 14)

MAPLEWOOD AVENUE & RAYNES AVENUE

PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	E.D.P.	DATE:	JUNE 17, 2020
CHECKED BY:	M.W.F.	DRAWING NO.	6082B
JOB NO.	6082	SHEET	3 OF 3

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: T:\PROJECTS\6082 CSD\DWG\6082B ECS.dwg LAYOUT NAME: TOPO PLAN (3) PLOTTED: Monday, May 17, 2021 - 4:09pm

HIGHEST OBSERVABLE TIDE LINE
ELEV. 4.3 FT NGVD1929
(SEE NOTES #13 & #14 ON SHEET 1 OF 3)

BOULDER REVETMENT

25' VEGETATED BUFFER

50' WATERFRONT BUFFER

1' RET. WALL

WOODEN POST (TYP.)

EXISTING UTILITY POLE TO BE REMOVED (TYP)

EXISTING OVERHEAD WIRES TO BE REMOVED (TYP)

EXISTING PROPERTY LINE TO BE REMOVED

LOCATION OF PROPOSED STRUCTURE

EXISTING BUILDING TBR

BUILDING TBR

OVERHANG

TIMBER EDGING

EXISTING PROPERTY LINE TO BE REMOVED

EXISTING CONCRETE SIDEWALK TBR

EXISTING GAS LINE TBR

EXISTING CATCH BASIN TBR

EXISTING DRAIN LINE TBR

EXISTING WATER LINE TBR

APPROXIMATE SAWCUT LINE

APPROXIMATE LIMIT OF WORK

EXISTING CONC HEADWALL TBR (SEE DEMO NOTE 17)

EXISTING DRAIN LINE TBR (SEE DEMO NOTE 17)

EXISTING DRAIN MAN HOLE TBR (SEE DEMO NOTE 17)

EXISTING CONCRETE PADS TBR (TYP)

EXISTING SHED TBR

GARAGE DOOR

EXISTING SHRUB TBR TYP

EXISTING CONSTRUCTION FENCE TBR

EXISTING WOOD STEPS TBR

EXISTING MECHANICAL EQUIPMENT TBR (TYP)

EXISTING PROPERTY LINE TBR

PAVEMENT TBR

EXISTING CONCRETE STEPS TBR

EXISTING SIGNS TBR (TYP)

EXISTING CONCRETE SIDEWALK TBR

EXISTING DUMPSTER PAD TBR

DMH 4839

EXISTING DRAIN MAN HOLE TBR

EXISTING BUILDING TBR

EXISTING DRAIN LINE TBR (TYP)

EXISTING GAS LINE TBR

EXISTING ELECTRIC LINE TBR

EXISTING CONCRETE PAD TBR

EXISTING DRAIN LINE TBR

EXISTING STONE BLOCK RETAINING WALL TBR

PAVED PARKING AREA

100' TIDAL BUFFER ZONE

EXISTING BRICK SIDEWALK TBR

OVERGROWN GRASS AREA

GRASS AREA

EXISTING TRANSFORMER PAD TBR

OVERHANG (TYP.)

LOCATION OF PROPOSED STRUCTURE

EXISTING CONCRETE PAD TBR

WOODEN STOCKADE FENCE

1" GAS PIPE

EXISTING WATER LINE TBR

EXISTING BRICK SIDEWALK TBR

MH 5031

MH 5032

BUILDING

WROUGHT IRON FENCE

RAIL ROAD TRACK IN DISREPAIR

SEE SHEET G-100 FOR EXISTING CONDITIONS/DEMOLITION NOTES AND LEGEND

0 20' 40'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

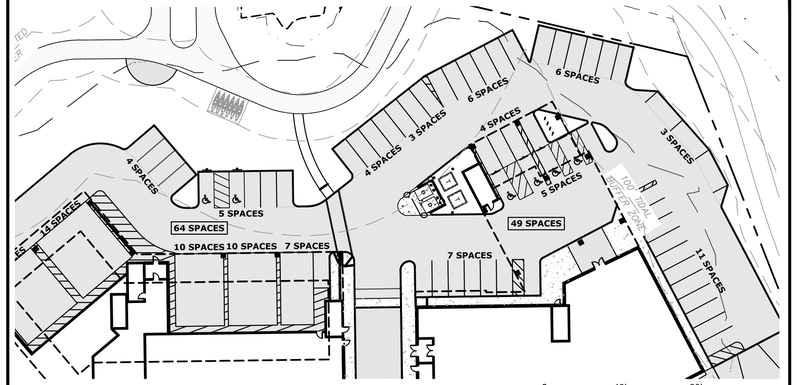
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DEMOLITION PLAN

SCALE: AS SHOWN

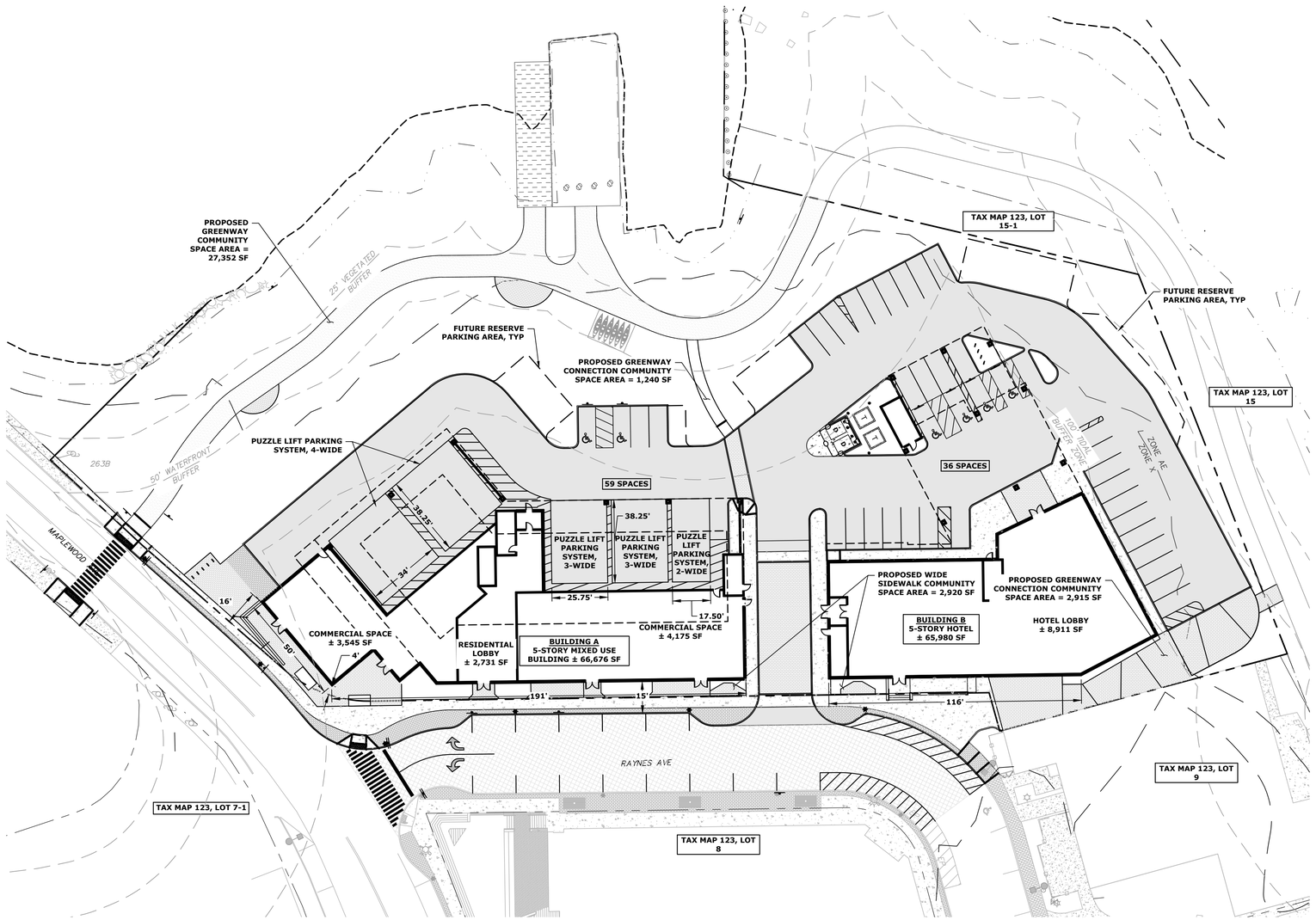
C-101

Last Saved: 11/18/2021
Plotted On: Nov 19, 2021- 1:15pm By: CKrzoulk
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-C-DSGN.dwg



FUTURE RESERVE PARKING

UPPER FLOOR PLANS



SITE DATA:

LOCATION: TAX MAP 123, LOT 10
TAX MAP 123, LOT 12
TAX MAP 123, LOT 13
TAX MAP 123, LOT 14
TAX MAP 123, LOT 12
RAYNES AVENUE

ZONING DISTRICT: CHARACTER DISTRICT 4 (CD4)
DOWNTOWN OVERLAY DISTRICT
NORTH END INCENTIVE OVERLAY DISTRICT
HISTORIC DISTRICT

PROPOSED USE: MULTI FAMILY DWELLING
HOTEL
RETAIL/RESTAURANT

PROPOSED LOT SIZE: ±2.53 ACRES (±110,415 SF)

DEVELOPMENT STANDARDS

BUILDING PLACEMENT (PRINCIPAL BUILDING):

	REQUIRED	PROPOSED BUILDING A	PROPOSED BUILDING B
MAXIMUM PRINCIPAL FRONT YARD:	15 FT	±16 FT (1)	7.4 FT
MAXIMUM SECONDARY FRONT YARD:	12 FT	±5 FT	N/A
SIDE YARD:	NR	NR	NR
MINIMUM REAR YARD:	5 FT	N/A	N/A
MINIMUM FRONT LOT LINE BUILDOUT:	50%	78.4%	78.4%

(1) - INCREASE ABOVE THE MAXIMUM ALLOWED PER 10.5A42.12

BUILDING AND LOT OCCUPATION:

	REQUIRED	PROPOSED BUILDING A	PROPOSED BUILDING B
MAXIMUM BUILDING BLOCK LENGTH:	200 FT	191 FT	116 FT
MAXIMUM FACADE MODULATION LENGTH:	80 FT	<80 FT	<80 FT
MAXIMUM ENTRANCE SPACING:	50 FT	<50 FT	<50 FT
MAXIMUM BUILDING COVERAGE:	90%	±47.0%	±47.0%
MAXIMUM BUILDING FOOTPRINT:	30,000 SF (2)	16,629 SF	14,622 SF
MINIMUM LOT AREA:	NR		
MINIMUM LOT AREA PER DWELLING UNIT:	NR		
MINIMUM OPEN SPACE:	10%	35.4%	
MAXIMUM GROUND FLOOR GFA PER USE:	15,000 SF	7,720 SF	8,911 SF

(2) - INCREASE ABOVE 15,000 SF ALLOWED PER 10.5A46.10

BUILDING FORM (PRINCIPAL BUILDING):

	REQUIRED	PROPOSED BUILDING A	PROPOSED BUILDING B
BUILDING HEIGHT:	5 STORY (3)	5 STORY	5 STORY
	60 FT	59.77 FT	57.90 FT
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE:	36 IN	<36"	<36"
MINIMUM GROUND STORY HEIGHT:	12 FT	15 FT	15 FT
MINIMUM SECOND STORY HEIGHT:	10 FT	10.5 FT	10.5 FT
FACADE GLAZING:			
SHOP FRONT FACADE TYPE	70%	70%	70%
ALLOWED ROOF TYPES			
FLAT, GABLE, HIP, GAMBREL, MANSARD	FLAT, GABLE, HIP, GAMBREL, MANSARD	FLAT	

(3) - ADDITIONAL 1 STORY UP TO 10FT ALLOWED FOR PROVIDING AT LEAST 20% OF THE SITE TO BE ASSIGNED AS COMMUNITY SPACE AS ALLOWED PER 10.5A46.10.

COMMUNITY SPACE:

REQUIRED	PROPOSED
21,274 SF	34,427 SF
20%	31.2%

OFF-STREET PARKING REQUIREMENTS

PARKING SPACES REQUIRED:

DWELLING UNITS:		
0 SF TO 500 SF, 0.5 SPACES PER UNIT	0 UNITS	0 SPACES
500 SF TO 750 SF, 1.0 SPACES PER UNIT	0 UNITS	0 SPACES
OVER 750 SF, 1.3 SPACES PER UNIT	32 UNITS	42 SPACES
TOTAL MINIMUM RESIDENTIAL SPACES REQUIRED =		42 SPACES
VISITORS:		
1 SPACES PER 5 DWELLING UNITS	32 UNITS	7 SPACES
HOTEL:		
0.75 SPACES PER GUEST ROOM	124 ROOMS	93 SPACES
DOWNTOWN OVERLAY DISTRICT		- 4 SPACES
TOTAL MINIMUM PARKING SPACES REQUIRED =		138 SPACES

TOTAL PARKING SPACES PROVIDED:

ON SITE SURFACE PARKING SPACES =	41 SPACES
PUZZLE LIFT SPACES =	54 SPACES
SHARED PARKING ON SEPARATE LOT (4) =	25 SPACES
FUTURE RESERVE SURFACE SPACES (5)=	18 SPACES
TOTAL PARKING SPACES PROVIDED =	**138 SPACES**

SIX (6) ADA ACCESSIBLE SPACES REQUIRED

(4) - CONDITIONAL USE PERMIT REQUIRED FOR SHARED PARKING ON SEPARATE LOT PER 10.1112.62.
(5) - ALLOWED BY APPROVAL FROM THE PLANNING BOARD PER 10.1112.40.

	REQUIRED	PROVIDED
PARKING STALL SIZE:	8.5' X 19'	8.5' X 19'
TANDEM PARKING STALL SIZE:	9' X 38'	9' X 38'
DRIVE AISLE:	24'	24'

BIKE SPACES REQUIRED:

1 BIKE SPACE / 10 PARKING SPACES	16 SPACES	16 SPACES

PROPOSED MIXED USE GROSS FLOOR AREA

FLOOR	COMMERCIAL (SF)	LOBBY (SF)	UNITS	TOTAL FLOOR AREA (SF)
FIRST	7,720	2,731	0	10,451
SECOND	0	0	11	16,629
THIRD	0	0	11	16,629
FOURTH	0	0	10	15,707
FIFTH	0	0	0	7,260
TOTAL	7,720	2,731	32	66,676

PROPOSED HOTEL GROSS FLOOR AREA

FLOOR	LOBBY (SF)	UNITS	TOTAL FLOOR AREA (SF)
FIRST	8,911	0	8,911
SECOND	0	32	14,622
THIRD	0	32	14,622
FOURTH	0	32	14,622
FIFTH	0	28	13,203
TOTAL	8,911	124	65,980

SITE RECORDING NOTES:

1. **THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.**
2. **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.**
3. **THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.**

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 11-24-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 11/24/21

0 30' 60'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

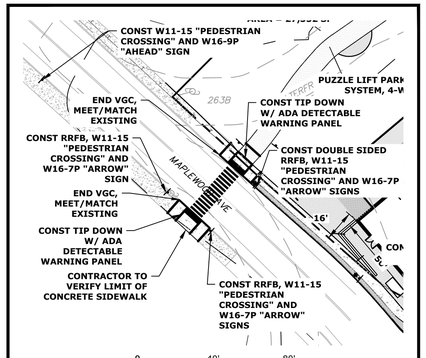
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102

Last Saved: 11/19/2021
Plotted: Nov 23, 2021- 3:39pm By: CKrzoulk
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-C-DSGN.dwg



SITE PLAN INSET

RECONSTRUCTED KAYAK LAUNCH RAMP

RECONSTRUCTED TIMBER PIER

CONST WETLAND BOUNDARY SIGN

CITY TO COORDINATE WITH LANDOWNER TO RELOCATE EXISTING EASEMENT

TAX MAP 123, LOT 15

TAX MAP 123, LOT 15-1

25' VEGETATED BUFFER

NORTH MILL POND GREENWAY TRAIL

CONST WETLAND BOUNDARY SIGN

PROPOSED GREENWAY COMMUNITY SPACE AREA = 27,352 SF

50' WATERFRONT BUFFER

FUTURE RESERVE PARKING AREA, TYP

PROPOSED GREENWAY CONNECTION COMMUNITY SPACE AREA = 1,240 SF

CONST R7-8 "RESERVED" AND R7-8P "VAN ACCESSIBLE" SIGNS (TYP OF 2)

CONST D11-1 "BIKE ROUTE" AND M4-6 "END" SIGNS

CONST D11-1 "BIKE ROUTE" SIGN

CONST DISTRICT STANDARD, 24' POLE

CONST 10' WIDE CROSS WALK

BEGIN VGC, MEET/MATCH EXISTING

TRANSITION FROM MVGC TO VGC

TRANSITION FROM VGC TO MVGC

CONST DISTRICT STANDARD, 16' POLE

CONST W11-15 "PEDESTRIAN CROSSING" AND W16-9P "AHEAD" SIGN

CONST TIP DOWN W/ ADA DETECTABLE WARNING PANEL

CONST R5-1 "DO NOT ENTER", R1-1 "STOP" SIGNS AND BAR

CONST 10' WIDE CROSS WALK

TAX MAP 123, LOT 7-1

LIMIT OF UPPER FLOOR AREA

59 SPACES

14 SPACES

PUZZLE LIFT PARKING SYSTEM, 4-WIDE

PUZZLE LIFT PARKING SYSTEM, 4-WIDE

PUZZLE LIFT PARKING SYSTEM, 3-WIDE

PUZZLE LIFT PARKING SYSTEM, 3-WIDE

PUZZLE LIFT PARKING SYSTEM, 2-WIDE

10 SPACES

10 SPACES

7 SPACES

4 SPACES

CONST FLUSH PAVER CROSSWALK (SEE LANDSCAPE PLAN SHEET L-101)

ELEVATOR

STAIRS

TRANSITION FROM SGC TO MVGC

PROPOSED BIKE RACKS (TYP OF 5)

END MVGC

COMMERCIAL SPACE ± 3,545 SF

RESIDENTIAL LOBBY ± 2,731 SF

BUILDING A 5-STORY MIXED USE BUILDING ± 66,676 SF

COMMERCIAL SPACE ± 4,175 SF

CONST CONC SIDEWALK W/ 2' BRICK BAND

CONST "LOADING ZONE, NO PARKING 6AM - 9AM" SIGNS (TYP OF 2)

SWL

RAYNES AVE

CONST ARROW PAVEMENT MARKING (TYP) (SEE DETAIL)

FINAL PAVING AND STRIPING AREA (SEE SITE NOTE 21)

CONST R5-1 "DO NOT ENTER" AND R1-1 "STOP" SIGNS

TAX MAP 123, LOT 8

CONST FENCE (SEE LANDSCAPE PLAN)

CONST TRANSFORMER (COORD W/ EVERSOURCE)

PROPOSED BOLLARDS (TYP OF 7)

36 SPACES

LIMIT OF UPPER FLOOR AREA

6 SPACES

3 SPACES

4 SPACES

5 SPACES

19' TYP

8' TYP

CONST BOLLARD MOUNTED R7-8 "RESERVED" AND R7-8P "VAN ACCESSIBLE" SIGNS (TYP OF 2)

PROPOSED BIKE RACKS (TYP OF 4)

CONST R7-8 "RESERVED" SIGN

CONST BOLLARD MOUNTED R7-8 "RESERVED" SIGN

CONST TIP DOWN

BEGIN VGC

100' TIDAL BUFFER ZONE

ZONE AE

ZONE X

11 SPACES

8.5' TYP

19' TYP

TRANSITION FROM MVGC TO SGC

END VGC

7 SPACES

CONST TIP DOWN

BEGIN VGC

CONST CONCRETE SIDEWALK

CONST FLUSH PAVERS (SEE LANDSCAPED PLAN SHEET L-101)

PROPOSED WIDE SIDEWALK COMMUNITY SPACE AREA = 2,920 SF

BUILDING B 5-STORY HOTEL ± 65,980 SF

HOTEL LOBBY ± 8,911 SF

TRANSITION FROM MVGC TO VGC

PROPOSED GREENWAY CONNECTION COMMUNITY SPACE AREA = 2,915 SF

TRANSITION FROM VGC TO MVGC

CONST DISTRICT STANDARD, 16' POLE (TYP OF 3)

CONST FLUSH VGC

CONST PAVERS (SEE LANDSCAPE PLAN SHEET L-101)

BEGIN VGC, MEET/MATCH EXISTING

CONST TIP DOWN

TAX MAP 123, LOT 9

FUTURE RESERVE PARKING AREA, TYP

TAX MAP 123, LOT 15

0
20'
40'
GRAPHIC SCALE

SITE RECORDING NOTES:

1. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. 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.
3. THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
11-24-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

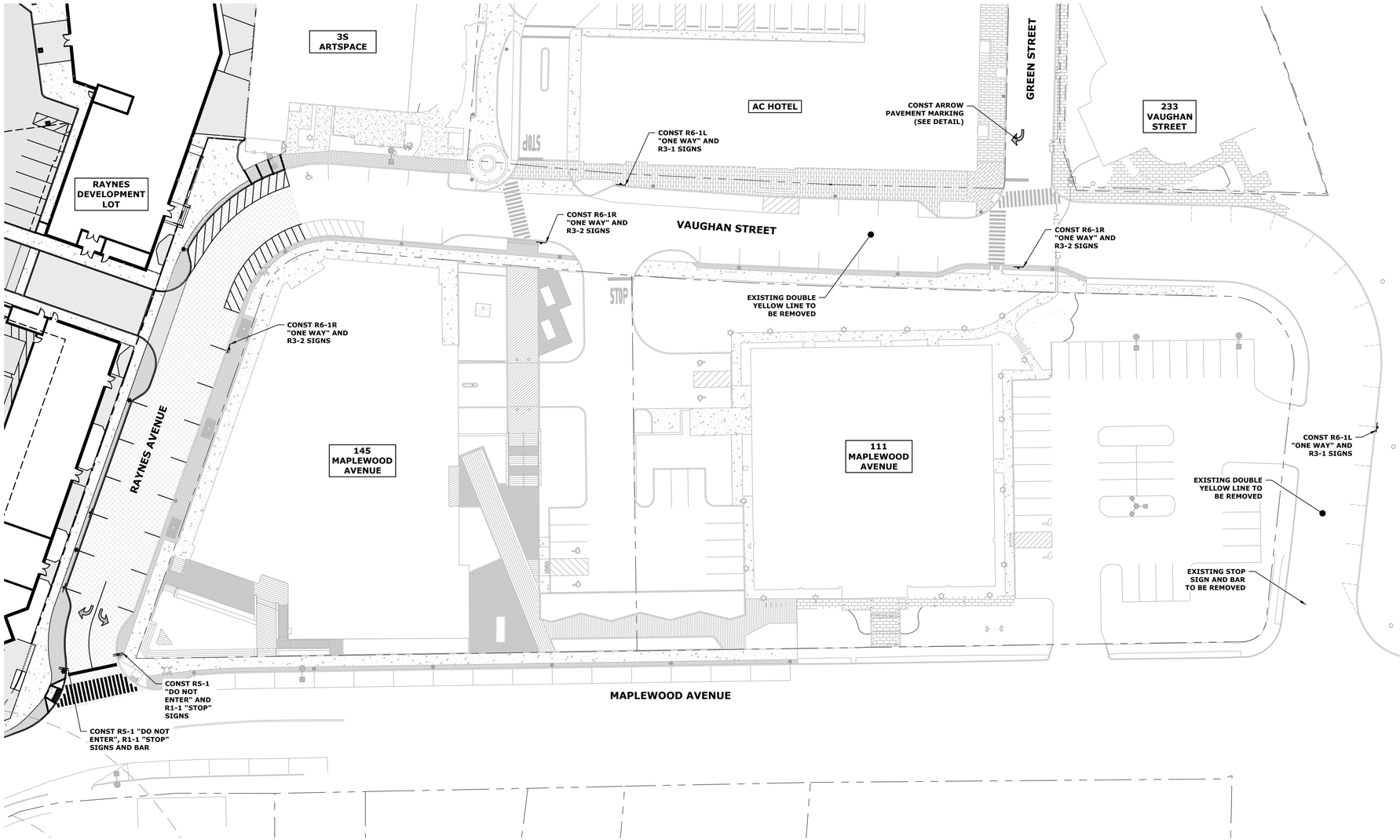
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.1

Last Saved: 11/19/2021
Plotted: Nov 23, 2021-3:40pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\SheetVP-0595-007-C-DSGN.dwg



SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
11-24-21

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
11/24/21

0 30' 60'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

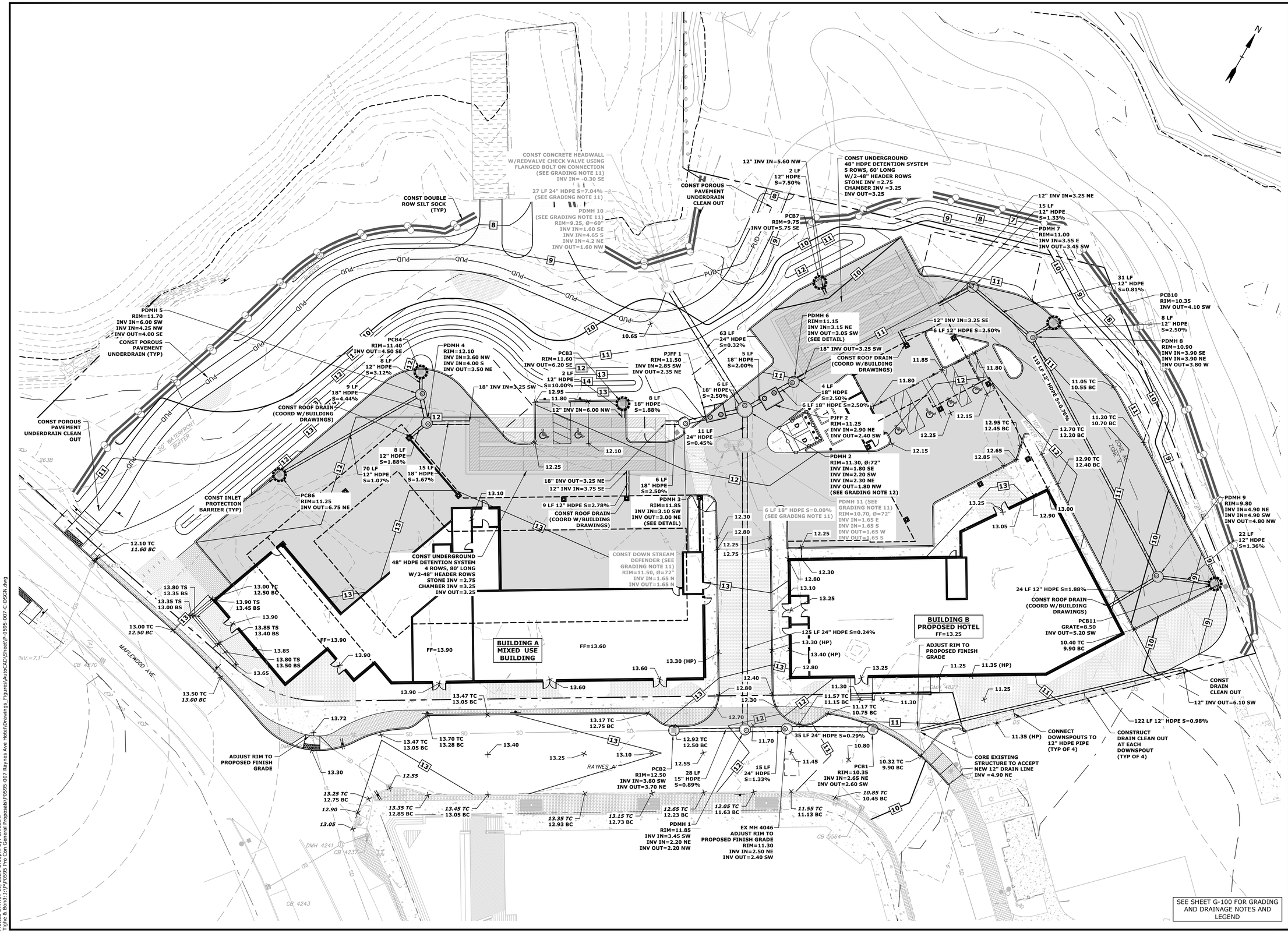
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

NEIGHBORHOOD SIGNAGE PLAN

SCALE: AS SHOWN

C-102.2

Last Saved: 11/18/2021
Plotted: Nov 19, 2021 - 1:16pm By: CKrzcuik
Tighe & Bond: J:\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\SheetVP-0595-007-C-DSGN.dwg



Last Saved: 11/19/2021
Plotted: Nov 19, 2021-2:01pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-C-DSGN.dwg

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 – LICENSED PROFESSIONAL ENGINEER
11-24-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 – LICENSED PROFESSIONAL ENGINEER
11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

GRADING, DRAINAGE AND EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

CONST GREASE TRAP 1
RIM=12.45
INV IN=8.45 S
INV OUT=7.95 E

CONST 6 LF
6" PVC SDR 35
S = 0.010

CONST 11 LF
8" PVC SDR 35
S = 0.010

CONST GREASE WASTE LINE
80 LF 6" SDR-35 PVC
S = 0.011, INV. = 9.30 N
(COORD W/ BUILDING DRAWINGS

PSMH 4
RIM=12.65
INV IN=7.85 W
INV IN=7.85 S
INV OUT=7.75 E

PSMH 3
RIM=12.95
INV IN=7.60 W
INV OUT=7.50 NE

CONST 114 LF
8" PVC SDR 35
S = 0.008

CONST SEWER SERVICE CONNECTION
80 LF 6" SDR-35 PVC
S = 0.014, INV. = 9.00 N (COORD W/
BUILDING DRAWINGS)

CONST ELECTRIC &
TELECOMMUNICATIONS
CONNECTION (COORD.
W/EVERSOURCE, COMCAST
AND BUILDING DRAWINGS)

CONST 4" DOMESTIC AND 6" FIRE
WATER SERVICE CONNECTIONS
(COORD. W/BUILDING DRAWINGS
& DPW PRIOR TO CONSTRUCTION)

CONST GAS CONNECTION
(COORD W/ UNITIL AND
BUILDING DRAWINGS)

CONST WYE INTO
SEWER LINE,
MATCH PIPE
CROWNS (TYP)

CONST UPPER FLOORS
SEWER CONNECTION (TYP)

CONST 111 LF
8" PVC SDR 35
S = 0.016

PSMH 2
RIM=12.05
INV IN=6.50 SW
INV IN=6.50 NE
INV OUT=6.40 SE

CONST TRANSFORMERS
(COORDINATE W/
EVERSOURCE)

CONST GAS CONNECTION
(COORD W/ UNITIL AND
BUILDING DRAWINGS)

PSMH 5
RIM=12.40
INV IN=7.10 NE
INV IN=7.10 SE
INV OUT=7.00 SW

CONST 5 LF
6" PVC SDR 35
S = 0.011

CONST 46 LF
8" PVC SDR 35
S = 0.010

CONST GREASE TRAP 2
RIM=12.50
INV IN=7.70 SE
INV OUT=7.20 SW

CONST GREASE WASTE LINE
30 LF 6" SDR-35 PVC
S = 0.010, INV. = 8.00 NW
(COORD W/ BUILDING DRAWINGS

CONST ELECTRIC &
TELECOMMUNICATIONS CONNECTION
(COORD. W/EVERSOURCE, COMCAST AND
BUILDING DRAWINGS)

CONST 4" DOMESTIC AND 6" FIRE
WATER SERVICE CONNECTIONS
(COORD. W/BUILDING DRAWINGS
& DPW PRIOR TO CONSTRUCTION)

CONST SEWER SERVICE CONNECTION
30 LF 6" SDR-35 PVC
S = 0.013, INV. = 7.50 NW
(COORD W/ BUILDING DRAWINGS)

PSMH 1
RIM=12.30
INV IN=4.60 NW
INV IN=4.60 SW
INV OUT=4.50 NE
(SEE UTILITY NOTE 26)

TIE INTO EXISTING GAS
LINE (COORD W/ UNITIL)

CONST TEE W/VALVE
(COORD. W/CITY OF
PORTSMOUTH DPW)

CONNECT TO
EXISTING 145
MAPLEWOOD
SERVICE LINES

CONST 8" DI WATER
MAIN (COORD W/CITY
OF PORTSMOUTH DPW)
(SEE UTILITY NOTE 27)

CONST GATE VALVE
(COORD W/CITY OF
PORTSMOUTH DPW)

LIMIT OF WATER MAIN
RECONSTRUCTION,
CONNECT TO
MAPLEWOOD AVENUE
MAIN (CONNECTION
LOCATION TO BE VIF)

LIMIT OF WATER MAIN
RECONSTRUCTION,
CONST GATE VALVE

CONNECT TO
EXISTING FIRE
HYDRANT

MAPLEWOOD AVE

RAYNES AVE

SEE SHEET G-100 FOR UTILITY
NOTES AND LEGEND

Tighe&Bond

BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
11-24-21

PATRICK
CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
11/24/21

0 20' 40'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

UTILITIES PLAN

SCALE: AS SHOWN

C-104

Last Saved: 11/18/2021
Plotted on: Nov 19, 2021 1:16pm By: CKrzcuik
Tighe & Bond:J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-C-DSGN.dwg

LEGEND

- PROPOSED DRAINAGE EASEMENT
- PROPOSED UTILITY EASEMENT
- PROPOSED COMMUNITY SPACE EASEMENT ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH
- PROPOSED TEMPORARY GRADING EASEMENT
- PROPOSED TEMPORARY ACCESS EASEMENT FOR BRIDGE REPLACEMENT ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH
- PROPOSEDWIDE SIDEWALK COMMUNITY SPACE ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH
- PROPOSED GREENWAY CONNECTION COMMUNITY SPACE ON DEVELOPMENT LOT TO BENEFIT CITY OF PORTSMOUTH

EASEMENTS SHOWN HEREIN ARE FOR PERMITTING PURPOSES ONLY. FINAL EASEMENT PLAN SHALL BE PREPARED BY THE PROJECT SURVEYOR AND RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEED PRIOR TO ISSUING BUILDING PERMITS.

TAX MAP 123, LOT 15

10' WIDE EXISTING PEDESTRIAN EASEMENT

TAX MAP 123, LOT 15-1

PROPOSED TEMPORARY GRADING EASEMENT ON TAX MAP 123, LOT 15-1

PROPOSED TEMPORARY GRADING EASEMENT ON TAX MAP 123, LOT 15

PROPOSED COMMUNITY SPACE EASEMENT ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH

PROPOSED TEMPORARY ACCESS EASEMENT FOR BRIDGE REPLACEMENT ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH

DEVELOPMENT LOT

PROPOSED GREENWAY CONNECTION COMMUNITY SPACE ON DEVELOPMENT LOT TO BENEFIT CITY OF PORTSMOUTH

PROPOSED WIDE SIDEWALK COMMUNITY SPACE ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH

PROPOSED 25' WIDE DRAINAGE, WATER, AND MAINTENANCE & ACCESS EASEMENT ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH

PROPOSED WIDE SIDEWALK COMMUNITY SPACE ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH

PROPOSED UTILITY EASEMENT ON DEVELOPMENT LOT TO BENEFIT TAX MAP 123, LOT 9

PROPOSED GREENWAY CONNECTION COMMUNITY SPACE ON DEVELOPMENT LOT TO BENEFIT CITY OF PORTSMOUTH

PROPOSED DRAINAGE EASEMENT ON DEVELOPMENT LOT TO BENEFIT TAX MAP 123, LOT 9

TAX MAP 123, LOT 15

TAX MAP 123, LOT 9

TAX MAP 123, LOT 7-1

TAX MAP 123, LOT 8

MAPLEWOOD AVE

RAYNES AVE

N

0 20' 40'

GRAPHIC SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER

11-24-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER

11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

EASEMENT PLAN

SCALE: AS SHOWN

C-201

Last Saved: 11/18/2021
Plotted: Nov 19, 2021 - 1:16pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-C-DSGN.dwg

PLANT SCHEDULE

Symbol	Quantity	*Botanical Name*	Common Name	Size	Spacing	Notes
TREES						
AC RU	9	*Acer rubrum*	Red Maple	4-5" Cal.		B&B; matched
AC KA	3	*Acer rubrum 'Karpick'*	Karpick Maple	4-5" Cal.		Single-stem, matched
BE AL	4	*Betula alleghaniensis*	Yellow Birch	4-5" Cal.		Single-stem, matched
CE OC	5	*Celtis occidentalis*	Hackberry	4-5" Cal.		Single-stem, matched
CH TH	5	*Chamaecyparis thyoides*	White Cypress	8-10' Ht, B&B		B&B; matched
CH VI	7	*Chionanthus virginicus*	Fringe Tree	4-5" Cal.		Multi-stem, matched
HA VE	12	*Hamamelis vernalis*	Vernal Witch Hazel	6-8' Ht, B&B		Multi-stem, matched
JU VI	9	*Juniperus virginiana*	Eastern Red Cedar	8-10' Ht, B&B		B&B; matched
QU BI	5	*Quercus bicolor*	Swamp White Oak	4-5" Cal.		B&B; matched
TH OC	6	*Thuja occidentalis 'Hetz Wintergreen'*	Hetz Wintergreen Arborvitae	6-8' Ht, B&B		B&B; matched
SHRUBS						
Ae Pa		*Aesculus parviflora*	Bottlebrush Buckeye	#10 Container	72" O.C.	
Ce Am		*Ceanothus americanus*	New Jersey Tea	#7 Container	48" O.C	
Co Pe		*Comptonia peregrina*	Sweet Fern	#3 Container	36" O.C.	
Co Ra		*Cornus racemosa*	Gray Dogwood	#7 Container	36" O.C.	
Fo Ga		*Fothergilla gardenii 'Mount Airy'*	Mount Airy Fothergilla	#7 Container	36" O.C.	
Hy Qu		*Hydrangea quercifolia*	Oakleaf Hydrangea	#7 Container	48" O.C	
Li Be		*Lindera Benzoin*	Spice Bush	#7 Container	36" O.C.	
Ix Gl		*Ilex glabra 'Shamrock'*	Shamrock Inkberry	#7 Container	36" O.C.	
Il Ji		*Ilex verticillata 'Jim Dandy'*	Jim Dandy Winterberry	#7 Container	48" O.C	
Il Ve		*Ilex verticillata 'Red Sprite'*	Red Sprite Winterberry	#7 Container	48" O.C	
Iv Fr		*Iva frutescens*	Bigleaf Marsh Elder	#3 Container	36" O.C.	
My Pe		*Myrica pensylvanica*	Northern Bayberry	#7 Container	48" O.C.	
Rh Gl		*Rhus aromatica 'Gro-Low'*	Fro-Low Fragrant Sumac	#3 Container	30" O.C.	
Sp To		*Spiraea tomentosa*	Steeplebush	#3 Container	30" O.C.	
Vi Ca		*Viburnum carlesii 'SMVCB'*	Spice Baby Viburnum	#7 Container	36" O.C.	
PERENNIALS						
am hu		*Amsonia tabernaemontana 'Walter'*	Eastern Bluestar	#2 Container	30" O.C.	
an ma		*Anaphalis margaritacea*	Pearly Everlasting	#2 Container	15" O.C.	
as in		*Asclepias tuberosa*	Butterfly Weed	#2 Container	30" O.C.	
as ob		*Aster oblongifolius 'Raydon's Favorite'*	Raydon's Favorite Aster	#2 Container	24" O.C.	
ba bi		*Baptisia australis*	Blue False Indigo	#3 Container	24" O.C.	
de pu		*Dennstaedtia punctilobula*	Hay Scented Fern	#2 Container	30" O.C.	
ec pu		*Echinacea purpurpea*	Purple Coneflower	#2 Container	24" O.C.	
on se		*Onoclea sensibilis*	Sensitive Fern	#2 Container	30" O.C.	
sa ma		*Salvia 'May Night'*	May Night Salvia	#2 Container	30" O.C.	
so ca		*Solidago simpervirens*	Seaside Goldenrod	#2 Container	24" O.C.	
ti co		*Tiarella cordifolia*	Foamflower	#2 Container	15" O.C.	
ORNAMENTAL GRASSES						
ag pe		Agrostis pernnans	Upland Bentgrass	#3 Container	30" O.C.	
bo cu		*Bouteloua curtipendula*	Side Oats Grama	#2 Container	30" O.C.	
ca ac		*Calamagrostis acutiflora 'Karl Foerster'*	Feather Reed Grass	#3 Container	30" O.C.	
de ce		*Deschampsia cespitosa 'Pixie Fountain'*	Tufted Hair Grass	#2 Container	30" O.C.	
fe ru		*Festuca rubra L.*	Coastal Red Fescue	Plug	12" O.C.	
mi si		*Miscanthus sinensis 'Adagio'*	Dwarf Silver Grass	#2 Container	30" O.C.	
pe al		*Pennisetum alopecuroides 'Hamelin'*	Hameln Dwarf Fountain Grass	#2 Container	24" O.C.	
sc sc		*Schizachyrium scoparium*	Little Bluestem	Plug	12" O.C.	
so nu		*Sorghastrum nutans*	Indian Grass			
SEED MIXES						
Buffer Seed Mix		*Ernst Seed Fescue Mix composed of 45% Creeping Red Fescue/ 27.5% Hard Fescue 'Minimus' / 27.5% Hard Fescue 'Beacon'*				

RESTORATION PLANTING NOTES

1. INVASIVE PLANT MATERIAL WILL BE REMOVED USING MECHANICAL, WHOLE PLANT REMOVAL STRATEGIES AND CHIPPED AND COMPOSTED AT AN APPROPRIATE FACILITY OR BURNED ON SITE ACCORDING TO LOCAL FIRE DEPARTMENT RULES AND REGULATIONS.

2. DISTURBED SOILS WILL BE AUGMENTED AS NEED WITH A CUSTOM BLENDED SOIL OF ONE PART LOAM, ONE PART COMPOST AND ONE PART CLEAN SAND.

3. SEEDED AREAS ARE TO BE COVERED WITH SALT MARSH HAY TO RETAIN SOIL MOISTURE AND PROTECT AGAINST SEED PREDATION BY BIRDS AND SMALL MAMMALS.

4. NATIVE PLANT MATERIAL WILL BE LAID OUT AND INSTALLED BY AN ECOLOGICAL RESTORATION SPECIALIST OR PERSONS TRAINED IN HORTICULTURAL PRACTICES. EXACT PLANT LOCATIONS WILL BE DETERMINED IN THE FIELD BASED ON SITE-SPECIFIC PLANTING CONDITIONS AND MICRO-TOPOGRAPHY.

5. THE NEW PLANTINGS WILL BE IRRIGATED FOR ONE FULL GROWING SEASON OR UNTIL THE SEED AND PLANT MATERIAL IS ESTABLISHED.

6. MONTHLY INSPECTIONS WILL BE CONDUCTED FOR THE FIRST GROWING SEASON AND TREATMENT/REMOVAL OF INVASIVE SPECIES WILL BE IMPLEMENTED AS NEEDED DURING THE ESTABLISHED PERIOD.

7. CARE IS TO BE TAKEN IN REMOVING ANY NEW COLONIZING INVASIVE PLANT MATERIAL TO MINIMIZE DISTURBANCE TO ESTABLISHING NATIVE PLANT SPECIES.

8. PRACTICES IN ASSOCIATION WITH FERTILIZERS AND PESTICIDES WILL COMPLY WITH ORDINANCES 10.1018.24 AND 10.1018.25.

PLANTING NOTES

1. LANDSCAPE ARCHITECT TO APPROVE PLANT MATERIAL PRIOR TO DELIVERY TO SITE.

2. PLANT MATERIAL SHALL CONFORM TO "THE AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.

3. NO SUBSTITUTIONS OF PLANT SPECIES WITHOUT LANDSCAPE ARCHITECT'S WRITTEN APPROVAL.

4. SUBSTITUTIONS OF PLANT SPECIES SHALL BE A PLANT OF EQUIVALENT OVERALL FORM, HEIGHT AND BRANCHING HABIT, FLOWER, LEAF AND FRUIT, COLOR AND TIME OF BLOOM, AS APPROVED BY LANDSCAPE ARCHITECT.

5. LOCATE AND VERIFY UTILITY LINE LOCATIONS PRIOR TO STAKING AND REPORT CONFLICTS TO LANDSCAPE ARCHITECT.

6. PLANTING DEMOLITION DEBRIS, GARBAGE, LUMPS OF CONCRETE, STEEL AND OTHER MATERIALS DELETERIOUS TO PLANT'S HEALTH AS DETERMINED BY LANDSCAPE ARCHITECT SHALL BE REMOVED FROM ALL PLANTING AREAS.

7. NO PLANTING TO BE INSTALLED BEFORE ACCEPTANCE OF ROUGH GRADING.

8. ALL PROPOSED TREE LOCATIONS SHALL BE STAKED OR LAID OUT IN THEIR APPROXIMATE LOCATION BY THE CONTRACTOR. REFER TO LAYOUT AND PLANTING SHEETS FOR LAYOUT INFORMATION. THE CONTRACTOR SHALL ADJUST THE LOCATIONS AS REQUESTED BY THE LANDSCAPE ARCHITECT TO ACCOUNT FOR SUBSURFACE UTILITIES AND OTHER FIELD CONDITIONS. FINAL LOCATIONS OF ALL PLANTS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING.

9. INSTALL PLANTS WITH ROOT FLARES FLUSH WITH FINISHED GRADE. IMMEDIATELY REPLANT PLANTS THAT SETTLE OUT OF PLUMB OR BELOW FINISHED GRADE.

10. PLANT UNDER FULL TIME SUPERVISION OF CERTIFIED ARBORIST, NURSERYMAN, OR LICENSED LANDSCAPE ARCHITECT. PROVIDE WRITTEN VERIFICATION OF CERTIFICATION AND/OR LICENSE FOR LANDSCAPE ARCHITECT'S APPROVAL.

11. WATER PLANTS THOROUGHLY AFTER INSTALLATION, A MINIMUM OF TWICE WITHIN THE FIRST 24 HOURS.

12. REPAIR DAMAGE DUE TO OPERATIONS INSIDE AND OUTSIDE OF LIMIT OF WORK

13. SOAK ALL PERENNIALS FOR 24 HOURS PRIOR TO INSTALLATION

14. BUFFER SEED MIX AREA TO BE WATERED AND MONITORED DURING ESTABLISHMENT TO ENSURE SEED COVERAGE AND ESTABLISHMENT IS UNIFORM AND HEALTHY AND UNTIL ACCEPTANCE.

15. MOWING OF THE BUFFER SEED MIX AREA FOLLOWING ESTABLISHED AND ACCEPTANCE SHALL OCCUR TWICE A YEAR - IN SPRING PRIOR TO NEW GROWTH AND THE AUTUMN AFTER DORMANCY. MOWING IS NOT TO OCCUR IN THE HEAT OF SUMMER. MOWING ENCOURAGES ESTABLISHMENT VIA ROOT SYSTEM GROWTH AND MITIGATES GROWTH OF WEEDS, UNDESIRABLE AND INVASIVE SPECIES.

16. MOWING HEIGHT TO BE NOT LESS THAN 3".

ZONING NOTES

10.5A44.40 PARKING LOT LANDSCAPE	
10.5A44.42 TREES	
PARKING LOTS SHALL CONTAIN AT LEAST (1) TREE FOR EVERY (7) PARKING SPACES	
TOTAL SURFACE PARKING	41
TOTAL FUTURE RESERVE SURFACE PARKING	25
TOTAL REQUIRED PARKING LOT TREES	10
TOTAL PARKING LOT TREES PROPOSED	19
10.5A44.43 LANDSCAPING	
ALL LANDSCAPING REQUIRED PURSUANT TO THIS SECTION SHALL BE LOCATED AND DESIGNED IN A MANNER TO PROTECT VEGETATION FROM VEHICULAR DAMAGE.	YES

10.1130 LANDSCAPING AND SCREENING	
10.1132.10 SCREENING OF DUMPSTERS	
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 TO FULLY COVER THE GROUND SURFACE OF THE AREA WITHIN 3 YEARS.	YES
10.1132.20 SCREENING OF DUMPSTERS	
A 6-FOOT HIGH FENCE OR MASONRY WALL MAY BE SUBSTITUTED FOR NATURAL SCREENING IF APPROVED.	YES

Tighe&Bond

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	5/4/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-L-DSGN.DWG
DRAWN BY:	OS
CHECKED BY:	RU/PMC
APPROVED BY:	BLM

LANDSCAPE MATERIAL PLAN, LEGEND AND NOTES

SCALE: AS SHOWN

L-100

Last Saved: 11/15/2021
Plotted: Nov 18, 2021 4:45pm By: OStasin
Tighe & Bond:J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-L-DSGN.dwg

LEGEND

- SEEDED LAWN
- BUFFER SEED MIX
- PLANTING BED
- PLANTING BED
- PLANTING BED
- BOAT/KAYAK LAUNCH RAMP
- RECONSTRUCTED TIMBER PIER
- DECIDUOUS TREE
- ORNAMENTAL TREE
- CONIFEROUS TREE
- SHRUBS

PROPOSED TRAIL CONNECTION TO ABUTTER; CITY TO COORDINATE WITH LANDOWNER TO RELOCATE EXISTING EASEMENT

OPTIONAL RECONSTRUCTED TIMBER PIER; OVERLOOK TO INCLUDE BENCHES

OVERLOOK SEATING NICHE WITH UNIT PAVERS AND FITNESS MULTIPURPOSE BENCH

PLANTING BED AT SEATING NICHE

OPTIONAL KAYAK STORAGE

OPTIONAL KAYAK/CANOE LAUNCH RAMP

PLANTING/LANDSCAPE DESIGN TO BE COORDINATED WITH ABUTTERS

1 JU VI
1 QU BI
1 AC RU
1 JU VI

1 CH VI
1 QU BI

2 QU BI
1 CH TH

PROPERTY LINE

BUFFER SEED MIX

1 QU BI

BUFFER SEED MIX

PLANTING BED AT SEATING NICHE

1 CH VI

1 CE OC
1 CH VI

BUFFER SEED MIX

OVERLOOK SEATING NICHE WITH UNIT PAVERS AND CHAIR BENCHES

1 HA VE

1 CH TH

3 HA VE
1 CH TH

1 AC RU

1 AC RU
1 CH VI

1 AC RU

BUFFER SEED MIX

1 JU VI
1 AC RU

5 TH OC

1 BE AL
1 CH TH

1 TH OC

BIKE PARKING

PERENNIALS AND ORNAMENTAL GRASS

5 HA VE
2 BE AL
1 JU VI

1 CE OC

1 JU VI

1 BE AL

1 AC RU
1 CH VI

1 CE OC
3 HA VE
3 AC RU

3 JU VI
1 CH VI

PERENNIALS AND ORNAMENTAL GRASS

GRANITE POST INDICATING PATH

VEHICULAR UNIT PAVERS WITH FLUSH GRANITE BAND ON EITHER SIDE

PERENNIALS AND ORNAMENTAL GRASS

DECORATIVE DUMPSTER ENCLOSURE FENCE AND GATE

EVERGREEN SCREENING

ENTRANCE WITH UNIT PAVING, BOLLARDS; FLAGGED WITH BENCHES & RAISED SEASONAL/ANNUAL PLANTERS

1 CE OC

PLANTING BED AT TRAIL ENTRANCE

PERENNIALS AND ORNAMENTAL GRASS

BIKE PARKING

1 CH TH
1 CE OC

GRANITE POST INDICATING PATH

PROPOSED CONNECTION TO TRAIL NETWORK

PROPERTY LINE

CAST IN PLACE CONCRETE SIDEWALK

WAYFINDING SIGNAGE; TO BE COORDINATED WITH THE CITY

ARRIVAL & DEPARTURE ZONE

SHADE TREE & METAL TREE GRATE WITH SAND BASED STRUCTURAL SOIL

PROPOSED MIXED USE BUILDING

BOLLARDS
RAISED VEHICULAR TABLE
CAST IN PLACE CONCRETE SIDEWALK

PROPOSED HOTEL

VEHICULAR UNIT PAVER ALLEY FOR FLEXIBLE PROGRAM USE; FIRE EMERGENCY ACCESS

PLANTING BED

PLANTING BED AT TRAIL ENTRANCE

VEHICULAR UNIT PAVER FOR FIRE EMERGENCY ACCESS

PLANTING BED

RETAIL SPILL OUT ZONE

SEATING NICHE
RETAIL SPILL OUT ZONE

SEATING NICHE

ARRIVAL & DEPARTURE ZONE

RETAIL SPILL OUT ZONE

BRICK PAVING BAND

3 AC KA

MAPLEWOOD AVE

PERENNIALS AND ORNAMENTAL GRASS

1 CH TH

PROPERTY LINE

TREE LOCATED WITHIN RIGHT-OF-WAY WILL BE REVIEWED BY THE CITY'S TREES & GREENERY COMMITTEE

PROPOSED LIGHTING

BRICK PAVING BAND

PROPOSED LIGHTING

WAYFINDING SIGNAGE; TO BE COORDINATED WITH THE CITY

BRICK STREETSCAPE FURNISHING ZONE

BRICK STREETSCAPE FURNISHING ZONE

PROPOSED LIGHTING

RETAIL SPILL OUT ZONE

RAYNES AVE

0 20' 40'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	5/4/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-L-DSGN.DWG
DRAWN BY:	OS
CHECKED BY:	RU/PMC
APPROVED BY:	BLM

LANDSCAPE PLANTING PLAN

SCALE: AS SHOWN

L-101

Last Saved: 11/15/2021
Printed: Nov 18, 2021 - 4:54pm By: OStasin
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-L-DSGN.dwg

CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS

THE BASE OF THE CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS IS THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPLANTING. ANSI A300 PART 6 LAYS OUT TERMS AND BASIC STANDARDS AS SET FORTH BY INDUSTRY BUT IT IS NOT THE 'END ALL' FOR THE CITY OF PORTSMOUTH. THE FOLLOWING ARE THE CITY OF PORTSMOUTH, NH TREE PLANTING REQUIREMENTS THAT IN ADDITION TO OR THAT GO BEYOND THE ANSI A300 PART 6.

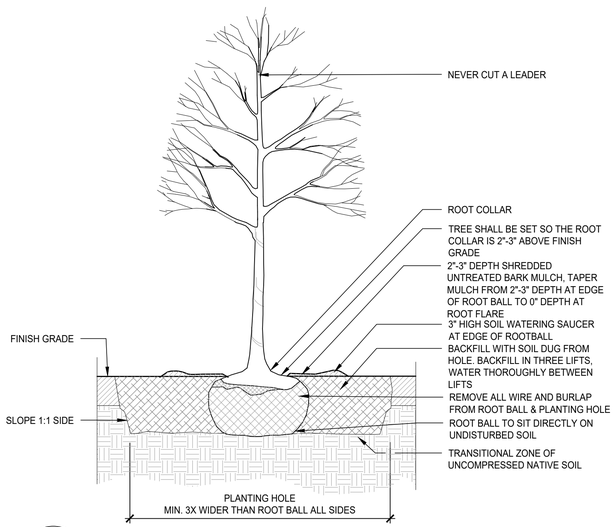
1. ALL PLANTING HOLES SHALL BE DUG BY HAND- NO MACHINES. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING PITS, PLANTING BEDS WITH GRANITE CURBING, AND PLANTING SITES WITH SILVA CELLS ARE BEING CREATED. IF A MACHINES USED TO DIG ANY OF THESE SITUATIONS AND PLANTING DEPTH NEEDS TO BE RAISED THE MATERIAL IN THE BOTTOM OF THE PLANTING HOLE MUST BE FIRMED WITH MACHINE TO PREVENT SINKING OF THE ROOT BALL.
2. ALL WIRE AND BURLAP SHALL BE REMOVED FROM THE ROOT BALL AND PLANTING HOLE.
3. THE ROOT BALL OF THE TREE SHALL BE WORKED SO THAT THE ROOT COLLAR OF THE TREE IS VISIBLE AND NO GIRDLING ROOTS ARE PRESENT.
4. THE ROOT COLLAR OF THE TREE SHALL BE 2"-3" ABOVE GRADE OF PLANTING HOLE FOR FINISHED DEPTH.
5. ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED NO MORE THAN 20% WITH ORGANIC COMPOST. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE ENGINEERED SOIL IS BEING USED IN CONJUNCTION WITH SILVA CELLS AND WHERE NEW PLANTING BEDS ARE BEING CREATED.
6. ALL PLANTINGS SHALL BE BACKFILLED IN THREE LIFTS AND ALL LIFTS SHALL BE WATERED SO THE PLANTING WILL BE SET AND FREE OF AIR POCKETS- NO EXCEPTIONS.
7. AN EARTH BERM SHALL BE PLACED AROUND THE PERIMETER OF THE PLANTING HOLE EXCEPT WHERE CURBED PLANTING BEDS OR PITS ARE BEING USED.
8. 2"-3" OF MULCH SHALL BE PLACED OVER THE PLANTING AREA.
9. AT THE TIME THE PLANTING IS COMPLETE THE PLANTING SHALL RECEIVE ADDITIONAL WATER TO ENSURE COMPLETE HYDRATION OF THE ROOTS, BACKFILL MATERIAL AND MULCH LAYER.

SAND BASED STRUCTURAL SOIL PLANTING MEDIUM NOTES

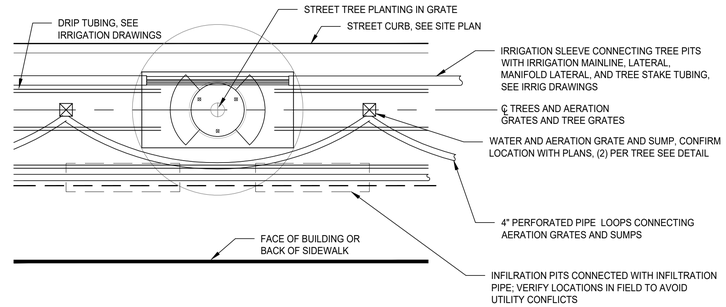
1. THE SAND-BASED STRUCTURAL SOIL PLANTING MEDIUM SHALL CONSIST OF A BLEND OF ONE PART COARSE SAND, ONE PART LOAM AND ONE PART ORGANIC AMENDMENT. BLENDING OF THE COMPONENTS SHALL BE CARRIED OUT WITH EARTH MOVING EQUIPMENT PRIOR TO PLACEMENT. THE COMPONENTS SHALL BE BLENDED TO CREATE A UNIFORM MIXTURE.
2. PROVIDE A SHOP DRAWING OF SAND BASED STRUCTURAL SOIL PLANTING MEDIUM (SIEVE, PH, ORGANIC CONTENT, SAND/LOAM/ORGANIC AMENDMENT PERCENTAGES) TO A&M FOR APPROVAL PRIOR TO PURCHASE & INSTALLATION.
3. THE FINAL BLENDED SAND-BASED STRUCTURAL SOIL PLANTING MEDIUM SHALL CONFORM TO THE FOLLOWING GRAIN SIZE DISTRIBUTION FOR MATERIAL PASSING THE #10 SIEVE:

SIEVE NO. U.S.	%PASSING BY WEIGHT	
	MIN.	MAX.
10	100	----
18	68	90
35	38	63
60	18	39
140	10	18
270	6	9
0.002MM	1	2

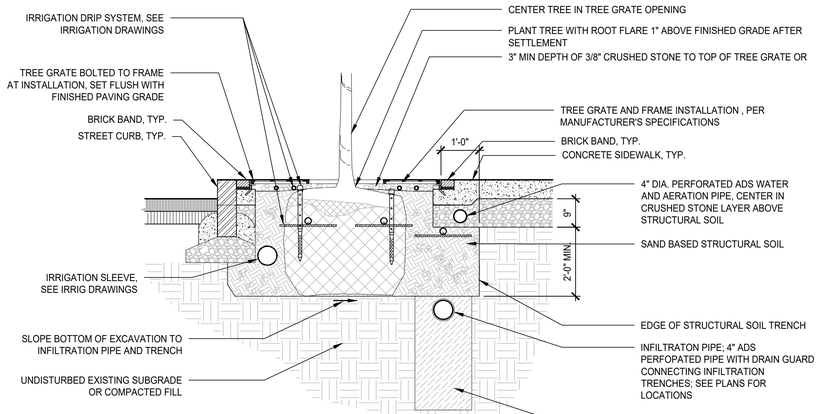
4. MAXIMUM SIZE SHALL BE ONE INCH LARGEST DIMENSION. THE MAXIMUM RETAINED ON THE #10 SIEVE SHALL BE 15% BY WEIGHT OF THE TOTAL SAMPLE.
5. THE RATIO OF THE PARTICLE SIZE FOR 70% PASSING (D70) TO THE PARTICLE SIZE FOR 20% PASSING (D20) SHALL BE 3.5 OR LESS (D70/D20 < 3.5). TESTS SHALL BE BY COMBINED HYDROMETER AND WET SIEVING IN COMPLIANCE WITH ASTM D422 AFTER DESTRUCTION OF ORGANIC MATTER BY IRRIGATION.
6. ORGANIC CONTENT SHALL BE BETWEEN 2.0 AND 3.0 PERCENT. PH SHALL BE 6.0 TO 7.0.



1 TREE PLANTING DETIAL
SCALE: 3/8"=1'-0"



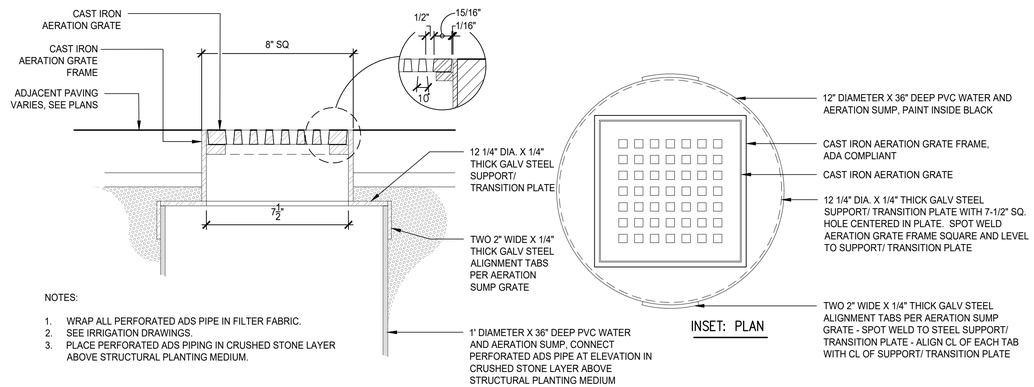
PLAN: WATER AND AERATION SYSTEM IN STREETSCAPE LAYOUT



CROSS SECTION

NOTES:
1. PLANTING DETAILS ARE INTENDED TO INDICATE CONSTRUCTION RELATED TO VARIOUS STREETSCAPE ELEMENTS. ACTUAL LOCATIONS OF STREETSCAPE ELEMENTS MAY VARY FROM THOSE SHOWN. SEE PLANS.
2. FINISHED GRADE OF TREE GRATES AND FRAMES SHALL BE FLUSH WITH SURROUNDING PAVEMENT.
3. PROVIDE AUTOMATIC IRRIGATION SYSTEM TO IRRIGATE EACH TREE EXTENDED FROM CENTRAL CONTROLS SYSTEM. IRRIGATION SLEEVING TO CONNECT ALL TREE LOCATIONS BACK TO POINT OF CONNECTION.
4. LIMB BRANCHES TO PROVIDE CLEAR PEDESTRIAN ZONE TO 7'-0" ABOVE FINISH GRADE.
5. SCARIFY ALL SOIL MARGINS TO DEPTH OF 6".
6. SEE IRRIGATION PLANS AND DETAILS.

2 TREE PLANTING IN TREE GRATE OVER SAND-BASED STRUCTURAL SOIL
SCALE: 1/2"=1'-0"



NOTES:
1. WRAP ALL PERFORATED ADS PIPE IN FILTER FABRIC.
2. SEE IRRIGATION DRAWINGS.
3. PLACE PERFORATED ADS PIPING IN CRUSHED STONE LAYER ABOVE STRUCTURAL PLANTING MEDIUM.

INSET: PLAN

3 WATER AND AERATION SUMP WITH GRATE AND FRAME
SCALE: 3"=1'-0"

Tighe&Bond

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	5/4/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-L-DSGN.DWG
DRAWN BY:	OS
CHECKED BY:	RU/PMC
APPROVED BY:	BLM

LANDSCAPE DETAILS

SCALE: AS SHOWN

L-102

Last Saved: 11/15/2021
Last Saved By: OStasin
Printed On: Nov 18, 2021 - 4:55pm By: OStasin
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_ Figures\AutoCAD\Sheet\P-0595-007-L-DSGN.dwg

GENERAL PROJECT INFORMATION

PROJECT APPLICANT: NORTH MILL POND HOLDINGS, LLC
1359 HOOKSETT ROAD
HOOKSETT, NH 03106
PROJECT NAME: PROPOSED MIXED USE DEVELOPMENT
PROJECT MAP / LOT: MAP 123 / LOTS 10, 12, 13 & 14
PROJECT ADDRESS: 1 RAYNES AVENUE
PORTSMOUTH, NH 03801
PROJECT LATITUDE: 42°-04'-48" N
PROJECT LONGITUDE: 70°-45'-50" W

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES TWO BUILDINGS, A 5 STORY MIXED USE BUILDING AND A 5 STORY 124 ROOM HOTEL. THE PROJECT WILL ALSO CONSIST OF ASSOCIATED SITE IMPROVEMENTS SUCH AS PAVING, STORMWATER MANAGEMENT, UTILITIES AND LIGHTING.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 2.40 ACRES.

SOIL CHARACTERISTICS

BASED ON THE USCS SITE SPECIFIC SOIL SURVEY CONDUCTED BY LEONARD LORD, PhD, CSS, CWS OF TIGHE & BOND, INC. THE SOIL SURVEY, IDENTIFIES MOSTLY HYDROLOGIC SOIL GROUP C SOILS AND SOME PORTIONS OF HYDROLOGIC SOIL GROUP A SOILS. MUCH OF THE SITE IS COMPRISED OF UDORTHENTS WITH TWO DRAINAGE CLASSIFICATIONS, MODERATELY POORLY DRAINED SOILS AND PORTIONS OF WELL DRAINED SOILS.

NAME OF RECEIVING WATERS

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA A CLOSED DRAINAGE SYSTEM ULTIMATELY FLOWS TO NORTH MILL POND THEN TO THE PISCATAQUA RIVER.

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
   - 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, 2016, 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. SEE LANDSCAPE PLAN FOR SEEDBED PREPARATION REQUIREMENTS;
   B. SEEDING:
      a. SEE LANDSCAPE PLAN FOR SEEDING REQUIREMENTS;
   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. VEGETATIVE PRACTICE:
   A. SEE LANDSCAPE PLAN FOR PERMANENT MEASURES AND PLANTINGS:
      a. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      b. 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 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:

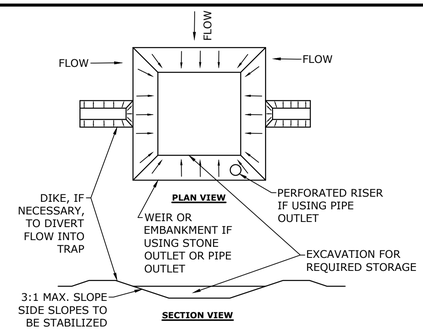
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING 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:
      i. ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
      ii. 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.
      iii. SECURE FUEL STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
      iv. INSPECT FUEL STORAGE AREAS WEEKLY;
      v. 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;
      vi. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
      vii. 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.
      viii. 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.
      ix. 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:
      i. FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
      ii. ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
      iii. 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.
      c. PAINTS:
      i. ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
      ii. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
      iii. 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

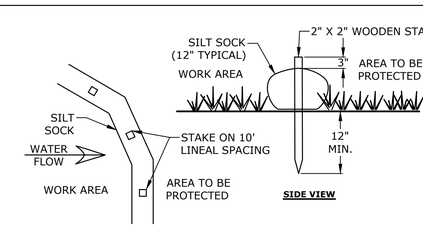
1. THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.
2. THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
   A. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE CONTRACTOR 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 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 SHALL BE MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP.
5. TRAP SHALL DISCHARGE TO A STABILIZED AREA.
6. TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.
8. SEDIMENT TRAPS MUST BE USED AS NEEDED TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.

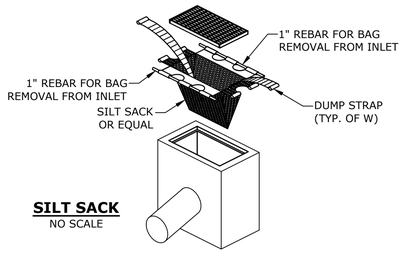
SEDIMENT TRAP
NO SCALE



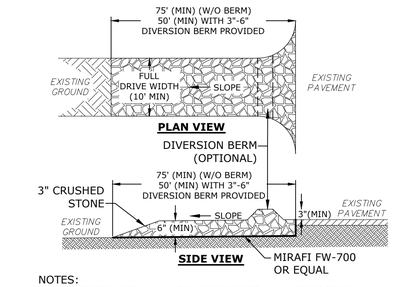
NOTES:

1. SILT SOCK SHALL BE SILT SOXX BY FILTREXX OR APPROVED EQUAL
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

SILT SOCK
NO SCALE



SILT SACK
NO SCALE



NOTES:

1. THE ENTRANCE 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

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 20830 LICENSED PROFESSIONAL ENGINEER
11-24-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

EROSION CONTROL NOTES AND DETAILS SHEET

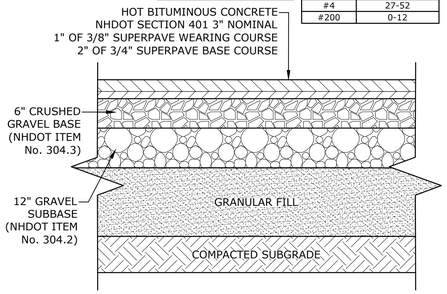
SCALE: AS SHOWN

C-501

Last Saved: 10/19/2021
Plotted: Nov 18, 2021-12:58pm By: CKrzculik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\SheetP-0595-007-DTLS.dwg

NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12

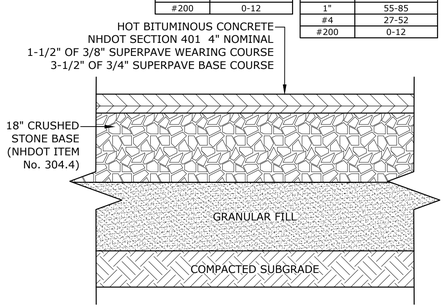


NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.
5. FINAL PAVEMENT DESIGN TO BE DETERMINED BY GEOTECHNICAL ENGINEER.

ON-SITE PAVEMENT SECTION
NO SCALE

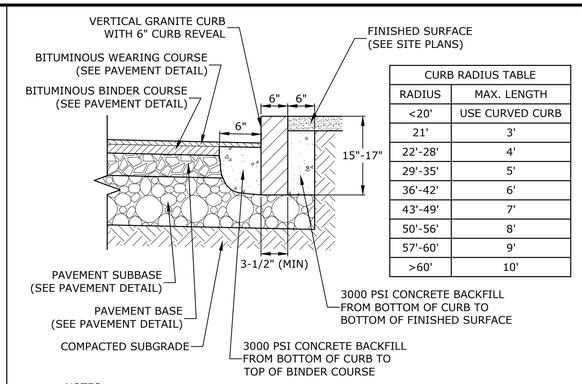
NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



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. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.

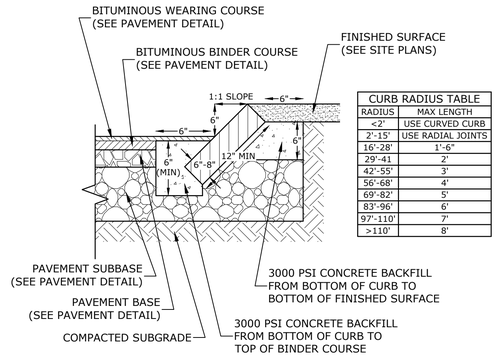
CITY RIGHT-OF-WAY PAVEMENT SECTION
NO SCALE



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.

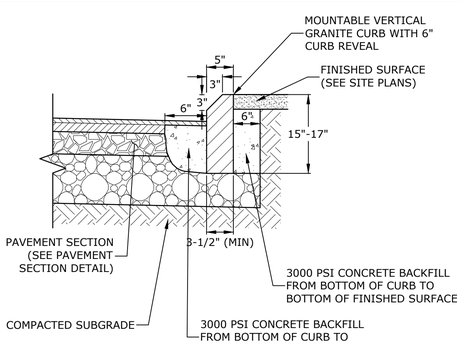
VERTICAL GRANITE CURB
NO SCALE



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'

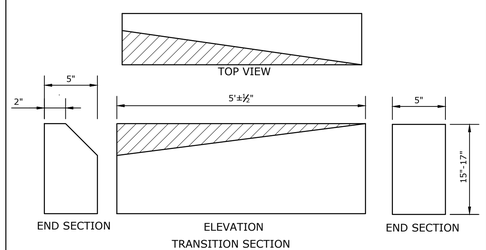
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF SLOPED GRANITE CURB (SGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

SLOPED GRANITE CURB
NO SCALE



NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF MOUNTABLE VERTICAL GRANITE CURB (MVGC).
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.

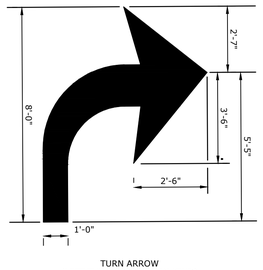
MOUNTABLE VERTICAL GRANITE CURB
NO SCALE



MOUNTABLE VERTICAL GRANITE CURB TO VERTICAL GRANITE CURB

NOTES:
1. THE INTENT OF THIS ITEM IS TO PROVIDE A SMOOTH TRANSITION BETWEEN VERTICAL GRANITE CURB AND MOUNTABLE VERTICAL GRANITE CURB WITHOUT REQUIRING FIELD CHIPPING DURING INSTALLATION. THE MOUNTABLE VERTICAL GRANITE 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.

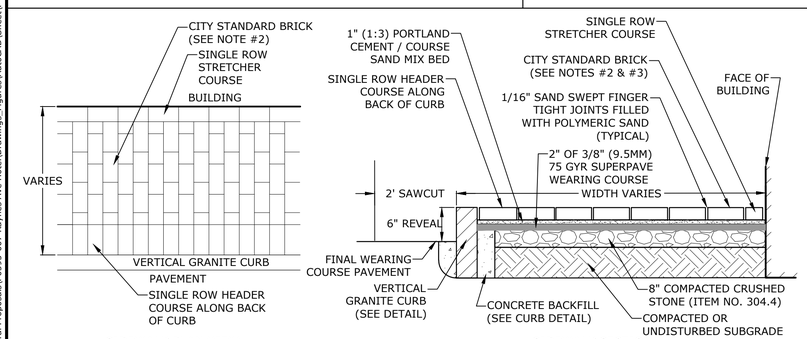
CURB TRANSITION
NO SCALE



TURN ARROW
(LEFT TURN OPPOSITE IN KIND)

NOTES:
1. SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. PREFORMED WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
3. ALL STOP BARS, WORDS, SYMBOLS AND ARROW SHALL BE THERMOPLASTIC.

TURN ARROW
NO SCALE

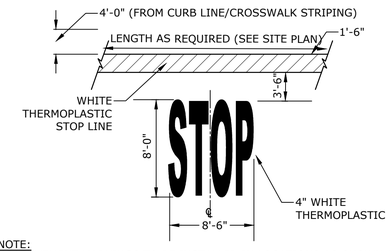


SIDEWALK PLAN VIEW

SIDEWALK SECTION

NOTES:
1. BRICK SIDEWALK SHALL BE INSTALLED AS DETAILED AND PER CITY OF PORTSMOUTH REQUIREMENTS/SPECIFICATIONS AND SHALL INCLUDE A CONTINUOUS APPROVED PAVER EDGE RESTRAINT SYSTEM AT ALL LOCATIONS NOT ADJACENT TO CURB OR BUILDINGS.
2. CITY STANDARD BRICK SHALL BE TRADITIONAL EDGE, PATHWAY, FULL RANGE 2.25"X4"X8" PAVER, BY PINE HALL BRICK, INC. BRICK MATERIAL SAMPLES SHALL BE PROVIDED TO DPW PRIOR TO INSTALLATION FOR REVIEW AND APPROVAL.
3. 80 MILLIMETER PINEHALL BRICK SHALL BE USED FOR THE FIRE ACCESS AREA UNIT PAVERS ALONG MAPLEWOOD AVE.
4. BEDDING MATERIAL SHALL BE A PORTLAND CEMENT / COURSE SAND MIX THAT IS 1 PART PORTLAND CEMENT AND 3 PARTS COURSE SAND. SAND SHALL CONFORM WITH ASTM C-33 AND CEMENT SHALL BE PORTLAND CEMENT TYPE I/TYPE II.

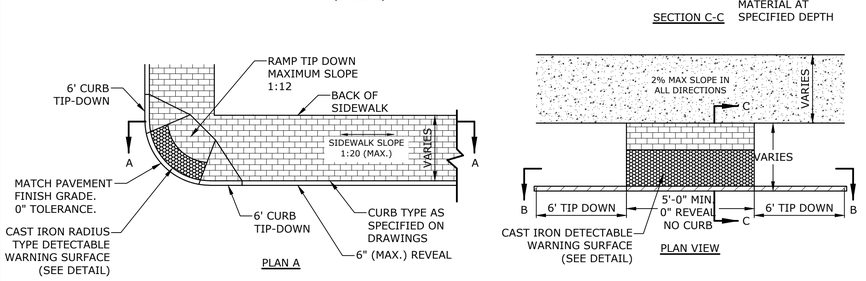
BRICK SIDEWALK
NO SCALE



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 AND LEGEND
NO SCALE

NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. A 6" COMPACTED CRUSHED GRAVEL BASE (NHDOT ITEM No. 304.3) SHALL BE PROVIDED BENEATH RAMPS.
3. DETECTABLE WARNING PANEL SHALL BE CAST IRON SET IN CONCRETE (SEE DETAIL.)
4. PROVIDE DETECTABLE WARNING SURFACES ANYTIME THAT A CURB RAMP, BLENDED TRANSITION, OR LANDING CONNECTS TO A STREET.
5. LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB ALONG THE EDGE OF THE LANDING.
6. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1, THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
7. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2 FT. FROM THE ROADWAY CURBLINE.
8. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
9. DETECTABLE WARNING PANELS SHALL BE A MINIMUM OF 2 FEET IN DEPTH. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP, BLENDED TRANSITION, OR LANDING AND THE STREET.
10. THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST VISUALLY WITH THE SURROUNDING SURFACES (EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT).

CONCRETE TIP DOWN RAMP
NO SCALE

Tighe&Bond

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-502

Last Saved:10/19/2021
Plotted On:Nov 18, 2021-12:58pm By: CKrzculk
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P-0595-007-DTLS.dwg

R1-1
30"X30"
WHITE ON RED

R5-1
30" X 30"
WHITE ON RED

W11-15
30"X30"
BLACK ON
FLUORESCENT YELLOW

D11-1
24" X 18"
WHITE ON GREEN

12" X 18"
RED ON WHITE

R7-8
12" X 18"
BLUE AND GREEN
ON WHITE

W16-7P
24"X12"
BLACK ON
FLUORESCENT
YELLOW

M4-6
12" X 6"
WHITE ON GREEN

R7-8P
18" X 9"
GREEN ON WHITE

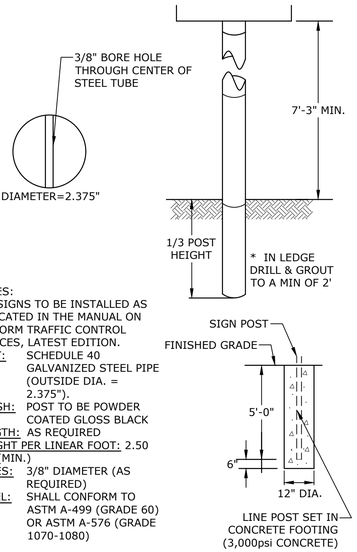
W16-9P
24"X12"
BLACK ON
FLUORESCENT
YELLOW

R3-1
24"X24"
BLACK AND RED
ON WHITE

R3-2
24"X24"
BLACK AND RED
ON WHITE

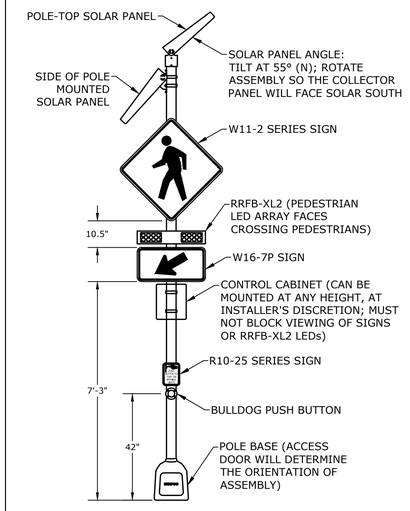
R6-1R
36"X12"
BLACK ON WHITE ARROW
ON BLACK BACKGROUND
BORDERED BY WHITE

R6-1L
36"X12"
BLACK ON WHITE ARROW
ON BLACK BACKGROUND
BORDERED BY WHITE

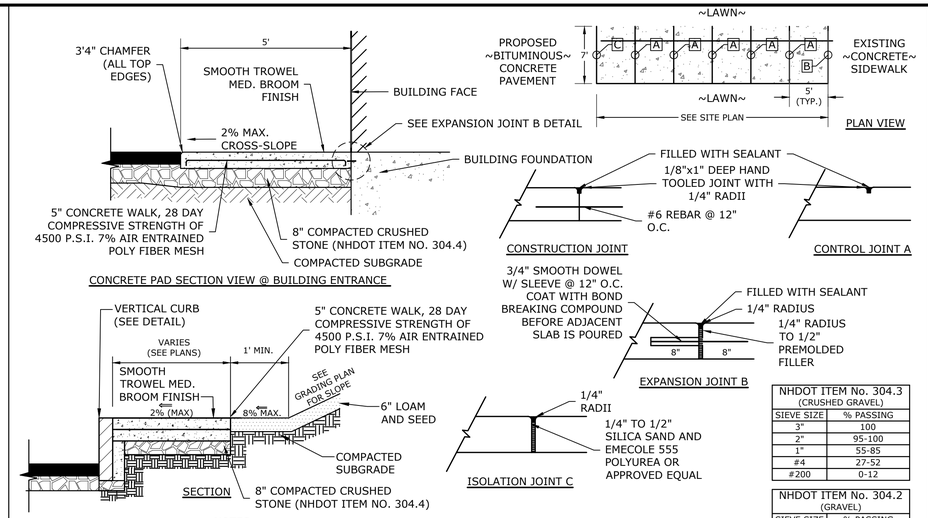


NOTES:
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
POST: SCHEDULE 40 GALVANIZED STEEL PIPE (OUTSIDE DIA. = 2.375").
FINISH: POST TO BE POWDER COATED GLOSS BLACK
LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER (AS REQUIRED)
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080)

SIGN LEGEND & SIGN POST
NO SCALE



RAPID RECTANGULAR FLASHING BEACON (RRFB)
NO SCALE

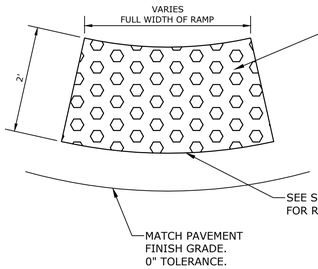


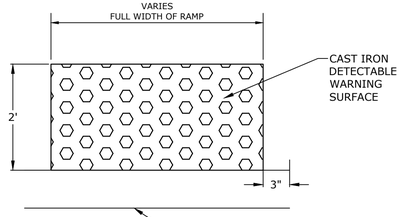
NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12

NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH AND LOCATIONS.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDE SLOPE GRADES.

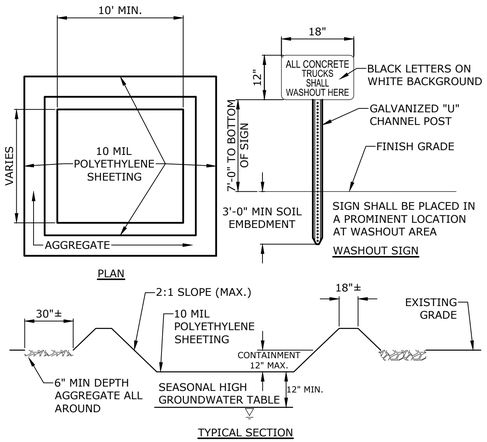
CONCRETE SIDEWALK
NO SCALE





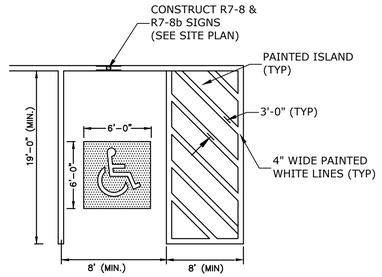
NOTES:
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

CAST IRON DETECTABLE WARNING SURFACE
NO SCALE



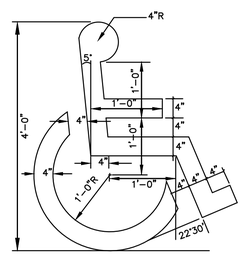
NOTES:
1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

CONCRETE WASHOUT AREA
NO SCALE



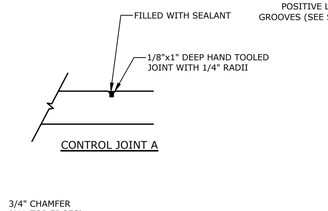
NOTES:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN W/DISABILITIES ACT.

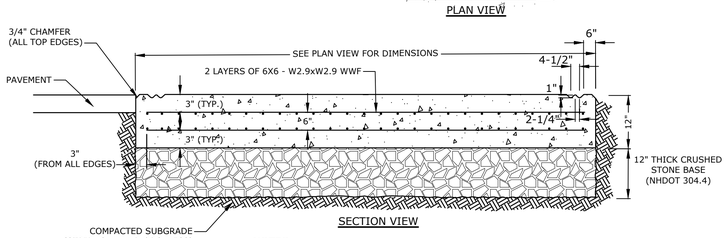
ACCESSIBLE PARKING STALL
NO SCALE



NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING WHITE THERMOPLASTIC, REFLECTORIZED PAVEMENT PARKING MATERAL MEETING THE REQUIREMENTS OF ASTM D 4505.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

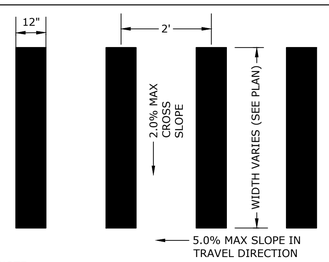
ACCESSIBLE SYMBOL
NO SCALE





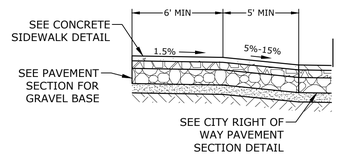
NOTES:
1. CONCRETE TO BE 4500 PSI, 7% AIR ENTRAINED
2. STANDARD BROOM FINISH.

DUMPSTER PAD
NO SCALE



NOTE:
STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

CROSSWALK STRIPING
NO SCALE



DRIVEWAY ENTRANCE SECTION
NO SCALE

Tighe&Bond

BRADLEE MEZQUITA No. 08630 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/24/21

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

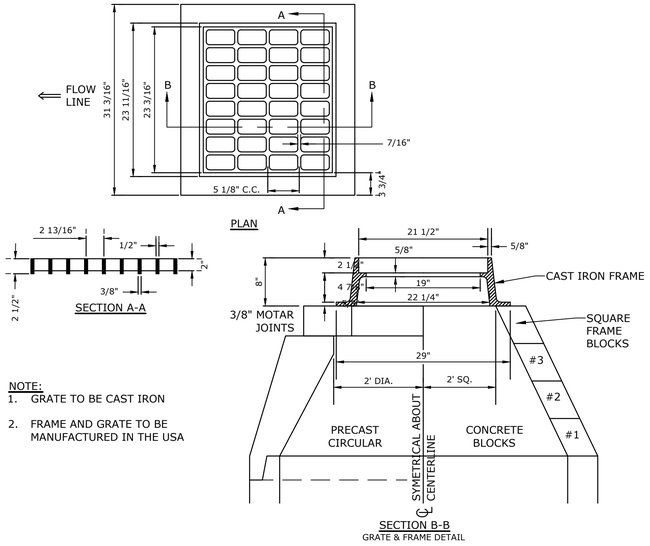
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

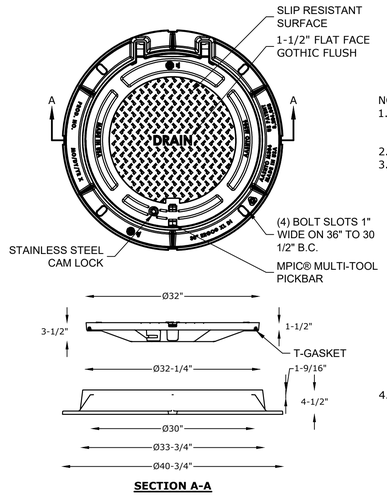
C-503

Last Saved: 10/19/2021
Plotted On: Nov 18, 2021 - 12:58pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P-0595-007-DTLS.dwg



NOTE:
1. GRATE TO BE CAST IRON
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

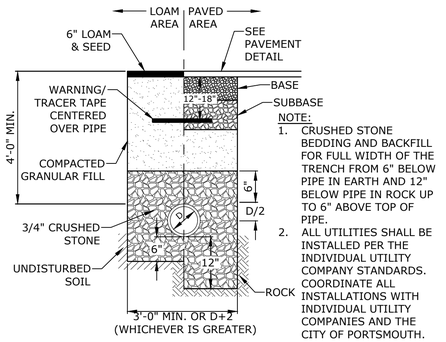
CATCH BASIN FRAME & GRATE
NO SCALE



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.

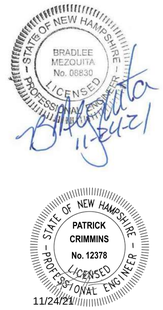
DRAIN MANHOLE FRAME & COVER
NO SCALE



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

Tighe&Bond



Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

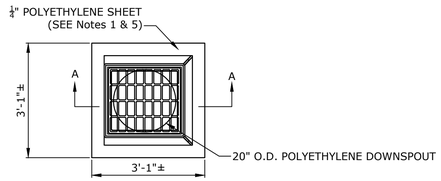
MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

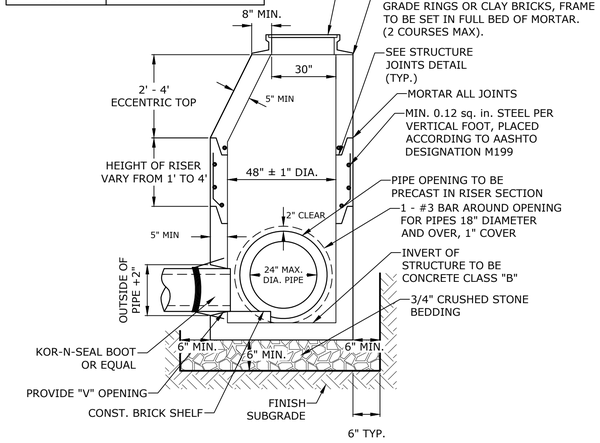
C-504



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

NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)	
SIEVE SIZE	% PASSING
2"	100
1-1/2"	85-100
3/4"	45-75
#4	10-45
#200	0-5



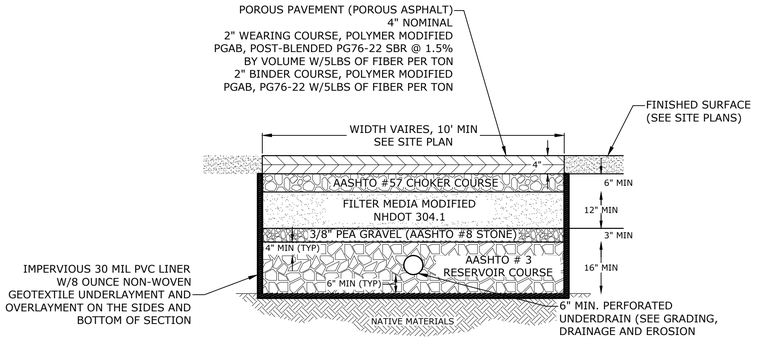
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL 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 CATCHBASIN
NO SCALE

Last Saved: 10/19/2021
Printed On: Nov 18, 2021-12:58pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-DTLS.dwg



AASHTO #57 STONE (CHOKER COURSE)	
	% PASSING
1-½"	100
1"	95-100
¾"	25-60
#4	0-10
#8	0-5

MODIFIED NHDOT 304.1	
	% PASSING
6"	100
#4	70-100
#200	0-6*

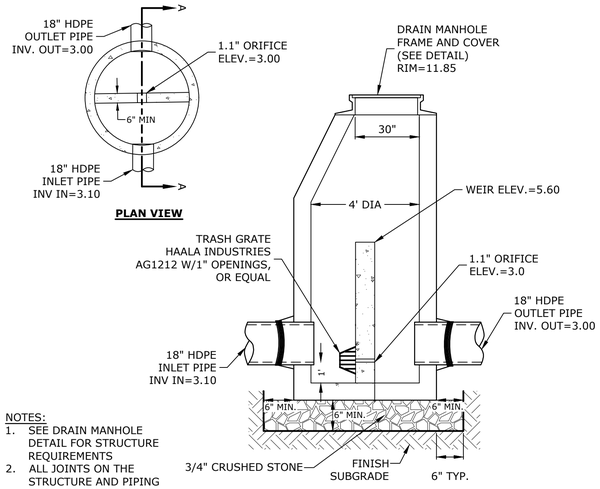
*PREFERABLY <4%

AASHTO #8 STONE (PEA GRAVEL)	
	% PASSING
½"	100
⅜"	85-100
#4	10-30
#8	0-10
#16	0-5

AASHTO #3 STONE (RESERVOIR COURSE)	
	% PASSING
2-½"	100
2"	90-100
1-½"	35-70
1"	0-15
½"	0-5

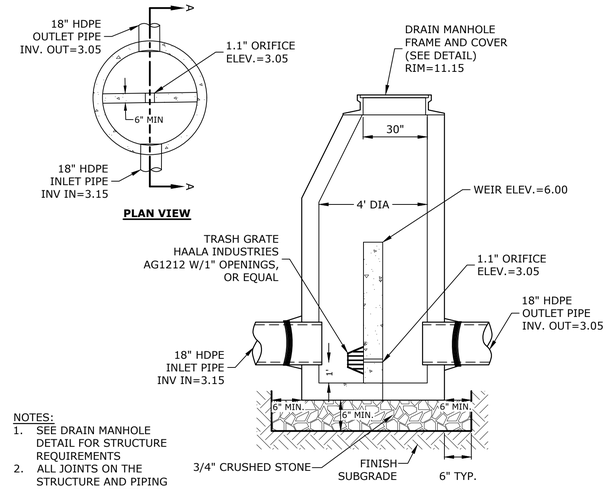
NOTES:
1. SEE GRADING, DRAINAGE, UTILITIES AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
2. POROUS ASPHALT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS FROM THE UNH STORMWATER CENTER FOR POROUS ASPHALT.
3. POROUS ASPHALT MIX SPECIFIED IS RECOMMENDED BY THE UNH STORMWATER CENTER FOR SITES ANTICIPATING H-20 LOADING.
4. FILTER COURSE TO BE INCREASED AS NECESSARY TO MEET PROPOSED GRADES.
5. INSTALL FILTER COURSE AGGREGATE IN 8-INCH MAXIMUM LIFTS TO A MAXIMUM OF 95% STANDARD PROCTOR COMPACTION (ASTM D698 / AASHTO T99). INSTALL AGGREGATE TO GRADES INDICATED ON THE DRAWINGS.
6. INSTALL CHOKER, GRAVEL, AND STONE BASE COURSE AGGREGATE TO A MAXIMUM OF 95% COMPACTION STANDARD PROCTOR (ASTM D698 / AASHTO T99). CHOKER SHOULD BE PLACED EVENLY OVER SURFACE OF FILTER COURSE BED, SUFFICIENT TO ALLOW PLACEMENT OF PAVEMENT, AND NOTIFY ENGINEER FOR APPROVAL. CHOKER BASE COURSE THICKNESS SHALL BE SUFFICIENT TO ALLOW FOR EVEN PLACEMENT OF THE POROUS ASPHALT BUT NO LESS THAN 6-INCHES IN DEPTH.
7. THE DENSITY OF SUBBASE COURSES SHALL BE DETERMINED BY AASHTO T 191 (SAND-CONE METHOD), AASHTO T 204 (DRIVE CYLINDER METHOD), OR AASHTO T 238 (NUCLEAR METHODS), OR OTHER APPROVED METHODS AT THE DISCRETION OF THE SUPERVISING ENGINEER.

POROUS ASPHALT SECTION
NO SCALE



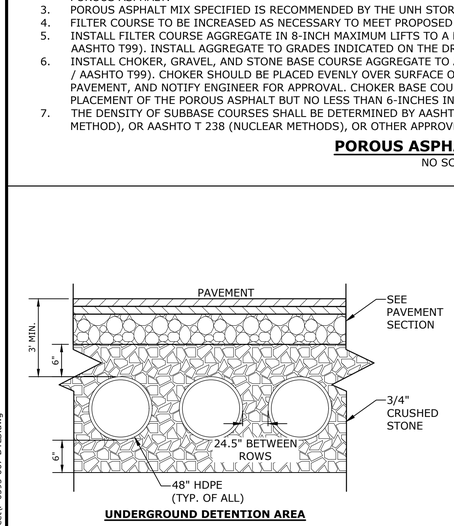
NOTES:
1. SEE DRAIN MANHOLE DETAIL FOR STRUCTURE REQUIREMENTS
2. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

PDMH3
NO SCALE

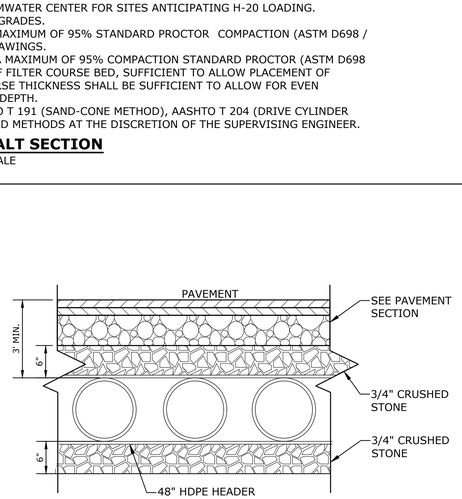


NOTES:
1. SEE DRAIN MANHOLE DETAIL FOR STRUCTURE REQUIREMENTS
2. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

PDMH6
NO SCALE



UNDERGROUND DETENTION AREA

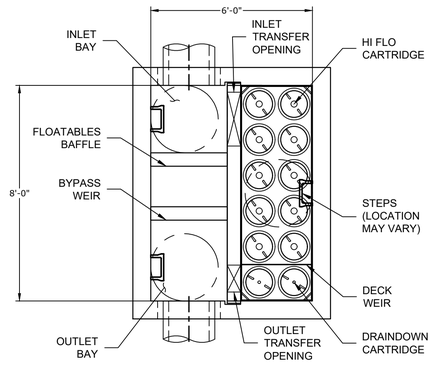


HEADER ROW

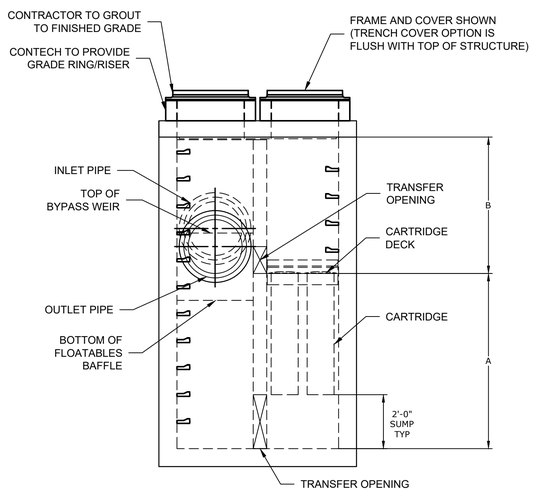
FIELD ELEVATIONS				
	TOP OF STONE ELEV	TOP OF PIPE ELEV	BOTTOM OF PIPE ELEV	BOTTOM OF STONE ELEV
UDB 1	8.25'	7.25'	3.50'	2.75'
UDB 2	8.25'	7.25'	3.50'	2.75'

NOTES:
1. UNDERGROUND DETENTION SYSTEM TO BE 48" 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.
4. REFER TO STANDARD DUTY PAVEMENT SECTION DETAIL FOR PAVEMENT SECTION.

UNDERGROUND DETENTION SYSYTEM DETAIL
NO SCALE



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW
JELLYFISH JFPD0806

FIELD ELEVATIONS					
	RIM ELEVATION	INLET ELEVATION	INLET PIPE	OUTLET ELEVATION	OULET PIPE
JFF 1	11.85	2.85'	18" HDPE	2.90'	18" HDPE
JFF 2	11.25	2.90'	18" HDPE	2.40'	18" HDPE

JELLYFISH JFPD0806 - 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'-6"	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)	1.96	1.47	0.98	0.54
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

SITE SPECIFIC DATA REQUIREMENTS		
STRUCTURE ID	JF-1	JF-2
MODEL SIZE	JFPD0806	JFPD0806
WATER QUALITY FLOW RATE (cfs)	2.85	0.63
PEAK FLOW RATE (cfs)	26.54	5.13
RETURN PERIOD OF PEAK FLOW (yrs)	25	25
# OF CARTRIDGES REQUIRED (HF / DD)	15/3	5/1
CARTRIDGE SIZE	54"	40"

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 3', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS 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 (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.

Jellyfish Filter
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 8,287,726, 8,221,616 & US 8,123,935. OTHER INTERNATIONAL PATENTS PENDING

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH JELLYFISH STORMWATER FILTER
NO SCALE

Tighe&Bond

BRADLEE MEZQUITA No. 08630 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 11-24-21

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

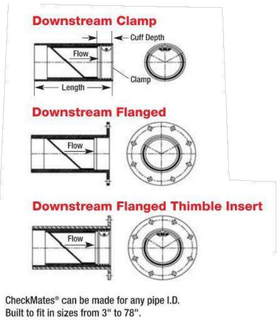
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-505

Last Saved: 10/19/2021
Plotted On: Nov 18, 2021 - 12:58pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-DTLS.dwg

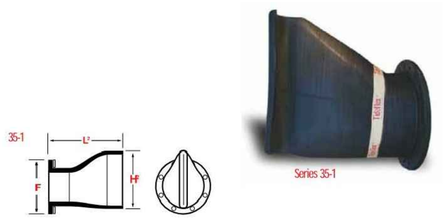


CheckMates® can be made for any pipe I.D.
Built to fit in sizes from 3" to 78".

CHECKMATE® VALVE											
	NOMINAL PIPE SIZE I.D.		OVERALL LENGTH*		NUMBER OF CLAMPS	CUFF DEPTH		BACK PRESSURE RATING**		WEIGHT	
	Inches	Millimeters	Inches	Millimeters		Inches	Millimeters	Feet	Meters	lbs	Kg
Standard Pressure	12	300	19.8	503	1	2.0	51	68	20.1	37	17
	14	350	25.8	655	1	4.0	102	64	20.0	110	50
	16	400	28.6	726	1	4.0	102	60	18.3	133	52
	18	450	31.0	787	1	4.0	102	56	17.1	143	65
	20	500	42.1	1069	2	8.0	203	53	16.2	223	102
	24	600	47.5	1207	2	8.0	203	45	13.7	304	137

NOTES:
1. PIPES WHERE NOTED TO HAVE TIDEFLEX, CHECKMATE INLINE CHECK VALVES MANUFACTURED BY REDVALVE, OR EQUAL
2. CHECK VALVES SHALL BE INSTALLED PER THE MANUFACTURERS INSTALLATION SPECIFICATIONS

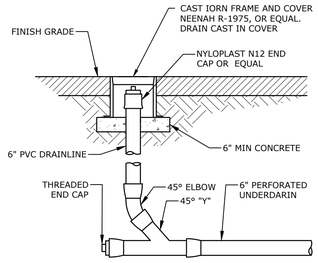
ON-SITE BACK FLOW PREVENTER
NO SCALE



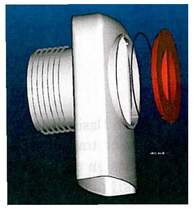
Flange Size (ANSI)	Flange O.D. (F)	SERIES 35-1 Length (L²)	SERIES 35-1 Bill Height (H²)
18	25	40	34
20	27 1/2	48	37
24	32	52	44
30	38 3/4	62	55

NOTES:
1. CONCRETE HEADWALL TO HAVE TIDEFLEX CHECK VALVE MANUFACTURED BY REDVALVE AND SHALL BE APPROVED BY THE CITY OF PORTSMOUTH DPW.
2. CHECK VALVE SHALL BE INSTALLED USING A FLANGED BOLT ON CONNECTION PER THE MANUFACTURERS INSTALLATION SPECIFICATIONS.
3. END OF PIPE SHALL BE FLUSH WITH CONCRETE HEADWALL AND BE GROUTED PRIOR TO THE INSTALLATION OF THE CHECK VALVE.

CITY OUTLET BACK FLOW PREVENTER
NO SCALE

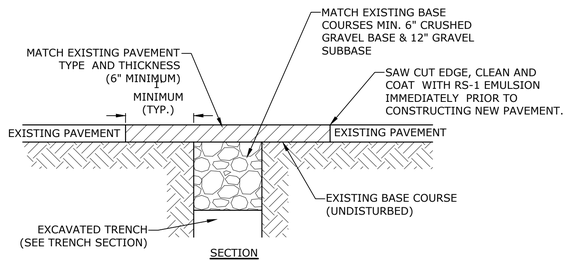


DRAIN CLEAN-OUT
NO SCALE

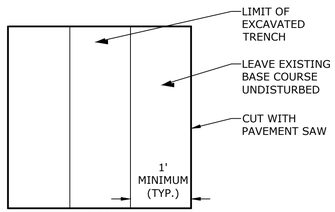


NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

"ELIMINATOR" OIL FLOATING DEBRIS TRAP



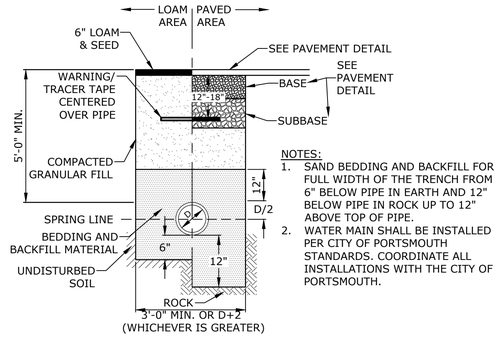
SECTION



PLAN

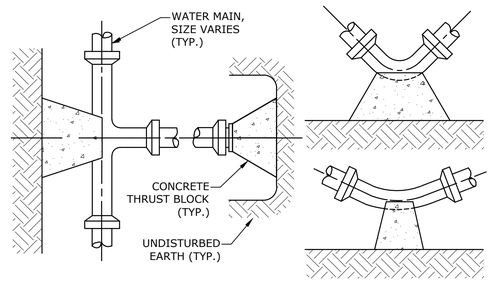
NOTE:
COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH
NO SCALE



NOTES:
1. 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.

WATER TRENCH
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 DETAIL
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
11-24-21

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

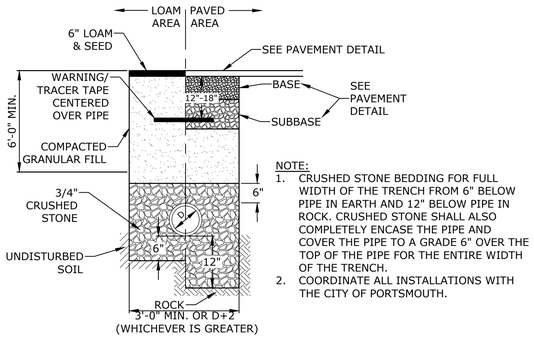
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

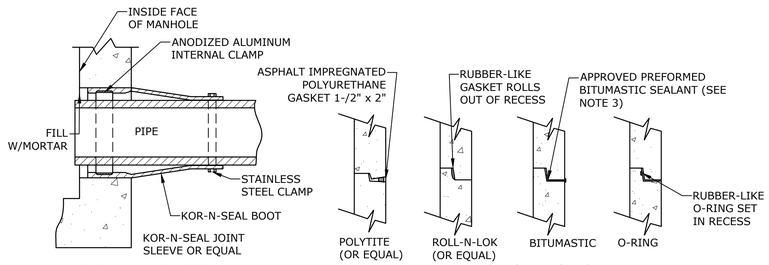
C-506

Last Saved: 10/19/2021
Plotted On: Nov 18, 2021 - 12:58pm By: CKrzculik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_ Figures\AutoCAD\Sheet\P-0595-007-DTLS.dwg



NOTE:
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. CRUSHED STONE SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 6" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
2. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

SEWER SERVICE TRENCH
NO SCALE

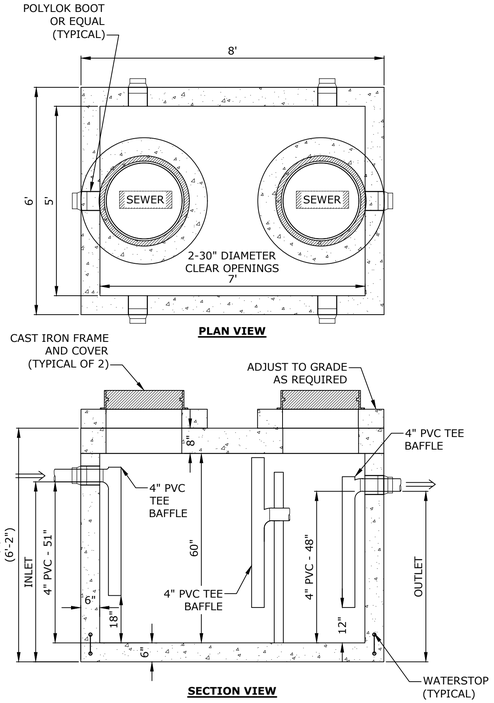


PIPE TO MANHOLE JOINTS

HORIZONTAL JOINTS

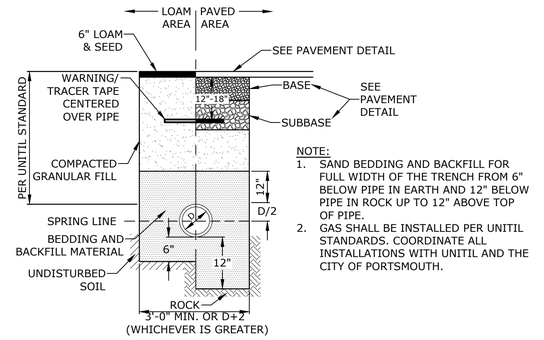
NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC 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.

MANHOLE JOINTS
NO SCALE



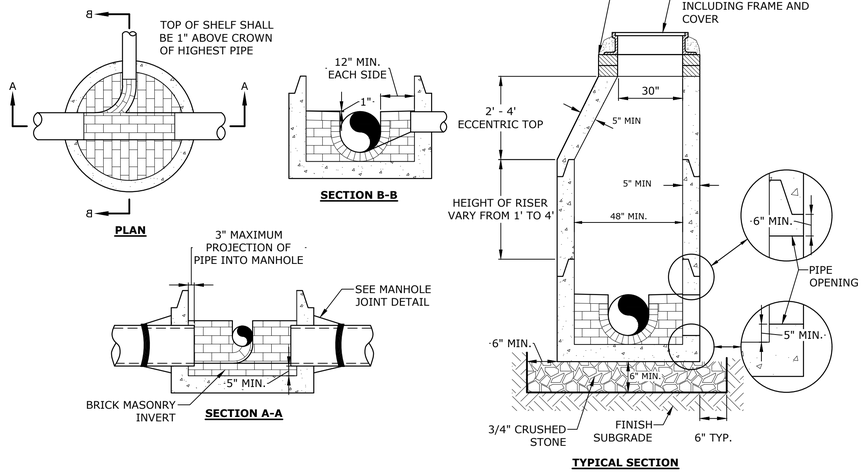
NOTES:
1. STEEL REINFORCEMENT SHALL CONFORM TO LATEST ASTM SPECIFICATIONS: ASTM-A615 GRADE 60 REBAR.
2. CONCRETE SHALL BE F_C=5,000 PSI @ 28 DAYS MINIMUM.
3. FLEXIBLE SLEEVES SHALL BE PROVIDED ON ALL PIPE CONNECTIONS.
4. JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
5. INLET SHALL PENETRATE AT LEAST 9" BELOW THE LIQUID LEVEL, BUT NOT DEEPER THAN THE OUTLET BAFFLE.
6. OUTLET SHALL EXTEND BELOW THE SURFACE OF THE LIQUID EQUAL TO 40% OF THE LIQUID DEPTH (19").
7. DESIGN LOADING SHALL BE: AASHTO-HS20-44, ASTM C-890-06.
8. DESIGN SPECIFIED AS: ASTM C-1227-08, ASTM C-913-08.
9. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
10. GREASE TRAP SHALL BE PHOENIX PRECAST CONCRETE P/N: C-6420 OR EQUAL.
11. TANK SHALL BE PUMPED AS NEEDED.

1,000 GALLON GREASE TRAP
NO SCALE



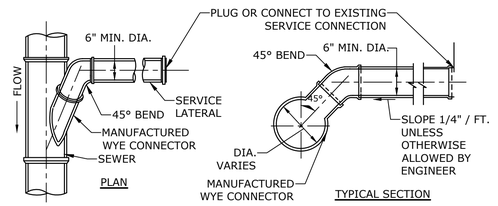
NOTE:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF PORTSMOUTH.

GAS TRENCH
NO SCALE



NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
5. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
6. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
7. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.

SEWER MANHOLE
NO SCALE



STANDARD SERVICE LATERAL CONNECTION
NO SCALE

Tighe&Bond

BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11-24-21

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/24/21

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

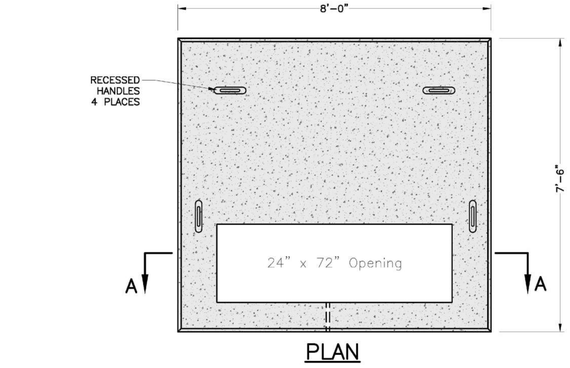
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

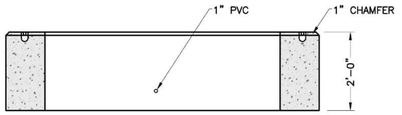
SCALE: AS SHOWN

C-507

Last Saved: 10/19/2021
Plotted On: Nov 18, 2021--12:58pm By: CKrzcuk
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-DTLS.dwg



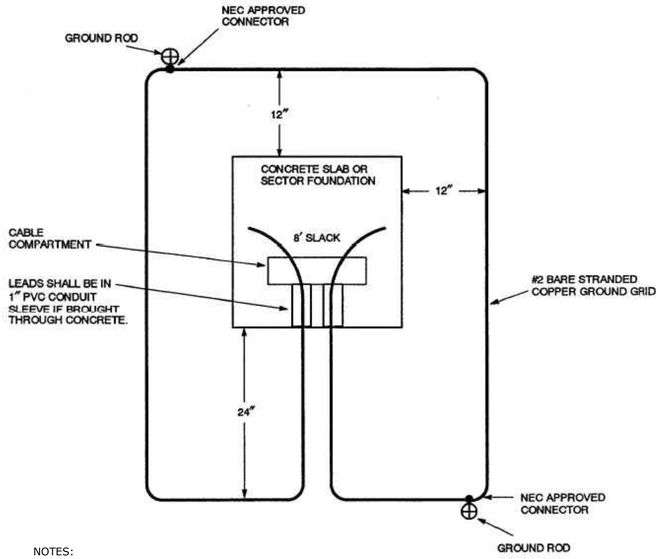
PLAN



SECTION A–A

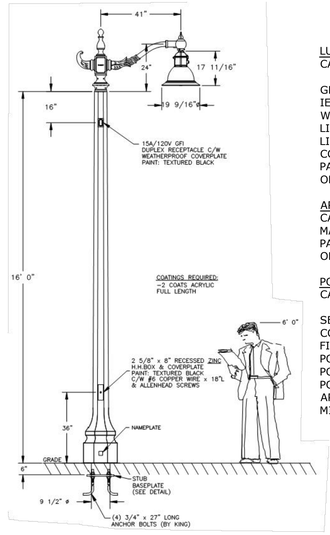
NOTES:
1. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
2. CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
3. STEEL REINFORCEMENT - ASTM A615, GRADE 60
4. PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS

3-PHASE TRANSFORMER PAD
NO SCALE



NOTES:
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.

PAD-MOUNTED EQUIPMENT GROUNDING GRID DETAIL
NO SCALE



LUMINAIRE SPECIFICATIONS:

CATALOGUE NO.:	K729-P4FL-II-60(SSL) -7030-120:277-3K S/F KPL20
GLOBE MAT'L:	FLAT ARRAY, CLEAR FLAT LENS
IES CLASSIFIC.:	TYPE II
WATTAGE:	60W (7030 SERIES)
LIGHT SOURCE:	SOLID STATE LIGHTING
LINE VOLTAGE:	120:277V
CCT:	3000K
PAINT:	TEXTURED BLACK
OPTIONS:	S/F KPL-20 LEVELING DEVICE

ARM SPECIFICATIONS:

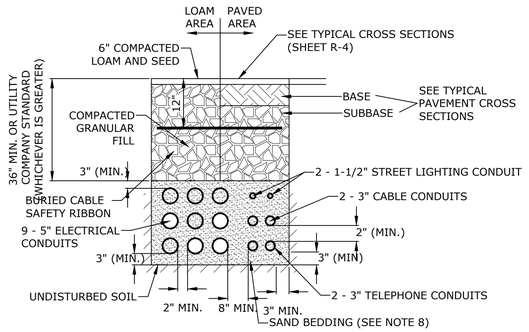
CATALOGUE NO.:	(MOD.) KA72-T-1-3
MATERIAL:	ALUMINUM
PAINT:	TEXTURED BLACK
OPTIONS:	KPL20 LEVELING DEVICE

POLE SPECIFICATIONS:

CATALOGUE NO.:	KBH16-G-S11-SBP C/W 140-30/100 & DR
SECTION:	OCTAGONAL
COLOUR:	ECLIPSE
FINISH:	POLISHED
POLE TOP:	6 3/8" FL/FL
POLE BUTT:	9 1/2" Ø
POLE LENGTH:	16' 6"
APPROX. WEIGHT:	1,190 LBS.
MIN. RACEWAY:	1 1/8" Ø

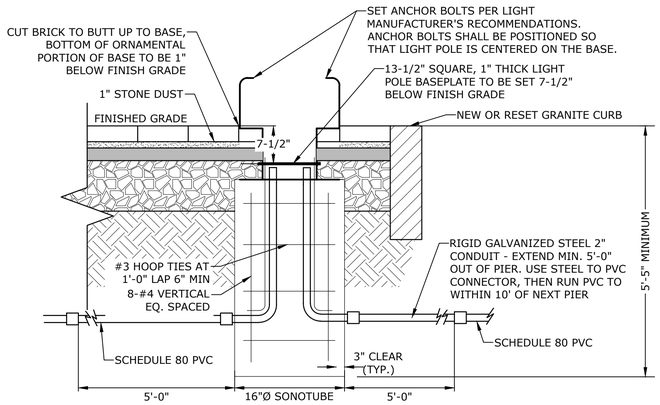
NORTH END LIGHT POLE & FIXTURE
NO SCALE

Tighe&Bond



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.

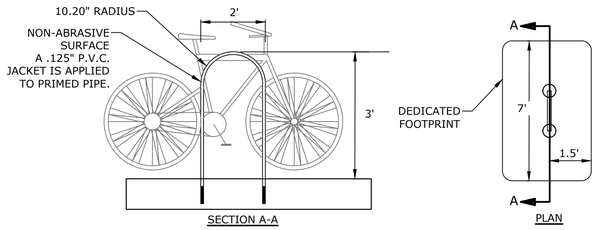
ELECTRICAL AND COMMUNICATION CONDUIT
NO SCALE



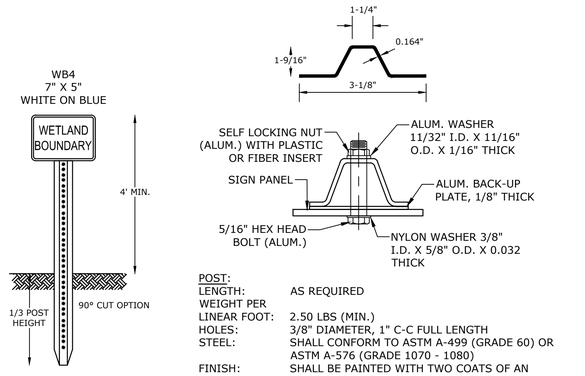
STANDARD BASE

NOTES:
1. REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.
2. CONCRETE: 4000 PSI, AIR ENTRAINED STEEL: 60 KSI
3. LIGHT POLE FOUNDATIONS SHALL BE PLACED PRIOR TO INSTALLATION OF BRICK PAVERS.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, TO INCLUDE PERFORMANCE SPECIFICATIONS, CALCULATIONS AND NH LICENSED STRUCTURAL ENGINEER'S STAMP FOR LIGHT POLE FOUNDATION.
5. STANDARD BASE SHALL BE CONSTRUCTED UNLESS THERE IS CONFLICT WITH THE EXISTING DUCT BANK. SPREAD FOOTING BASE SHALL BE USED IN LIEU OF STANDARD BASE IN LOCATIONS WHERE TOP OF DUCT BANK ELEVATION WILL CONFLICT WITH STANDARD POLE BASE DEPTH. CONTRACTOR SHALL VERIFY LOCATIONS WHERE SPREAD FOOTINGS ARE REQUIRED PRIOR TO CONSTRUCTION. SEE NOTE#4 FOR SUBMITTAL REQUIREMENTS.
6. DEPTH OF FIXTURE BASE TO BE VERIFIED IN FIELD PRIOR TO INSTALLATION TO ENSURE THAT 1" OF THE ORNAMENTAL BOTTOM PORTION OF BASE TO WILL BE 1" BELOW FINISH GRADE

NORTH END LIGHT FIXTURE BASE
NO SCALE



BIKE RACK
NO SCALE



POST:

LENGTH:	AS REQUIRED
WEIGHT PER LINEAR FOOT:	2.50 LBS (MIN.)
HOLES:	3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL:	SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)
FINISH:	SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

WETLAND BOUNDARY SIGN & SIGN POST
NO SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-508

Last Saved: 10/19/2021
Plotted On: Nov 18, 2021-12:58pm By: CKrzculik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\SheetVP-0595-007-DTLS.dwg

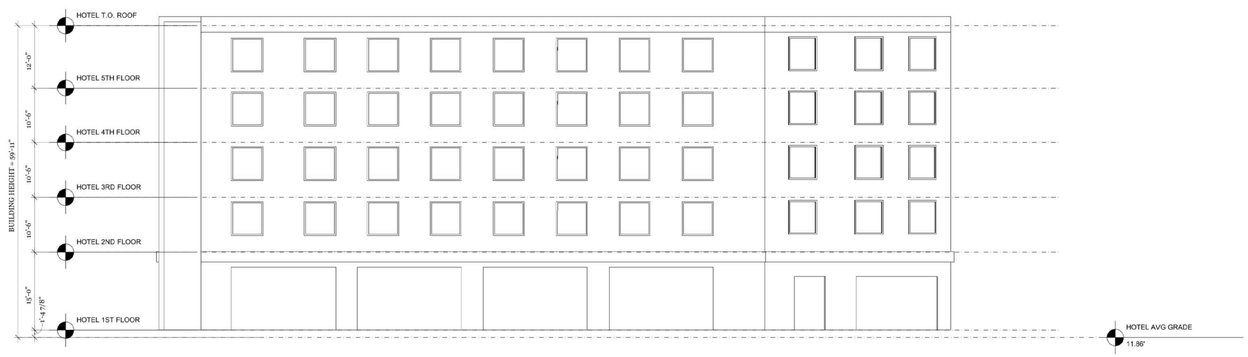
11/22/2021 11:40:52 AM

OVERALL ELEVATIONS

1/16"=1'-0"

MIXED USE ELEVATION

3/32"=1'-0"



HOTEL ELEVATION

3/32"=1'-0"

C:\Users\arnom\Documents\Revit Local Files\301942_Raynes Ave_Arch_arnomREN358.rvt

PROCON
CONNECT • CREATE • CONSTRUCT

PO BOX 4430
MANCHESTER NH 03108
603.623.8811
PROCONINC.COM

PROJECT:

PROPOSED MIXED USE DEVELOPMENT
Raynes Avenue
Portsmouth, NH

Date	Issue Description

PROFESSIONAL SEAL

Architect:	JAL
Drawn By:	Author
Project No.:	XXX
Copyright:	2018 Pro Con, Inc.

Drawing Sheet
EXTERIOR ELEVATIONS

Drawing Sheet
A3.00

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ALL POINTS AT GRADE 10'X10'	Illuminance	Fc	0.66	12.3	0.0	N.A.	N.A.
BLDG A COVERED PARKING	Illuminance	Fc	4.89	9.1	1.5	3.26	6.07
BLDG B COVERED PARKING	Illuminance	Fc	6.61	11.0	3.2	2.07	3.44

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	LLD	UDF	LLF	Arr. Lum. Lumens	Arr. Watts
	6	A	SINGLE	SLM-LED-24L-SIL-FT-40-70CRI-IL-SINGLE - 18'POLE + 2' BASE	0.940	1.000	0.940	15996	176
	1	B	SINGLE	SLM-LED-24L-SIL-SW-40-70CRI-SINGLE - 18'POLE + 2' BASE	0.940	1.000	0.940	23667	188.8
	1	C	SINGLE	SLM-LED-24L-SIL-2-40-70CRI-IL-SINGLE - 18'POLE + 2' BASE	0.940	1.000	0.940	14904	176
	8	G	SINGLE	CPG-LED-10L-CA-W-40 - 12'MH	0.900	1.000	0.900	9830	79.57
	2	W	SINGLE	XWM-3-LED-04L-40-16'MH	0.980	1.000	0.980	4124	29.5

Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine the applicability of the layout to existing or future field conditions.

This lighting plan represents illumination levels calculated from laboratory data taken under controlled conditions in accordance with The Illuminating Engineering Society (IES) approved methods. Actual performance of any manufacturer's luminaires may vary due to changes in electrical voltage, tolerance in lamps/LED's and other variable field conditions. Calculations do not include obstructions such as buildings, curbs, landscaping, or any other architectural elements unless noted. Fixture nomenclature noted does not include mounting hardware or poles. This drawing is for photometric evaluation purposes only and should not be used as a construction document or as a final document for ordering product.

Total Project Watts
Total Watts = 2116.36

1000 ALLIANCE RD. CINCINNATI, OHIO 45246 USA
(513) 791-3333 • FAX (513) 791-4455

LIGHTING PROPOSAL LD-153488A-1

XSS HOTELS
PORTSMOUTH, NH

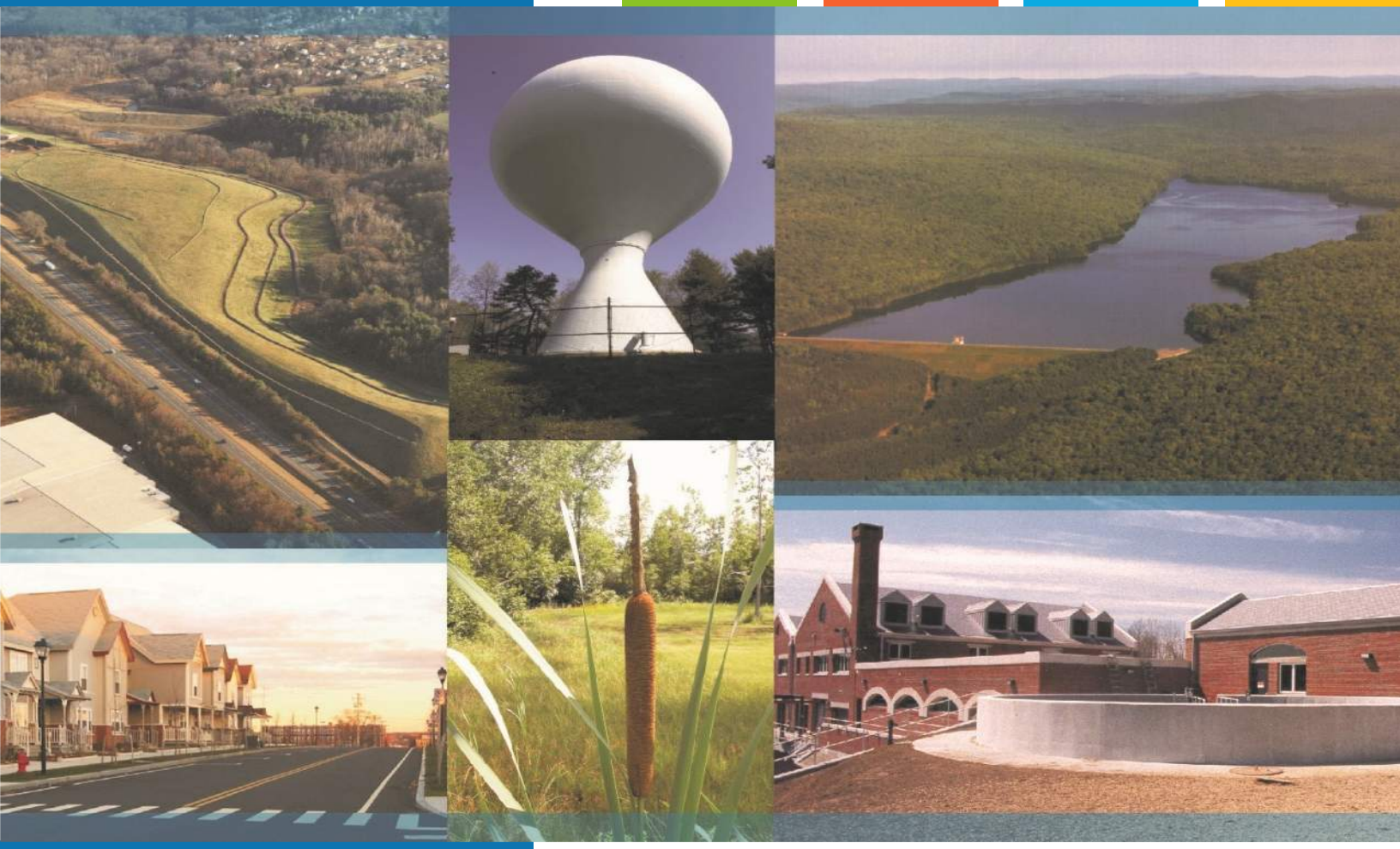
BY: THC	DATE: 3/24/21	REV: 1 1/23/2021	SHEET 1 OF 1

SCALE: 1"=20' 0 20

Raynes Ave - City of Portsmouth TAC STIPULATION RESPONSE

Date: November 24, 2021

City of Portsmouth TAC, November 2, 2021:			
	TAC Comment	**Applicant Response**	**Sheet**
TAC Stipulations from 11/8 Correspondence:			
1	The community space plan is to include all the public space types.	The community Space Exhibit has been revised to include all eligible community space areas and types.	Community Space Exhibit
2	Dock, kayak launch, and pier are included as public spaces.	The dock, kayak launch, and pier are included as community spaces.	Community Space Exhibit & C-201
3	Parking spaces are reduced to 138 with specific space reduction on Maplewood Ave.	Parking spaces have been reduced to 138 with the spaces being removed from the parking area adjacent to Maplewood Avenue. The reserve spaces previously shown closer to Maplewood Avenue have been relocated to the area behind the proposed hotel as requested by TAC.	C-102 & C-102.1
4	Lights will include full cut off feature with a shield to prevent light pollution across the water.	The photometric plan has been revised to include lights that will include full cut off feature with a shield to prevent light pollution across the water.	Lighting Plan 1 of 1
5	Mountable curb is included on pedestrian walkway between proposed hotel and 3S Artspace.	Mountable curb is included on pedestrian walkway between proposed hotel and 3S Artspace and has been relocated so the entire pedestrian walkway is at the same level. Additionally, at the request of TAC, the landscaping plan was revised to enhance the pedestrian connection between the walkway area and the City's multiuse path. The paver pattern was extended all the way to the City's path and the planting plan was revised to provide a consistent planting design across all three entrances to the North Mill Pond trail on the site.	C-102.1 & L-101
6	Grease traps will be designed to meet code requirements.	Confirmed, all grease traps will be designed to meet code requirements.	C-104
7	Sewer connection permit will be obtained from DES.	Confirmed.	N/A
8	Applicant and City will enter into a Community Space Agreement.	Confirmed.	N/A
9	Fertilizing within the buffer zone will follow City guidance.	Confirmed.	N/A
10	Third party inspection serves are required during construction.	Confirmed.	N/A
11	Square footage will be added to the public space plan, matrix and exhibits.	Square footages of community space have be added to the community space exhibits.	Community Space Exhibit
12	Wide pedestrian sidewalks and alleyways, including seating, are to be included as Community Space.	Wide pedestrian sidewalks and alleyways, including seating, have been included as Community Space on the Community Space Exhibit.	Community Space Exhibit
13	Exposed parking shall be screened from view.	Screening has been added to the building design to screen the lift systems from Maplewood Avenue. Final screening design to be approved by the HDC.	N/A
14	Proposed greenway trail on abutting property is shown on the site and landscape plan.	Proposed greenway trail on abutting property is shown on the site and landscape plan.	C-102, C-102.1 & L-101



Proposed Mixed Use Development
Raynes Avenue
Portsmouth, NH

Drainage Analysis

North Mill Pond Holdings, LLC

March 22, 2021
Last Revised: November 24 2021

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
11/24/21

Tighe&Bond

100% Recyclable

Table of Contents

Section 1 Project Description

1.1 On-Site Soil Description 1-1
1.2 Pre- and Post-Development Comparison 1-2
1.3 Calculation Methods.....1-2

Section 2 Pre-Development Conditions

2.1 Pre-Development Calculations.....2-1
2.2 Pre-Development Watershed Plans 2-1

Section 3 Post-Development Conditions

3.1 Post-Development Calculations 3-2
3.2 Post-Development Watershed Plans.....3-2

Section 4 Peak Rate Comparison

Section 5 Mitigation Description

5.1 Pre-Treatment Methods for Protecting Water Quality 5-2
5.2 Treatment Methods for Protecting Water Quality. 5-2

Section 6 BMP Worksheets and Sizing Memos

Appendices

A Site Specific Soils Report
B Extreme Precipitation Tables

Section 1
Project Description

The proposed project is located at 1 Raynes Avenue, 31 Raynes Avenue & 203 Maplewood Avenue and is comprised of four (4) parcels that are bounded by Raynes Avenue to the south, Maplewood Avenue to the west, North Mill Pond to the north, and municipal land to the east, which is the future site of the North Mill Pond community park. The existing parcels are listed below.

Tax Map/Lot No.	Area (ac)
123 / 10	0.170
123 / 12	0.140
123 / 13	1.323
123 / 14	0.906

The proposed project will include the construction of two (2) 5-story buildings. The first is a mixed-use residential building that has a first-floor residential lobby and two (2) commercial spaces, and 32 upper floor residential units. The second is a hotel building with 124 rooms at the corner of Raynes Ave and Vaughan Street. The project will include associated site improvements such as paving, utilities, lighting, landscaping and community space. The community space will be located on the land between North Mill Pond's mean high water (MHW) line to the 50ft buffer and will be deeded to the City of Portsmouth as community space designated for the City's North Mill Pond Trail project.

1.1 On-Site Soil Description

The site is a highly disturbed site along the North Mill Pond. The property shows evidence of what appears to be very old filling and grading associated with the existing development. The site consists of terrain that is generally flat and slopes from the south and west to the north to North Mill Pond. The existing property has an approximate high point of elevation of 14 near the corner of the property at the intersection of Raynes Ave and Maplewood Ave

A site specific soils survey was conducted by Leonard Lord, PhD, CSS, CWS of Tighe & Bond, Inc and can be found in Appendix A of this Report. Based on the soil survey, the runoff analyzed within these studies has been modeled using mostly Hydrologic Soil Group C soils and some portions of Hydrologic Soil Group A soils, as much of the site is comprised of Udorthents with two drainage classifications, moderately poorly drained soils and portions of well drained soils.

1.2 Pre- and Post-Development Comparison

The pre-development and post-development watershed areas have been analyzed at one point of analysis. While the point of analysis has remained unchanged, the contributing sub-catchment areas varied between pre-development and post-development conditions. These adjustments were made to reflect the differences in drainage patterns between the existing and proposed conditions. The overall area analyzed as part of this drainage analysis was held constant. PA-1 assesses flows that discharge directly to North Mill Pond via overland flow or various outlets.

Since North Mill Pond is a tidal water, NHDES does not require peak runoff control requirements to be met (Env-Wq 1507.06(d)). However, detention systems are included on the development site for the purpose of mitigating temperature differences between the stormwater runoff and the North Mill Pond, therefore peak runoff requirements have been met and can be found in section 4 of this report.

1.3 Calculation Methods

The design storms analyzed in this study are the 2-year, 10-year, 25-year and 50-year 24-hour duration storm events. The stormwater modeling system, HydroCAD 10.0 was utilized to predict the peak runoff rates from these storm events. The peak discharge rates were determined by analyzing Type III 24-hour storm events. The rainfall data for these storm events was obtained from the data published by the Northeast Regional Climate Center at Cornell University, with an additional 15% added factor of safety as required by Env-Wq 1503.08(l).

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.

Section 2
Pre-Development Conditions

To analyze the pre-development condition, the site has been divided into one (1) distinct points of analysis (PA-1). This point of analysis and watershed is depicted on the plan entitled "Pre-Development Watershed Plan", Sheet C-801.

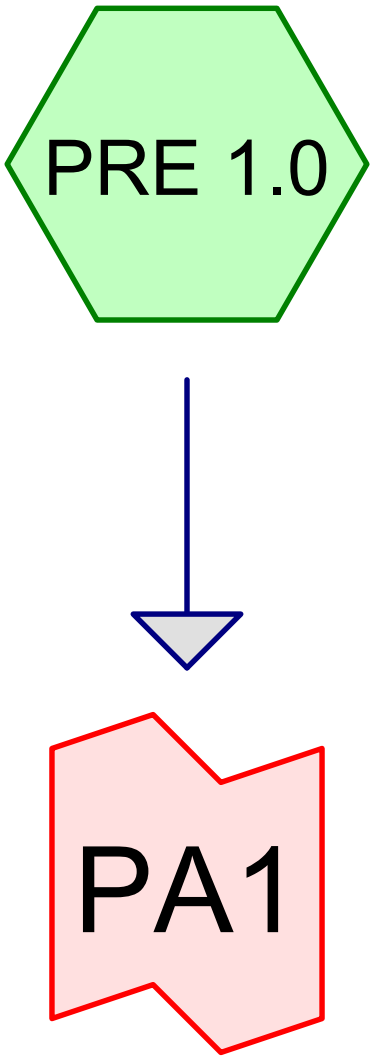
The point of analysis and its contributing watershed areas are described below:

Point of Analysis (PA-1)

Pre-development Watershed 1.0 (PRE 1.0) is comprised of mostly impervious surfaces from paved parking and structures, as well as some disturbed forested areas to the northeast, and a run down pier. Banks along the shoreline of North Mill Pond consist of lawn, various species associated with disturbed sites, and rip rap slope. Runoff from this watershed area travels via overland flow or underground drainage system to discharge into North Mill Pond. The runoff is currently untreated before discharge.

2.1 Pre-Development Calculations

2.2 Pre-Development Watershed Plans



POINT OF ANALYSIS 1

Subcat Reach Pond Link

Routing Diagram for P-0595-007 PRE
Prepared by Tighe & Bond, Printed 3/19/2021
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.007	39	>75% Grass cover, Good, HSG A (PRE 1.0)
0.628	74	>75% Grass cover, Good, HSG C (PRE 1.0)
1.117	98	Paved parking, HSG C (PRE 1.0)
0.068	98	Rock embankment, HSG C (PRE 1.0)
0.456	98	Roofs, HSG C (PRE 1.0)
0.056	98	Unconnected pavement, HSG A (PRE 1.0)
0.204	70	Woods, Good, HSG C (PRE 1.0)
2.537	**90**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.063	HSG A	PRE 1.0
0.000	HSG B	
2.474	HSG C	PRE 1.0
0.000	HSG D	
0.000	Other	
2.537		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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=110,529 sf 66.92% Impervious Runoff Depth=2.62"
Flow Length=189' Tc=5.0 min CN=90 Runoff=7.82 cfs 0.553 af

Link PA1: POINT OF ANALYSIS1 Inflow=7.82 cfs 0.553 af
Primary=7.82 cfs 0.553 af

Total Runoff Area = 2.537 ac Runoff Volume = 0.553 af Average Runoff Depth = 2.62"
33.08% Pervious = 0.839 ac 66.92% Impervious = 1.698 ac

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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=110,529 sf 66.92% Impervious Runoff Depth=4.45"
Flow Length=189' Tc=5.0 min CN=90 Runoff=12.94 cfs 0.940 af

Link PA1: POINT OF ANALYSIS1 Inflow=12.94 cfs 0.940 af
Primary=12.94 cfs 0.940 af

Total Runoff Area = 2.537 ac Runoff Volume = 0.940 af Average Runoff Depth = 4.45"
33.08% Pervious = 0.839 ac 66.92% Impervious = 1.698 ac

Summary for Subcatchment PRE 1.0:

Runoff = 12.94 cfs @ 12.07 hrs, Volume= 0.940 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

	Area (sf)	CN	Description
	2,435	98	Unconnected pavement, HSG A
	317	39	>75% Grass cover, Good, HSG A
	19,880	98	Roofs, HSG C
	27,362	74	>75% Grass cover, Good, HSG C
	8,883	70	Woods, Good, HSG C
*	2,980	98	Rock embankment, HSG C
	48,672	98	Paved parking, HSG C
	110,529	90	Weighted Average
	36,562		33.08% Pervious Area
	73,967		66.92% Impervious Area
	2,435		3.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	33	0.0280	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.9	121	0.0250	2.37		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	35	0.1400	5.61		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.4	189	Total, Increased to minimum Tc = 5.0 min			

Summary for Link PA1: POINT OF ANALYSIS 1

Inflow Area = 2.537 ac, 66.92% Impervious, Inflow Depth = 4.45" for 10 Year Storm event
Inflow = 12.94 cfs @ 12.07 hrs, Volume= 0.940 af
Primary = 12.94 cfs @ 12.07 hrs, Volume= 0.940 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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=110,529 sf 66.92% Impervious Runoff Depth=5.90"
Flow Length=189' Tc=5.0 min CN=90 Runoff=16.90 cfs 1.248 af

Link PA1: POINT OF ANALYSIS1 Inflow=16.90 cfs 1.248 af
Primary=16.90 cfs 1.248 af

Total Runoff Area = 2.537 ac Runoff Volume = 1.248 af Average Runoff Depth = 5.90"
33.08% Pervious = 0.839 ac 66.92% Impervious = 1.698 ac

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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=110,529 sf 66.92% Impervious Runoff Depth=7.28"
Flow Length=189' Tc=5.0 min CN=90 Runoff=20.59 cfs 1.539 af

Link PA1: POINT OF ANALYSIS1 Inflow=20.59 cfs 1.539 af
Primary=20.59 cfs 1.539 af

Total Runoff Area = 2.537 ac Runoff Volume = 1.539 af Average Runoff Depth = 7.28"
33.08% Pervious = 0.839 ac 66.92% Impervious = 1.698 ac

LEGEND

PRE-DEVELOPMENT WATERSHED BOUNDARY

LONGEST FLOW PATH

PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION

PA-1 — POINT OF ANALYSIS

SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE	HSG
100*/afaaa	UDORTHENTS, WET SUBSTRATUM /EXCESSIVELY DRAINED	A
100*/dfccc	UDORTHENTS, WET SUBSTRATUM /MODERATELY WELL DRAINED	C

* INDICATES THE LOCATION OF THE SLOPE CLASS IDENTIFIER (A-F)

A - 0-3% C - 8-15% E - 25-50%
B - 3-8% D - 15-25% F - >50%

NOTES:

1. HYDROLOGIC SOIL GROUPS FOR DISTURBED SOILS WERE BASED ON MOST SIMILAR SOIL SERIES LISTED IN *KSAT VALUES FOR NH SOILS*, SSSNNE SPECIAL PUBLICATION NO. 5, 2009.
2. FIELDWORK FOR THIS MAP WAS CONDUCTED BY LEONARD A. LORD, PHD, NHCSS #19 ON OCTOBER 22, 2019.
3. THIS DETAILED SITE SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, *SITE SPECIFIC SOIL MAPPING STANDARDS FOR NH AND VT.*
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

PA-1

100A/afaaa

100A/dfccc

8.25' VEGETATED BUFFER

50' WATERFRONT BUFFER

IMPERVIOUS

PRE 1.0

100A/dfccc

4" PVC INV.=6.8'

100' TIDAL BUFFER ZONE

ZONE AE

ZONE X

IMPERVIOUS

MAPLEWOOD AVE

RAYNES AVE

DMH 4275

MH 4046

DMH 4837

CB 4270

CB 4410

DMH 4839

Tighe&Bond

0 20' 40'

GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-HYDRO.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Last Saved: 11/18/2021
Plotted: Thursday, Nov 18, 2021 - 10:54am By: CKrzcsiak
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-HYDRO.dwg

Section 3
Post-Development Conditions

The post-development condition was analyzed by dividing the watersheds into seven (7) watershed areas. Stormwater runoff from these sub-catchment areas flow via subsurface drainage systems prior to discharging to North Mill Pond. Like the pre-development condition, flows from these sub-catchment areas are modeled at one point of analysis at North Mill Pond (PA-1). As per Env-Wq 1507.06(d), since North Mill Pond is tidal water the peak runoff control requirements do not apply. However, the peak runoff requirements have been met due to the onsite underground detention basin and these comparisons can be found in Section 4 of this report.

Two underground detention system are included on the development site for the purpose of mitigating temperature differences between the stormwater runoff and the North Mill Pond. The detention systems and outlet structures have been sized to detain the WQV with a drain down time of 24 hours, prior to discharging to the treatment units. This detention basin is used to mitigate increased temperature of the initial surface runoff. Flows greater than the 2-year storm event are designed to bypass the treatment unit.

The point of analysis (PA-1) and its sub-catchment areas are depicted on the plan entitled "Post-Development Watershed Plan," Sheet C-802. The point of analysis and it's contributing watershed areas are described below:

Point of Analysis (PA-1)

Post-development Watershed 1.1 (POST 1.1) is comprised of mostly the southern building and associated impervious areas on the south end of the site. Runoff from this watershed area travels via overland flow or roof leader to deep sump catch basins and an underground detention system. The detention system and outlet structure have been sized to detain the WQV with a drain down time greater than 24 hours, prior to discharging to the treatment unit, a Contech Jellyfish Stormwater Filter (JFF-1). Flows exiting the Jellyfish Filter discharge to North Mill Pond (PA-1). The pipe network is protected by a backflow preventer within the outlet invert of a manhole structure at the most downstream location.

Post-development Watershed 1.2 (POST 1.2) like POST 1.1, is comprised of mostly the northern building and associated impervious areas on the north side of the site. Runoff from this watershed area travels via overland flow or roof leader to deep sump catch basins and an underground detention system. The detention system and outlet structure have been sized to detain the WQV with a drain down time greater than 24 hours, prior to discharging to the treatment unit, a Contech Jellyfish Stormwater Filter (JFF-2). Flows exiting the Jellyfish Filter discharge to North Mill Pond (PA-1). As previously stated, the pipe network is protected by a backflow preventer within the outlet invert of a manhole structure at the most downstream location.

Post-development Watershed 1.3 (POST 1.3) is comprised mostly of porous pavement multi use path located between the proposed development and the North Mill Pond as well as some grassed landscape areas. Runoff from the watershed infiltrates through the filter media section under the porous pavement and discharges to an underdrain. Due to the poor onsite soils and high groundwater elevation the porous pavement section has been lined with an impermeable liner and an underdrain has been provided. The underdrain connects to the closed drainage system on site, ultimately discharging to the North Mill Pond.

Post-development Watershed 1.4 (POST 1.4) is nearly identical to POST 1.3 and is comprised mostly of porous pavement multi use path located between the proposed development and the North Mill Pond as well as some grassed landscape areas. Runoff from the watershed infiltrates through the filter media section under the porous pavement and discharges to an underdrain. Due to the poor onsite soils and high groundwater elevation the porous pavement section has been lined with an impermeable liner and an underdrain has been provided. The underdrain also connects to the closed drainage system on site, ultimately discharging to the North Mill Pond.

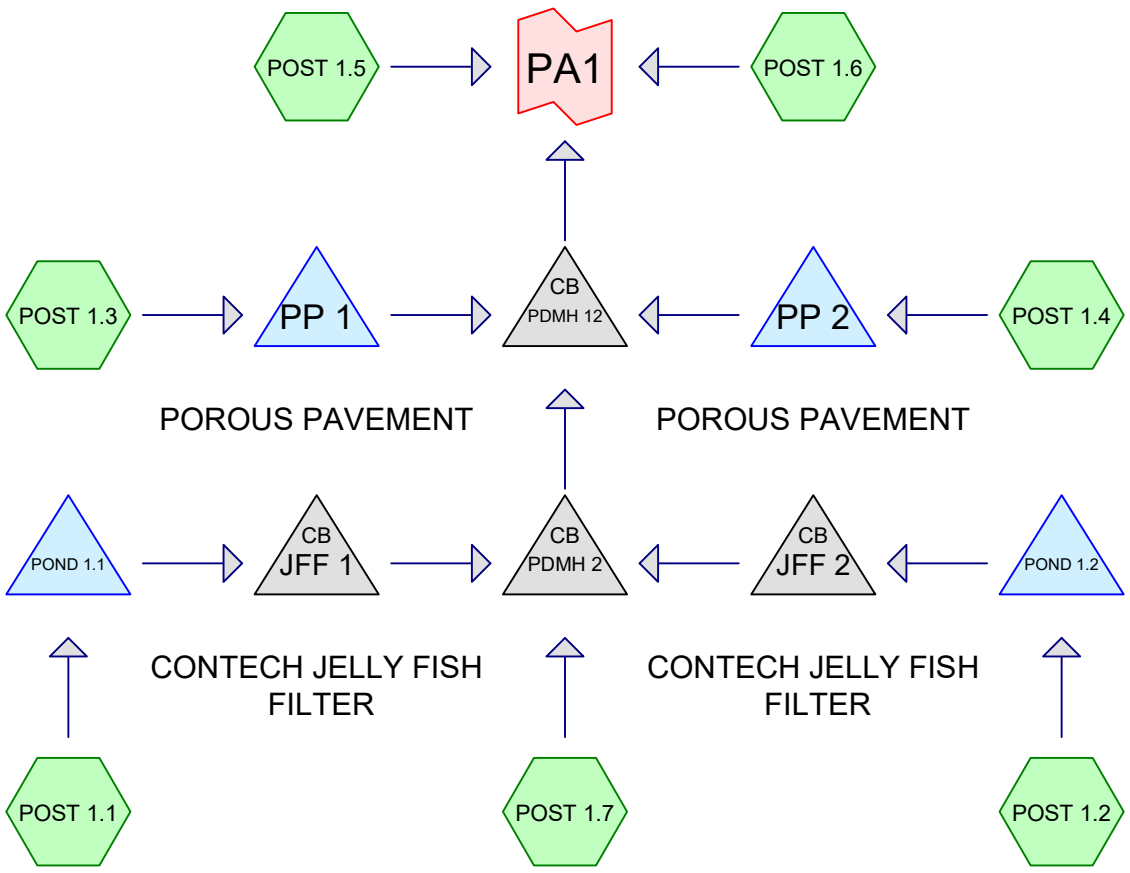
Post-development Watershed 1.5 (POST 1.5) is comprised mostly of grassy areas and a proposed boat/kayak launch and reconstructed timber pier. Runoff from this watershed simply sheets toward and discharges into North Mill Pond, as in the existing condition. There are no proposed impervious surfaces that are within this watershed area that would require treatment.

Post-development Watershed 1.6 (POST 1.6) is also comprised mostly of grassy area along the northern side of the property. Runoff from this watershed simply sheets north and discharges into North Mill Pond, as in the existing condition. There are no proposed impervious surfaces that are within this watershed area that would require treatment.

Post-development Watershed 1.7 (POST 1.7) is comprised of a small strip of sidewalk and landscaping in between the proposed buildings and the city right of way along Raynes Ave. The runoff from this Subcatchment sheets directly onto the street to the existing closed drainage system, ultimately discharging to North Mill Pond via the previously mentioned drainage system.

3.1 Post-Development Calculations

3.2 Post-Development Watershed Plans



Subcat Reach Pond Link

Routing Diagram for P-0595-007 POST
Prepared by Tighe & Bond, Printed 11/18/2021
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.007	39	>75% Grass cover, Good, HSG A (POST 1.3, POST 1.5)
0.735	74	>75% Grass cover, Good, HSG C (POST 1.1, POST 1.2, POST 1.3, POST 1.4, POST 1.5, POST 1.6, POST 1.7)
0.056	98	Paved parking, HSG A (POST 1.3, POST 1.5)
0.924	98	Paved parking, HSG C (POST 1.1, POST 1.2, POST 1.3, POST 1.4, POST 1.5, POST 1.7)
0.068	98	Rock embankment, HSG C (POST 1.5)
0.749	98	Roofs, HSG C (POST 1.1, POST 1.2)
2.540	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.063	HSG A	POST 1.3, POST 1.5
0.000	HSG B	
2.476	HSG C	POST 1.1, POST 1.2, POST 1.3, POST 1.4, POST 1.5, POST 1.6, POST 1.7
0.000	HSG D	
0.000	Other	
2.540		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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

Subcatchment POST 1.1: Runoff Area=29,222 sf 90.60% Impervious Runoff Depth=3.22"
Flow Length=74' Tc=5.0 min CN=96 Runoff=2.39 cfs 0.180 af

Subcatchment POST 1.2: Runoff Area=39,564 sf 93.83% Impervious Runoff Depth=3.33"
Flow Length=85' Tc=5.0 min CN=97 Runoff=3.28 cfs 0.252 af

Subcatchment POST 1.3: Runoff Area=14,222 sf 32.32% Impervious Runoff Depth=1.93"
Flow Length=45' Slope=0.1360 '/' Tc=5.0 min CN=82 Runoff=0.76 cfs 0.053 af

Subcatchment POST 1.4: Runoff Area=2,858 sf 27.68% Impervious Runoff Depth=1.86"
Flow Length=30' Slope=0.1330 '/' Tc=5.0 min CN=81 Runoff=0.15 cfs 0.010 af

Subcatchment POST 1.5: Runoff Area=17,643 sf 33.65% Impervious Runoff Depth=1.86"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=81 Runoff=0.90 cfs 0.063 af

Subcatchment POST 1.6: Runoff Area=2,896 sf 0.00% Impervious Runoff Depth=1.37"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.11 cfs 0.008 af

Subcatchment POST 1.7: Runoff Area=4,223 sf 79.54% Impervious Runoff Depth=2.91"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.32 cfs 0.024 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=3.17' Inflow=1.75 cfs 0.180 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=1.75 cfs 0.180 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=3.34' Inflow=3.02 cfs 0.252 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=3.02 cfs 0.252 af

Pond PDMH 12: Peak Elev=2.60' Inflow=5.37 cfs 0.519 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=5.37 cfs 0.519 af

Pond PDMH 2: Peak Elev=3.00' Inflow=4.96 cfs 0.456 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=4.96 cfs 0.456 af

Pond POND 1.1: Peak Elev=5.86' Storage=2,801 cf Inflow=2.39 cfs 0.180 af
Outflow=1.75 cfs 0.180 af

Pond POND 1.2: Peak Elev=6.37' Storage=3,450 cf Inflow=3.28 cfs 0.252 af
Outflow=3.02 cfs 0.252 af

Pond PP 1: POROUS PAVEMENT Peak Elev=5.27' Storage=602 cf Inflow=0.76 cfs 0.053 af
Outflow=0.35 cfs 0.052 af

Pond PP 2: POROUS PAVEMENT Peak Elev=5.08' Storage=60 cf Inflow=0.15 cfs 0.010 af
Outflow=0.11 cfs 0.010 af

Link PA1: Inflow=6.23 cfs 0.589 af
Primary=6.23 cfs 0.589 af

Total Runoff Area = 2.540 ac Runoff Volume = 0.589 af Average Runoff Depth = 2.78"
29.24% Pervious = 0.743 ac 70.76% Impervious = 1.797 ac

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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

Subcatchment POST 1.1: Runoff Area=29,222 sf 90.60% Impervious Runoff Depth=5.12"
Flow Length=74' Tc=5.0 min CN=96 Runoff=3.70 cfs 0.286 af

Subcatchment POST 1.2: Runoff Area=39,564 sf 93.83% Impervious Runoff Depth=5.24"
Flow Length=85' Tc=5.0 min CN=97 Runoff=5.05 cfs 0.396 af

Subcatchment POST 1.3: Runoff Area=14,222 sf 32.32% Impervious Runoff Depth=3.61"
Flow Length=45' Slope=0.1360 '/' Tc=5.0 min CN=82 Runoff=1.41 cfs 0.098 af

Subcatchment POST 1.4: Runoff Area=2,858 sf 27.68% Impervious Runoff Depth=3.51"
Flow Length=30' Slope=0.1330 '/' Tc=5.0 min CN=81 Runoff=0.28 cfs 0.019 af

Subcatchment POST 1.5: Runoff Area=17,643 sf 33.65% Impervious Runoff Depth=3.51"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=81 Runoff=1.70 cfs 0.119 af

Subcatchment POST 1.6: Runoff Area=2,896 sf 0.00% Impervious Runoff Depth=2.84"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.23 cfs 0.016 af

Subcatchment POST 1.7: Runoff Area=4,223 sf 79.54% Impervious Runoff Depth=4.78"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.52 cfs 0.039 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=3.65' Inflow=3.43 cfs 0.286 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=3.43 cfs 0.286 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=3.77' Inflow=4.80 cfs 0.396 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=4.80 cfs 0.396 af

Pond PDMH 12: Peak Elev=3.00' Inflow=9.44 cfs 0.838 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=9.44 cfs 0.838 af

Pond PDMH 2: Peak Elev=3.47' Inflow=8.73 cfs 0.721 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=8.73 cfs 0.721 af

Pond POND 1.1: Peak Elev=6.01' Storage=3,015 cf Inflow=3.70 cfs 0.286 af
Outflow=3.43 cfs 0.286 af

Pond POND 1.2: Peak Elev=6.51' Storage=3,623 cf Inflow=5.05 cfs 0.396 af
Outflow=4.80 cfs 0.396 af

Pond PP 1: POROUS PAVEMENT Peak Elev=5.56' Storage=1,049 cf Inflow=1.41 cfs 0.098 af
Outflow=0.62 cfs 0.098 af

Pond PP 2: POROUS PAVEMENT Peak Elev=5.22' Storage=103 cf Inflow=0.28 cfs 0.019 af
Outflow=0.17 cfs 0.019 af

Link PA1: Inflow=11.31 cfs 0.973 af
Primary=11.31 cfs 0.973 af

Total Runoff Area = 2.540 ac Runoff Volume = 0.973 af Average Runoff Depth = 4.60"
29.24% Pervious = 0.743 ac 70.76% Impervious = 1.797 ac

Summary for Subcatchment POST 1.1:

Runoff = 3.70 cfs @ 12.07 hrs, Volume= 0.286 af, Depth= 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
17,976	98	Roofs, HSG C
2,746	74	>75% Grass cover, Good, HSG C
8,500	98	Paved parking, HSG C
29,222	96	Weighted Average
2,746		9.40% Pervious Area
26,476		90.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0400	1.69		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.1	24	0.0360	3.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	74	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.2:

Runoff = 5.05 cfs @ 12.07 hrs, Volume= 0.396 af, Depth= 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
14,635	98	Roofs, HSG C
2,441	74	>75% Grass cover, Good, HSG C
22,488	98	Paved parking, HSG C
39,564	97	Weighted Average
2,441		6.17% Pervious Area
37,123		93.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0300	1.51		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.2	35	0.0270	3.34		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	85	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.3:

Runoff = 1.41 cfs @ 12.08 hrs, Volume= 0.098 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
200	98	Paved parking, HSG A
6	39	>75% Grass cover, Good, HSG A
9,619	74	>75% Grass cover, Good, HSG C
4,397	98	Paved parking, HSG C
14,222	82	Weighted Average
9,625		67.68% Pervious Area
4,597		32.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	45	0.1360	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
2.2	45	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.4:

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
2,067	74	>75% Grass cover, Good, HSG C
791	98	Paved parking, HSG C
2,858	81	Weighted Average
2,067		72.32% Pervious Area
791		27.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	30	0.1330	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
1.6	30	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.5:

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 0.119 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

	Area (sf)	CN	Description
	2,235	98	Paved parking, HSG A
	311	39	>75% Grass cover, Good, HSG A
*	2,980	98	Rock embankment, HSG C
	11,396	74	>75% Grass cover, Good, HSG C
	721	98	Paved parking, HSG C
	17,643	81	Weighted Average
	11,707		66.35% Pervious Area
	5,936		33.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	60	0.0520	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
4.1	60	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.6:

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
2,896	74	>75% Grass cover, Good, HSG C
0	98	Paved parking, HSG C
2,896	74	Weighted Average
2,896		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	37	0.0610	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
2.6	37	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.7:

Runoff = 0.52 cfs @ 12.07 hrs, Volume= 0.039 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
864	74	>75% Grass cover, Good, HSG C
3,359	98	Paved parking, HSG C
4,223	93	Weighted Average
864		20.46% Pervious Area
3,359		79.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0350	1.61		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.2	42	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	92	Total, Increased to minimum Tc = 5.0 min			

Summary for Pond JFF 1: CONTECH JELLY FISH FILTER

Inflow Area = 0.671 ac, 90.60% Impervious, Inflow Depth = 5.12" for 10 Year Storm event
Inflow = 3.43 cfs @ 12.10 hrs, Volume= 0.286 af
Outflow = 3.43 cfs @ 12.10 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.10 hrs, Volume= 0.286 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 3.65' @ 12.13 hrs
Flood Elev= 11.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	2.35'	**18.0" Round Culvert** L= 7.0' Ke= 0.500 Inlet / Outlet Invert= 2.35' / 2.20' S= 0.0214 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.60 cfs @ 12.10 hrs HW=3.59' TW=3.46' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.60 cfs @ 2.27 fps)

Summary for Pond JFF 2: CONTECH JELLY FISH FILTER

Inflow Area = 0.908 ac, 93.83% Impervious, Inflow Depth = 5.24" for 10 Year Storm event
Inflow = 4.80 cfs @ 12.10 hrs, Volume= 0.396 af
Outflow = 4.80 cfs @ 12.10 hrs, Volume= 0.396 af, Atten= 0%, Lag= 0.0 min
Primary = 4.80 cfs @ 12.10 hrs, Volume= 0.396 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 3.77' @ 12.13 hrs
Flood Elev= 11.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	2.40'	**18.0" Round Culvert** L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 2.40' / 2.30' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.91 cfs @ 12.10 hrs HW=3.71' TW=3.46' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.91 cfs @ 3.20 fps)

Summary for Pond PDMH 12:

Inflow Area = 2.068 ac, 80.31% Impervious, Inflow Depth = 4.86" for 10 Year Storm event
Inflow = 9.44 cfs @ 12.10 hrs, Volume= 0.838 af
Outflow = 9.44 cfs @ 12.10 hrs, Volume= 0.838 af, Atten= 0%, Lag= 0.0 min
Primary = 9.44 cfs @ 12.10 hrs, Volume= 0.838 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 3.00' @ 12.10 hrs
Flood Elev= 9.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	1.60'	**24.0" Round Culvert** L= 27.0' Ke= 0.500 Inlet / Outlet Invert= 1.60' / -0.30' S= 0.0704 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=9.23 cfs @ 12.10 hrs HW=2.98' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 9.23 cfs @ 4.00 fps)

Summary for Pond PDMH 2:

Inflow Area = 1.676 ac, 91.71% Impervious, Inflow Depth = 5.16" for 10 Year Storm event
Inflow = 8.73 cfs @ 12.10 hrs, Volume= 0.721 af
Outflow = 8.73 cfs @ 12.10 hrs, Volume= 0.721 af, Atten= 0%, Lag= 0.0 min
Primary = 8.73 cfs @ 12.10 hrs, Volume= 0.721 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 3.47' @ 12.11 hrs
Flood Elev= 10.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	1.80'	**24.0" Round Culvert** L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 1.80' / 1.70' S= 0.0029 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=8.32 cfs @ 12.10 hrs HW=3.46' TW=2.98' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 8.32 cfs @ 4.06 fps)

Summary for Pond POND 1.1:

Inflow Area = 0.671 ac, 90.60% Impervious, Inflow Depth = 5.12" for 10 Year Storm event
Inflow = 3.70 cfs @ 12.07 hrs, Volume= 0.286 af
Outflow = 3.43 cfs @ 12.10 hrs, Volume= 0.286 af, Atten= 7%, Lag= 1.8 min
Primary = 3.43 cfs @ 12.10 hrs, Volume= 0.286 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 6.01' @ 12.10 hrs Surf.Area= 2,496 sf Storage= 3,015 cf
Flood Elev= 7.25' Surf.Area= 2,496 sf Storage= 4,456 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 246.8 min (1,005.7 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	2.75'	0 cf	**27.13'W x 92.00'L x 5.50'H Field A** 13,726 cf Overall - 5,470 cf Embedded = 8,255 cf x 0.0% Voids
#2A	3.25'	4,566 cf	**ADS N-12 48"** x 16 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.86 sf x 20.00'L = 297.1 cf 4 Rows of 4 Chambers 24.13' Header x 12.40 sf x 2 = 598.3 cf Inside
		4,566 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	3.00'	**18.0" Round Culvert** L= 7.0' Ke= 0.500 Inlet / Outlet Invert= 3.00' / 2.85' S= 0.0214 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	3.00'	**1.1" Vert. Orifice/Grate** C= 0.600
#3	Device 1	5.60'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=3.36 cfs @ 12.10 hrs HW=6.00' TW=3.59' (Dynamic Tailwater)
↑**1=Culvert** (Passes 3.36 cfs of 12.76 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 7.48 fps)
3=Custom Weir/Orifice (Weir Controls 3.31 cfs @ 2.07 fps)

Summary for Pond POND 1.2:

Inflow Area = 0.908 ac, 93.83% Impervious, Inflow Depth = 5.24" for 10 Year Storm event
Inflow = 5.05 cfs @ 12.07 hrs, Volume= 0.396 af
Outflow = 4.80 cfs @ 12.10 hrs, Volume= 0.396 af, Atten= 5%, Lag= 1.5 min
Primary = 4.80 cfs @ 12.10 hrs, Volume= 0.396 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 6.51' @ 12.10 hrs Surf.Area= 2,424 sf Storage= 3,623 cf
Flood Elev= 7.25' Surf.Area= 2,424 sf Storage= 4,372 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 244.1 min (996.7 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	2.75'	0 cf	**33.67'W x 72.00'L x 5.50'H Field A** 13,332 cf Overall - 5,368 cf Embedded = 7,965 cf x 0.0% Voids
#2A	3.25'	4,481 cf	**ADS N-12 48"** x 15 Inside #1 Inside= 47.7"W x 47.7"H => 12.40 sf x 20.00'L = 248.0 cf Outside= 54.0"W x 54.0"H => 14.86 sf x 20.00'L = 297.1 cf 5 Rows of 3 Chambers 30.67' Header x 12.40 sf x 2 = 760.5 cf Inside
		4,481 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	3.05'	**18.0" Round Culvert** L= 6.0' Ke= 0.500 Inlet / Outlet Invert= 3.05' / 2.90' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	3.05'	**1.1" Vert. Orifice/Grate** C= 0.600
#3	Device 1	6.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=4.68 cfs @ 12.10 hrs HW=6.50' TW=3.71' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.68 cfs of 13.98 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.05 fps)
  └─**3=Custom Weir/Orifice** (Weir Controls 4.63 cfs @ 2.32 fps)

Summary for Pond PP 1: POROUS PAVEMENT

Inflow Area = 0.326 ac, 32.32% Impervious, Inflow Depth = 3.61" for 10 Year Storm event
Inflow = 1.41 cfs @ 12.08 hrs, Volume= 0.098 af
Outflow = 0.62 cfs @ 12.26 hrs, Volume= 0.098 af, Atten= 56%, Lag= 10.9 min
Primary = 0.62 cfs @ 12.26 hrs, Volume= 0.098 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 5.56' @ 12.26 hrs Surf.Area= 3,857 sf Storage= 1,049 cf
Flood Elev= 8.80' Surf.Area= 3,857 sf Storage= 2,615 cf

Plug-Flow detention time= 52.9 min calculated for 0.098 af (100% of inflow)
Center-of-Mass det. time= 51.7 min (862.5 - 810.8)

Volume	Invert	Avail.Storage	Storage Description
#1	4.88'	2,615 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.88	3,857	0.0	0	0
5.95	3,857	40.0	1,651	1,651
6.95	3,857	10.0	386	2,036
7.45	3,857	30.0	579	2,615
7.80	3,857	0.0	0	2,615

Device	Routing	Invert	Outlet Devices
#1	Primary	4.88'	**6.0" Vert. Underdrain** C= 0.600
#2	Device 1	4.88'	**10.000 in/hr Filter Media Infiltration over Surface area**

Primary OutFlow Max=0.62 cfs @ 12.26 hrs HW=5.56' TW=2.58' (Dynamic Tailwater)
└─**1=Underdrain** (Orifice Controls 0.62 cfs @ 3.15 fps)
  └─**2=Filter Media Infiltration** (Passes 0.62 cfs of 0.89 cfs potential flow)

Summary for Pond PP 2: POROUS PAVEMENT

Inflow Area = 0.066 ac, 27.68% Impervious, Inflow Depth = 3.51" for 10 Year Storm event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.17 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 37%, Lag= 0.2 min
Primary = 0.17 cfs @ 12.08 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 5.22' @ 12.17 hrs Surf.Area= 755 sf Storage= 103 cf
Flood Elev= 8.80' Surf.Area= 755 sf Storage= 512 cf

Plug-Flow detention time= 21.5 min calculated for 0.019 af (100% of inflow)
Center-of-Mass det. time= 21.1 min (834.6 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	4.88'	512 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.88	755	0.0	0	0
5.95	755	40.0	323	323
6.95	755	10.0	76	399
7.45	755	30.0	113	512
7.80	755	0.0	0	512

Device	Routing	Invert	Outlet Devices
#1	Primary	4.88'	**6.0" Vert. Underdrain** C= 0.600
#2	Device 1	4.88'	**10.000 in/hr Filter Media Infiltration over Surface area**

Primary OutFlow Max=0.17 cfs @ 12.08 hrs HW=5.17' TW=2.98' (Dynamic Tailwater)
└─**1=Underdrain** (Passes 0.17 cfs of 0.21 cfs potential flow)
└─**2=Filter Media Infiltration** (Exfiltration Controls 0.17 cfs)

Summary for Link PA1:

Inflow Area = 2.540 ac, 70.76% Impervious, Inflow Depth = 4.60" for 10 Year Storm event
Inflow = 11.31 cfs @ 12.09 hrs, Volume= 0.973 af
Primary = 11.31 cfs @ 12.09 hrs, Volume= 0.973 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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

Subcatchment POST 1.1: Runoff Area=29,222 sf 90.60% Impervious Runoff Depth=6.60"
Flow Length=74' Tc=5.0 min CN=96 Runoff=4.71 cfs 0.369 af

Subcatchment POST 1.2: Runoff Area=39,564 sf 93.83% Impervious Runoff Depth=6.72"
Flow Length=85' Tc=5.0 min CN=97 Runoff=6.42 cfs 0.509 af

Subcatchment POST 1.3: Runoff Area=14,222 sf 32.32% Impervious Runoff Depth=4.99"
Flow Length=45' Slope=0.1360 '/' Tc=5.0 min CN=82 Runoff=1.92 cfs 0.136 af

Subcatchment POST 1.4: Runoff Area=2,858 sf 27.68% Impervious Runoff Depth=4.88"
Flow Length=30' Slope=0.1330 '/' Tc=5.0 min CN=81 Runoff=0.38 cfs 0.027 af

Subcatchment POST 1.5: Runoff Area=17,643 sf 33.65% Impervious Runoff Depth=4.88"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=81 Runoff=2.34 cfs 0.165 af

Subcatchment POST 1.6: Runoff Area=2,896 sf 0.00% Impervious Runoff Depth=4.11"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.33 cfs 0.023 af

Subcatchment POST 1.7: Runoff Area=4,223 sf 79.54% Impervious Runoff Depth=6.25"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.67 cfs 0.050 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=4.01' Inflow=4.41 cfs 0.369 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=4.41 cfs 0.369 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=4.22' Inflow=6.16 cfs 0.509 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=6.16 cfs 0.509 af

Pond PDMH 12: Peak Elev=3.24' Inflow=12.07 cfs 1.091 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=12.07 cfs 1.091 af

Pond PDMH 2: Peak Elev=3.77' Inflow=11.22 cfs 0.928 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=11.22 cfs 0.928 af

Pond POND 1.1: Peak Elev=6.08' Storage=3,120 cf Inflow=4.71 cfs 0.369 af
Outflow=4.41 cfs 0.369 af

Pond POND 1.2: Peak Elev=6.60' Storage=3,737 cf Inflow=6.42 cfs 0.509 af
Outflow=6.16 cfs 0.509 af

Pond PP 1: POROUS PAVEMENT Peak Elev=5.82' Storage=1,444 cf Inflow=1.92 cfs 0.136 af
Outflow=0.78 cfs 0.136 af

Pond PP 2: POROUS PAVEMENT Peak Elev=5.44' Storage=170 cf Inflow=0.38 cfs 0.027 af
Outflow=0.17 cfs 0.027 af

Link PA1: Inflow=14.67 cfs 1.278 af
Primary=14.67 cfs 1.278 af

Total Runoff Area = 2.540 ac Runoff Volume = 1.278 af Average Runoff Depth = 6.04"
29.24% Pervious = 0.743 ac 70.76% Impervious = 1.797 ac

Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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

Subcatchment POST 1.1: Runoff Area=29,222 sf 90.60% Impervious Runoff Depth=8.00"
Flow Length=74' Tc=5.0 min CN=96 Runoff=5.67 cfs 0.447 af

Subcatchment POST 1.2: Runoff Area=39,564 sf 93.83% Impervious Runoff Depth=8.12"
Flow Length=85' Tc=5.0 min CN=97 Runoff=7.70 cfs 0.615 af

Subcatchment POST 1.3: Runoff Area=14,222 sf 32.32% Impervious Runoff Depth=6.32"
Flow Length=45' Slope=0.1360 '/' Tc=5.0 min CN=82 Runoff=2.41 cfs 0.172 af

Subcatchment POST 1.4: Runoff Area=2,858 sf 27.68% Impervious Runoff Depth=6.20"
Flow Length=30' Slope=0.1330 '/' Tc=5.0 min CN=81 Runoff=0.48 cfs 0.034 af

Subcatchment POST 1.5: Runoff Area=17,643 sf 33.65% Impervious Runoff Depth=6.20"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=81 Runoff=2.94 cfs 0.209 af

Subcatchment POST 1.6: Runoff Area=2,896 sf 0.00% Impervious Runoff Depth=5.36"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.43 cfs 0.030 af

Subcatchment POST 1.7: Runoff Area=4,223 sf 79.54% Impervious Runoff Depth=7.64"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.81 cfs 0.062 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=4.50' Inflow=5.36 cfs 0.447 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=5.36 cfs 0.447 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=4.72' Inflow=7.44 cfs 0.615 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=7.44 cfs 0.615 af

Pond PDMH 12: Peak Elev=3.50' Inflow=14.54 cfs 1.329 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=14.54 cfs 1.329 af

Pond PDMH 2: Peak Elev=4.22' Inflow=13.58 cfs 1.124 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=13.58 cfs 1.124 af

Pond POND 1.1: Peak Elev=6.15' Storage=3,214 cf Inflow=5.67 cfs 0.447 af
Outflow=5.36 cfs 0.447 af

Pond POND 1.2: Peak Elev=6.68' Storage=3,832 cf Inflow=7.70 cfs 0.615 af
Outflow=7.44 cfs 0.615 af

Pond PP 1: POROUS PAVEMENT Peak Elev=6.47' Storage=1,851 cf Inflow=2.41 cfs 0.172 af
Outflow=0.89 cfs 0.172 af

Pond PP 2: POROUS PAVEMENT Peak Elev=5.72' Storage=254 cf Inflow=0.48 cfs 0.034 af
Outflow=0.17 cfs 0.034 af

Link PA1: Inflow=17.83 cfs 1.568 af
Primary=17.83 cfs 1.568 af

Total Runoff Area = 2.540 ac Runoff Volume = 1.568 af Average Runoff Depth = 7.41"
29.24% Pervious = 0.743 ac 70.76% Impervious = 1.797 ac

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 (HSG) LEGEND

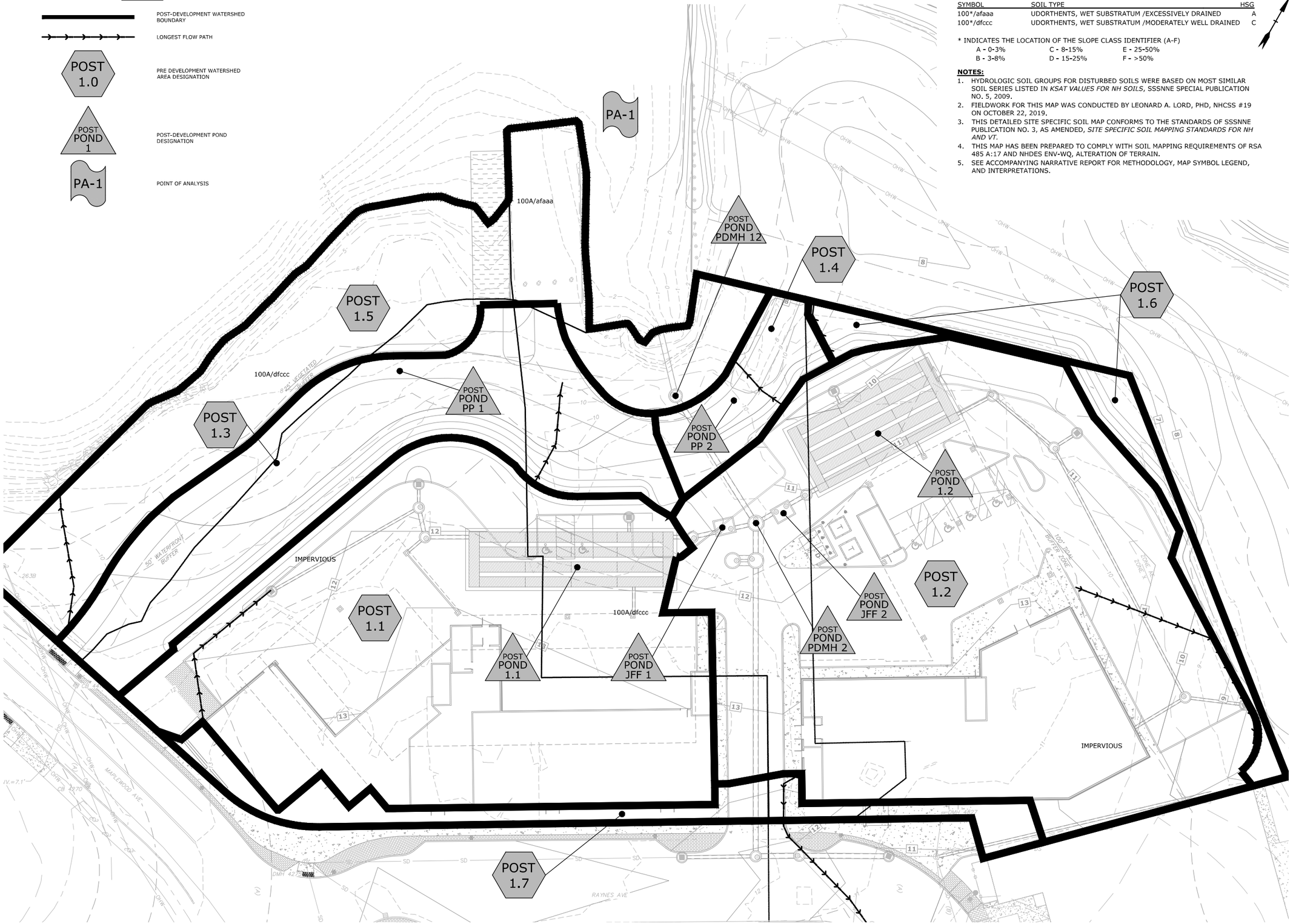
SYMBOL	SOIL TYPE	HSG
100*/afaaa	UDORTHENTS, WET SUBSTRATUM /EXCESSIVELY DRAINED	A
100*/dfccc	UDORTHENTS, WET SUBSTRATUM /MODERATELY WELL DRAINED	C

* INDICATES THE LOCATION OF THE SLOPE CLASS IDENTIFIER (A-F)

A - 0-3% B - 3-8% C - 8-15% D - 15-25% E - 25-50% F - >50%

NOTES:

1. HYDROLOGIC SOIL GROUPS FOR DISTURBED SOILS WERE BASED ON MOST SIMILAR SOIL SERIES LISTED IN *KSAT VALUES FOR NH SOILS*, SSSNNE SPECIAL PUBLICATION NO. 5, 2009.
2. FIELDWORK FOR THIS MAP WAS CONDUCTED BY LEONARD A. LORD, PHD, NHCSS #19 ON OCTOBER 22, 2019.
3. THIS DETAILED SITE SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, *SITE SPECIFIC SOIL MAPPING STANDARDS FOR NH AND VT*.
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.



Tighe&Bond

0 20' 40'

GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-HYDRO.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Saved: 11/19/2021
Plotted: Fri, Nov 19, 2021 - 10:29am By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-HYDRO.dwg

Section 4
Peak Rate Comparison

The following table summarizes and compares the pre- and post-development peak runoff rates from the 2-year, 10-year, 25-year and 50-year storm events at the point of analysis.

Table 4.1
Comparison of Pre- and Post-Development Flows (CFS)

	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed				
PA-1	7.82	12.94	16.90	20.59
Post-Development Watershed				
PA-1	6.23	11.31	14.67	17.83

Section 5
Mitigation Description

The stormwater management system has been designed to provide stormwater treatment as required by the City of Portsmouth Site Review Regulations and NHDES AoT Regulations (Env-Wq 1500).

5.1 Pre-Treatment Methods for Protecting Water Quality

Pre-treatment for the stormwater filtration systems consist of deep sump catch basins.

5.2 Treatment Methods for Protecting Water Quality.

The runoff from proposed impervious areas will be treated by various Contech Jellyfish stormwater filtration systems. These Jellyfish systems are sized to treat the Water Quality Flows of their respective subcatchment areas. Each system is outfitted with an internal bypass that diverts peak flows away from treatment. The BMP worksheet for these treatment practices have been included in Section 5 of this report.

The multiuse path along the North Mill Pond will be constructed as lined porous pavement with and underdrain. The underdrain will discharge to the closed drainage system prior to discharging to the Pond.

Table 5.1 – Pollutant Removal Efficiencies

BMP	Total Suspended Solids	Total Nitrogen	Total Phosphorus
Jellyfish Filter w/Pretreatment[1]	91%	53%	61%
Porous Pavement w/Underdrain[2]	90%	10%	45%

1. Pollutant removal calculations for Jellyfish Filter with deep sump catchbasin pretreatment shown in Table 4.2.
2. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.

Table 5.2 – Pollutant Removal Calculations				
Contech Jellyfish Filter				
BMP	TSS Removal Rate	Starting TSS Load	TSS Removed	Remaining TSS Load
Deep Sump Catchbasin w/Hood[1]	0.15	1.00	0.15	0.85
Jellyfish Filter[2]	0.89	0.85	0.76	0.09
	Total Suspended Solids Removed:			**91%**
	TN Removal Rate	Starting TN Load	TN Removed	Remaining TN Load
Deep Sump Catchbasin w/Hood[1]	0.05	1.00	0.05	0.95
Jellyfish Filter[2]	0.51	0.95	0.48	0.47
	Total Nitrogen Removed:			**53%**
	TP Removal Rate	Starting TP Load	TP Removed	Remaining TP Load
Deep Sump Catchbasin w/Hood[1]	0.05	1.00	0.05	0.95
Jellyfish Filter[2]	0.59	0.95	0.56	0.39
	Total Phosphorus Removed:			**61%**

1. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix E.
2. Pollutant removal efficiencies from Contech Engineered Solutions, Jellyfish Filter Stormwater Treatment performance testing results.

Section 6
BMP Worksheets and Sizing Memos

GENERAL CALCULATIONS - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.67	ac	A = Area draining to the practice
0.60	ac	A_I = Impervious area draining to the practice
0.90	decimal	I = Percent impervious area draining to the practice, in decimal form
0.86	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.57	ac-in	WQV= 1" x Rv x A
2,082	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".
0.86	inches	Q = Water quality depth. Q = WQV/A
99	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.1	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.027	inches	Ia = Initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
640.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.574	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: POST 1.1

JFF-1

Peak Flow = 5.36 cfs

CONTECH Stormwater Solutions Inc. Engineer: DRA
Date Prepared: **3/16/2021**

Site Information

Project Name	**Proposed Mixed Use Dev - JFF1**	
Project State	**NH**	
Project City	**Portsmouth**	
Total Drainage Area, Ad	**0.87**	ac
Post Development Impervious Area, Ai	**0.68**	ac
Pervious Area, Ap	**0.19**	ac
% Impervious	**78%**	
Runoff Coefficient, Rc	**0.75**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**107076**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M total	**501.04**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**54**	in

Jelly Fish Sizing

Mass to be Captured by System	**400.83**	lbs
Water Quality Flow	**0.66**	cfs

Method to Use **FLOW BASED**

Summary			
Flow	Treatment Flow Rate	0.80	cfs
	Required Size	**JFPD0806-4-1**	

GENERAL CALCULATIONS - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.91	ac	A = Area draining to the practice
0.85	ac	A_I = Impervious area draining to the practice
0.94	decimal	I = Percent impervious area draining to the practice, in decimal form
0.89	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.81	ac-in	WQV= 1" x Rv x A
2,955	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".
0.89	inches	Q = Water quality depth. Q = WQV/A
99	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.1	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.019	inches	Ia = Initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
640.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.814	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: POST 1.2

JFF 2

Peak Flow = 7.44 cfs

CONTECH Stormwater Solutions Inc. Engineer: DRA
Date Prepared: **3/16/2021**

Site Information

Project Name	**Proposed Mixed Use Dev- JFF2**	
Project State	**NH**	
Project City	**Portsmouth**	
Total Drainage Area, Ad	**0.86**	ac
Post Development Impervious Area, Ai	**0.83**	ac
Pervious Area, Ap	**0.03**	ac
% Impervious	**97%**	
Runoff Coefficient, Rc	**0.92**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**129047**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M total	**603.85**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**54**	in

Jelly Fish Sizing

Mass to be Captured by System	**483.08**	lbs
Water Quality Flow	**0.79**	cfs

Method to Use **FLOW BASED**

Summary			
Flow	Treatment Flow Rate	0.80	cfs
	Required Size	**JFPD0806-4-1**	

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **PP-1**

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).	
0.32	ac	A = Area draining to the practice	
0.11	ac	A_I = Impervious area draining to the practice	
0.34	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.36	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.12	ac-in	WQV= 1" x Rv x A	
417	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
104	cf	25% x WQV (check calc for sediment forebay volume)	
313	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:			
3,857	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
YES	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
5.18	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.23	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
1.01	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
5.95	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
4.88	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)	
1.07	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
5.95	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
5.95	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
6.47	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
7.80	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**
	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:			
Asphalt		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.1	acres	A_{SA} = Surface area of the pervious pavement	
3.6	: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	C-505	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:

Stage-Area-Storage for Pond PP 1: POROUS PAVEMENT

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.88	**3,857**	0
4.93	3,857	77
4.98	3,857	154
5.03	3,857	231
5.08	3,857	309
5.13	3,857	386
5.18	3,857	463
5.23	3,857	540
5.28	3,857	617
5.33	3,857	694
5.38	3,857	771
5.43	3,857	849
5.48	3,857	926
5.53	3,857	1,003
5.58	3,857	1,080
5.63	3,857	1,157
5.68	3,857	1,234
5.73	3,857	1,311
5.78	3,857	1,389
5.83	3,857	1,466
5.88	3,857	1,543
5.93	3,857	1,620
5.98	3,857	1,662
6.03	3,857	1,682
6.08	3,857	1,701
6.13	3,857	1,720
6.18	3,857	1,740
6.23	3,857	1,759
6.28	3,857	1,778
6.33	3,857	1,797
6.38	3,857	1,817
6.43	3,857	1,836
6.48	3,857	1,855
6.53	3,857	1,875
6.58	3,857	1,894
6.63	3,857	1,913
6.68	3,857	1,932
6.73	3,857	1,952
6.78	3,857	1,971
6.83	3,857	1,990
6.88	3,857	2,009
6.93	3,857	2,029
6.98	3,857	2,071
7.03	3,857	2,129
7.08	3,857	2,187
7.13	3,857	2,245
7.18	3,857	2,303
7.23	3,857	2,360
7.28	3,857	2,418
7.33	3,857	2,476
7.38	3,857	2,534
7.43	3,857	**2,592**
7.48	3,857	**2,615**
7.53	3,857	2,615
7.58	3,857	2,615
7.63	3,857	2,615
7.68	3,857	2,615
7.73	3,857	2,615
7.78	3,857	2,615
7.83	3,857	2,615
7.88	3,857	2,615
7.93	3,857	2,615
7.98	3,857	2,615
8.03	3,857	2,615
8.08	3,857	2,615
8.13	3,857	2,615
8.18	3,857	2,615
8.23	3,857	2,615
8.28	3,857	2,615
8.33	3,857	2,615
8.38	3,857	2,615
8.43	3,857	2,615
8.48	3,857	2,615
8.53	3,857	2,615
8.58	3,857	2,615
8.63	3,857	2,615
8.68	3,857	2,615
8.73	3,857	2,615
8.78	3,857	2,615

Stage-Discharge for Pond PP 1: POROUS PAVEMENT

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
4.88	0.00	5.92	0.84	6.96	0.89	8.00	0.89
4.90	0.00	5.94	0.85	6.98	0.89	8.02	0.89
4.92	0.01	5.96	0.86	7.00	0.89	8.04	0.89
4.94	0.01	5.98	0.87	7.02	0.89	8.06	0.89
4.96	0.02	6.00	0.88	7.04	0.89	8.08	0.89
4.98	0.03	6.02	**0.89**	7.06	0.89	8.10	0.89
5.00	0.04	6.04	**0.89**	7.08	0.89	8.12	0.89
5.02	0.06	6.06	0.89	7.10	0.89	8.14	0.89
5.04	0.07	6.08	0.89	7.12	0.89	8.16	0.89
5.06	0.09	6.10	0.89	7.14	0.89	8.18	0.89
5.08	0.11	6.12	0.89	7.16	0.89	8.20	0.89
5.10	0.13	6.14	0.89	7.18	0.89	8.22	0.89
5.12	0.16	6.16	0.89	7.20	0.89	8.24	0.89
5.14	0.18	6.18	0.89	7.22	0.89	8.26	0.89
5.16	0.20	6.20	0.89	7.24	0.89	8.28	0.89
5.18	0.23	6.22	0.89	7.26	0.89	8.30	0.89
5.20	0.26	6.24	0.89	7.28	0.89	8.32	0.89
5.22	0.28	6.26	0.89	7.30	0.89	8.34	0.89
5.24	0.31	6.28	0.89	7.32	0.89	8.36	0.89
5.26	0.34	6.30	0.89	7.34	0.89	8.38	0.89
5.28	0.36	6.32	0.89	7.36	0.89	8.40	0.89
5.30	0.39	6.34	0.89	7.38	0.89	8.42	0.89
5.32	0.41	6.36	0.89	7.40	0.89	8.44	0.89
5.34	0.44	6.38	0.89	7.42	0.89	8.46	0.89
5.36	0.46	6.40	0.89	7.44	0.89	8.48	0.89
5.38	0.47	6.42	0.89	7.46	0.89	8.50	0.89
5.40	0.49	6.44	0.89	7.48	0.89	8.52	0.89
5.42	0.51	6.46	0.89	7.50	0.89	8.54	0.89
5.44	0.53	6.48	0.89	7.52	0.89	8.56	0.89
5.46	0.54	6.50	0.89	7.54	0.89	8.58	0.89
5.48	0.56	6.52	0.89	7.56	0.89	8.60	0.89
5.50	0.58	6.54	0.89	7.58	0.89	8.62	0.89
5.52	0.59	6.56	0.89	7.60	0.89	8.64	0.89
5.54	0.61	6.58	0.89	7.62	0.89	8.66	0.89
5.56	0.62	6.60	0.89	7.64	0.89	8.68	0.89
5.58	0.63	6.62	0.89	7.66	0.89	8.70	0.89
5.60	0.65	6.64	0.89	7.68	0.89	8.72	0.89
5.62	0.66	6.66	0.89	7.70	0.89	8.74	0.89
5.64	0.68	6.68	0.89	7.72	0.89	8.76	0.89
5.66	0.69	6.70	0.89	7.74	0.89	8.78	0.89
5.68	0.70	6.72	0.89	7.76	0.89	8.80	0.89
5.70	0.71	6.74	0.89	7.78	0.89		
5.72	0.73	6.76	0.89	7.80	0.89		
5.74	0.74	6.78	0.89	7.82	0.89		
5.76	0.75	6.80	0.89	7.84	0.89		
5.78	0.76	6.82	0.89	7.86	0.89		
5.80	0.77	6.84	0.89	7.88	0.89		
5.82	0.79	6.86	0.89	7.90	0.89		
5.84	0.80	6.88	0.89	7.92	0.89		
5.86	0.81	6.90	0.89	7.94	0.89		
5.88	0.82	6.92	0.89	7.96	0.89		
5.90	0.83	6.94	0.89	7.98	0.89		

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: _____

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).	
0.06	ac	A = Area draining to the practice	
0.02	ac	A_I = Impervious area draining to the practice	
0.33	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.35	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.02	ac-in	WQV= 1" x Rv x A	
76	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
19	cf	25% x WQV (check calc for sediment forebay volume)	
57	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:			
755	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
YES	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
5.13	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.17	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
0.25	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
5.95	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
4.88	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)	
1.07	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
5.95	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
5.95	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
5.72	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
7.40	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**
	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:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.0	acres	A_{SA} = Surface area of the pervious pavement	
3.5	: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 mod. 304.1 (see spec)**
Sheet	C-505	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:

Stage-Area-Storage for Pond PP 2: POROUS PAVEMENT

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.88	**755**	0
4.93	755	15
4.98	755	30
5.03	755	45
5.08	755	60
5.13	755	76
5.18	755	91
5.23	755	106
5.28	755	121
5.33	755	136
5.38	755	151
5.43	755	166
5.48	755	181
5.53	755	196
5.58	755	211
5.63	755	227
5.68	755	242
5.73	755	257
5.78	755	272
5.83	755	287
5.88	755	302
5.93	755	317
5.98	755	325
6.03	755	329
6.08	755	333
6.13	755	337
6.18	755	341
6.23	755	344
6.28	755	348
6.33	755	352
6.38	755	356
6.43	755	359
6.48	755	363
6.53	755	367
6.58	755	371
6.63	755	374
6.68	755	378
6.73	755	382
6.78	755	386
6.83	755	390
6.88	755	393
6.93	755	397
6.98	755	405
7.03	755	417
7.08	755	428
7.13	755	439
7.18	755	451
7.23	755	462
7.28	755	473
7.33	755	485
7.38	755	496
7.43	755	**507**
7.48	755	**512**
7.53	755	512
7.58	755	512
7.63	755	512
7.68	755	512
7.73	755	512
7.78	755	512
7.83	755	512
7.88	755	512
7.93	755	512
7.98	755	512
8.03	755	512
8.08	755	512
8.13	755	512
8.18	755	512
8.23	755	512
8.28	755	512
8.33	755	512
8.38	755	512
8.43	755	512
8.48	755	512
8.53	755	512
8.58	755	512
8.63	755	512
8.68	755	512
8.73	755	512
8.78	755	512

Stage-Discharge for Pond PP 2: POROUS PAVEMENT

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
4.88	0.00	5.92	0.17	6.96	0.17	8.00	0.17
4.90	0.00	5.94	0.17	6.98	0.17	8.02	0.17
4.92	0.01	5.96	0.17	7.00	0.17	8.04	0.17
4.94	0.01	5.98	0.17	7.02	0.17	8.06	0.17
4.96	0.02	6.00	0.17	7.04	0.17	8.08	0.17
4.98	0.03	6.02	0.17	7.06	0.17	8.10	0.17
5.00	0.04	6.04	0.17	7.08	0.17	8.12	0.17
5.02	0.06	6.06	0.17	7.10	0.17	8.14	0.17
5.04	0.07	6.08	0.17	7.12	0.17	8.16	0.17
5.06	0.09	6.10	0.17	7.14	0.17	8.18	0.17
5.08	0.11	6.12	0.17	7.16	0.17	8.20	0.17
5.10	0.13	6.14	0.17	7.18	0.17	8.22	0.17
5.12	0.16	6.16	0.17	7.20	0.17	8.24	0.17
5.14	**0.17**	6.18	0.17	7.22	0.17	8.26	0.17
5.16	0.17	6.20	0.17	7.24	0.17	8.28	0.17
5.18	0.17	6.22	0.17	7.26	0.17	8.30	0.17
5.20	0.17	6.24	0.17	7.28	0.17	8.32	0.17
5.22	0.17	6.26	0.17	7.30	0.17	8.34	0.17
5.24	0.17	6.28	0.17	7.32	0.17	8.36	0.17
5.26	0.17	6.30	0.17	7.34	0.17	8.38	0.17
5.28	0.17	6.32	0.17	7.36	0.17	8.40	0.17
5.30	0.17	6.34	0.17	7.38	0.17	8.42	0.17
5.32	0.17	6.36	0.17	7.40	0.17	8.44	0.17
5.34	0.17	6.38	0.17	7.42	0.17	8.46	0.17
5.36	0.17	6.40	0.17	7.44	0.17	8.48	0.17
5.38	0.17	6.42	0.17	7.46	0.17	8.50	0.17
5.40	0.17	6.44	0.17	7.48	0.17	8.52	0.17
5.42	0.17	6.46	0.17	7.50	0.17	8.54	0.17
5.44	0.17	6.48	0.17	7.52	0.17	8.56	0.17
5.46	0.17	6.50	0.17	7.54	0.17	8.58	0.17
5.48	0.17	6.52	0.17	7.56	0.17	8.60	0.17
5.50	0.17	6.54	0.17	7.58	0.17	8.62	0.17
5.52	0.17	6.56	0.17	7.60	0.17	8.64	0.17
5.54	0.17	6.58	0.17	7.62	0.17	8.66	0.17
5.56	0.17	6.60	0.17	7.64	0.17	8.68	0.17
5.58	0.17	6.62	0.17	7.66	0.17	8.70	0.17
5.60	0.17	6.64	0.17	7.68	0.17	8.72	0.17
5.62	0.17	6.66	0.17	7.70	0.17	8.74	0.17
5.64	0.17	6.68	0.17	7.72	0.17	8.76	0.17
5.66	0.17	6.70	0.17	7.74	0.17	8.78	0.17
5.68	0.17	6.72	0.17	7.76	0.17	8.80	0.17
5.70	0.17	6.74	0.17	7.78	0.17		
5.72	0.17	6.76	0.17	7.80	0.17		
5.74	0.17	6.78	0.17	7.82	0.17		
5.76	0.17	6.80	0.17	7.84	0.17		
5.78	0.17	6.82	0.17	7.86	0.17		
5.80	0.17	6.84	0.17	7.88	0.17		
5.82	0.17	6.86	0.17	7.90	0.17		
5.84	0.17	6.88	0.17	7.92	0.17		
5.86	0.17	6.90	0.17	7.94	0.17		
5.88	0.17	6.92	0.17	7.96	0.17		
5.90	0.17	6.94	0.17	7.98	0.17		

ProCon, LLC
31 Raynes Avenue Project
Portsmouth, NH

SITE SPECIFIC SOIL MAP

June 2020

Tighe&Bond
Engineers | Environmental Specialists

100% Recyclable

1.0 Introduction

This report is provided in conjunction with a 1.35 +/- acre Site Specific Soil Map (SSSM) prepared by Tighe & Bond for a parcel at 31 Raynes Avenue in Portsmouth, NH. The purpose of the mapping was to assist in the evaluation of drainage and other soil-related uses associated with site improvements, and may be used as part of an Alteration of Terrain (AoT) permit application.

2.0 Methods

Fieldwork for the soil mapping was completed October 22, 2019 based on *Site-Specific Soil Mapping Standards for New Hampshire and Vermont*, *Version 5.0,* (Society of Soil Scientists of Northern New England [SSSNNE] Special Publication No. 3, December 2017). The poorly and very poorly drained soil types under this system are based on the most recent version of *Field Indicators for Identifying Hydric Soils in New England*, *Version 4* (New England Interstate Water Pollution Control Commission, 2018).

The soil legend for this map is based on the soil series currently mapped in the State of New Hampshire as published in the *New Hampshire State-Wide Numerical Soils Legend* (USDA Natural Resources Conservation Service, Issue #10, 2011). Since this soil map includes disturbed soils and may be used for an AoT application, the map symbols are composed of two major parts separated by a forward slash (/). The first part of the soil symbol includes a numerical identifier from the state-wide soil legend, followed by a letter indicating the slope class (*e.g.*, 299A). Slope class identifiers are as follows:

A	0-3%	D	15-25%
B	3-8%	E	25-50%
C	8-15%	F	>50%

The second part of the symbol is based on the SSSNNE Disturbed Soil Supplemental Symbols, which are included within the Site Specific Soil Map (SSSM) standards. This portion of the symbol translates as follows:

Character 1: Drainage Class

a-Excessively Drained

b-Somewhat Excessively Drained

c-Well Drained

d-Moderately Well Drained

e-Somewhat Poorly Drained

f-Poorly Drained

g-Very Poorly Drained

h-Not Determined

Character 2: Parent Material (of naturally formed soil only, if present)

a-No natural soil within 60 inches

b-Glaciofluvial deposits (outwash/terraces of sand or sand and gravel)

c-Glacial till material (active ice)

d-Glaciolacustrine very fine sand and silt deposits (glacial lakes)

e-Loamy/sandy over silt/clay deposits

f-Marine silt and clay deposits (ocean waters)

g-Alluvial deposits (floodplains)

h-Organic materials-fresh water wetlands

i-Organic materials-tidal wetlands

Character 3: Restrictive Properties

a-None

b-Bouldery surface with more than 15% of the surface covered with boulders

c-Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hard pan, platy structure or clayey texture with consistence of at least firm (i.e. more than 20 newtons).

d-Bedrock in the soil profile; 0-20 inches

e-Bedrock in the soil profile; 20-60 inches

f-Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types

g-Subject to flooding

h–Manufactured impervious surface including pavement, concrete, or built-up surfaces (e.g. buildings) with no morphological restrictive layer within control section

Character 4: Estimated Ksat (most limiting layer excluding symbol 3h above)

a-High

b-Moderate

c-Low

d-Not determined *See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA

Character 5: Hydrologic Soil Group

a-Group A

b-Group B

c-Group C

d-Group D

e-Not determined

SSSM report standards require estimates of the maximum size of *limiting* inclusions for the entire soil map and an estimate of the percentage of *dissimilar* inclusions within each map unit. *Limiting* inclusions are soils "…that differ appreciably in one or more soil properties from the named soil in a map unit. The difference in soil properties is more restrictive and may affect use and management." *Dissimilar* inclusions are "…soils that either do not share limits of some important diagnostic properties of the named taxon, or, in the professional judgment of the soil scientist, have different use or management requirements." The maximum size of any limiting inclusions in this soil map is estimated to be less than 2,000 square feet. Any dissimilar inclusions noted during the mapping are listed below within the map unit descriptions.

3.0 Site Features

The parcel is a highly disturbed site along the North Mill Pond. The property shows evidence of what appears to be very old filling and grading associated with the existing development.

4.0 Soil Map Unit Descriptions

Below are descriptions for each of the map units found on the accompanying SSSM. The "*" after the numerical map unit symbol represents a placeholder for the slope class indicators described above.

100*/afaaa—Udorthents, wet substratum

Landscape Setting: Soils that have been filled and leveled over what was originally hydric soils. On this site this map unit represents fill that was used to construct a pier.

Drainage Class: Excessively drained

Parent Material of Natural Soil: Fill over marine silts and clays at <60 inches (presumed).

Typical Textures: Very gravelly sand (mixed sand and crushed stone)

Hydrologic Soil Group: A

Dissimilar Inclusions: None noted

Limiting Inclusions: None noted

Additional Notes: Soils in these areas have properties that are similar to the Hinckley soil series for Hydologic Soil Group determination

100*/dfccc—Udorthents, wet substratum

Landscape Setting: Soils that have been filled and leveled over what was originally hydric soils

Drainage Class: Moderately well drained.

Parent Material: Fill over marine silts and clays at <60 inches (presumed).

Typical Textures: Very gravelly sandy loam and gravelly silty clay loam fill

Hydrologic Soil Group: C

Dissimilar Inclusions: None noted

Limiting Inclusions: Slopes along the shore are steeper than the mapped unit and are affected by tidal inundation. These areas comprise less than 10% of the unit

Additional Notes: Soils in these areas have properties that are similar to the Elmridge soil series for Hydrologic Soil Group determination

Site Specific Soil Map Legend

31 Raynes Avenue, Portsmouth, NH

Slope Class Identifiers

A	0-3%	D	15-25%
B	3-8%	E	25-50%
C	8-15%	F	>50%

Map Unit Symbols

Map Number* /Disturbed Soil Numerator**	Soil Map Unit Name	Hydrologic Soil Group
100*/afaaa	Udorthents, wet substratum / excessively drained, over marine silts and clays, no restrictive layer within 40 inches, high Ksat, Hydrologic Soil Group A	A
100*/dfccc	Udorthents, wet substratum / moderately well drained, over marine silts and clays, with a restrictive layer within 40 inches, low Ksat, Hydrologic Soil Group C	C

*Indicates the location of the slope class identifier (A-F)
**Supplemental symbols are used to further characterize disturbed soils for Alteration of Terrain permits

Soil Mapping Notes:

1. Hydrologic soil groups for disturbed soils were based on most similar soil series listed in *Ksat Values for NH Soils*, SSSNNE Special Publication No. 5, 2009.
2. Fieldwork for this map was conducted by Leonard A. Lord, PhD, NHCSS #19 on October 22, 2019.
3. This detailed Site Specific Soil Map conforms to the standards of SSSNNE Publication No. 3, as amended, *Site Specific Soil Mapping Standards for NH and VT.*
4. This map has been prepared to comply with soil mapping requirements of RSA 485 A:17 and NHDES Env-Wq, Alteration of Terrain.
5. See accompanying narrative report for methodology, map symbol legend, and interpretations.

www.tighebond.com

100% Recyclable

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	70.764 degrees West
Latitude	43.080 degrees North
Elevation	0 feet
Date/Time	Fri, 24 Jul 2020 12:23:19 -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	2.65	2.92	**1yr**	2.35	2.81	3.22	3.94	4.54	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.48	3.20	3.57	**2yr**	2.84	3.43	3.93	4.67	5.32	**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	4.06	4.57	**5yr**	3.59	4.40	5.03	5.93	6.69	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.72	2.23	2.89	3.74	4.86	5.52	**10yr**	4.30	5.31	6.07	7.09	7.96	**10yr**
25yr	0.48	0.76	0.97	1.33	1.77	2.33	**25yr**	1.53	2.14	2.77	3.62	4.73	6.16	7.09	**25yr**	5.45	6.81	7.78	9.00	10.03	**25yr**
50yr	0.53	0.86	1.10	1.53	2.07	2.75	**50yr**	1.78	2.52	3.28	4.31	5.65	7.37	8.57	**50yr**	6.53	8.24	9.40	10.79	11.95	**50yr**
100yr	0.59	0.96	1.24	1.76	2.41	3.25	**100yr**	2.08	2.97	3.90	5.15	6.75	8.83	10.36	**100yr**	7.82	9.96	11.35	12.93	14.24	**100yr**
200yr	0.67	1.10	1.42	2.04	2.82	3.82	**200yr**	2.43	3.51	4.60	6.11	8.06	10.58	12.52	**200yr**	9.37	12.04	13.71	15.50	16.98	**200yr**
500yr	0.80	1.31	1.71	2.48	3.47	4.75	**500yr**	2.99	4.37	5.75	7.68	10.19	13.45	16.11	**500yr**	11.90	15.49	17.61	19.72	21.44	**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	2.48	**1yr**	1.97	2.39	2.86	3.18	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	3.05	3.45	**2yr**	2.70	3.31	3.82	4.54	5.07	**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	3.78	4.18	**5yr**	3.34	4.02	4.71	5.52	6.23	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.80	2.39	3.06	4.36	4.85	**10yr**	3.86	4.66	5.42	6.39	7.17	**10yr**
25yr	0.44	0.67	0.83	1.18	1.56	1.90	**25yr**	1.34	1.86	2.10	2.76	3.54	4.70	5.87	**25yr**	4.16	5.64	6.62	7.76	8.65	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.17	**50yr**	1.52	2.12	2.34	3.07	3.93	5.31	6.77	**50yr**	4.70	6.51	7.68	9.00	9.98	**50yr**
100yr	0.53	0.81	1.01	1.46	2.00	2.47	**100yr**	1.73	2.41	2.62	3.42	4.35	5.96	7.81	**100yr**	5.28	7.51	8.92	10.45	11.52	**100yr**
200yr	0.59	0.89	1.12	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.79	4.79	6.68	9.01	**200yr**	5.91	8.66	10.34	12.15	13.31	**200yr**
500yr	0.68	1.02	1.31	1.90	2.70	3.36	**500yr**	2.33	3.28	3.41	4.32	5.46	7.76	10.87	**500yr**	6.87	10.45	12.58	14.86	16.11	**500yr**

Upper Confidence Limits

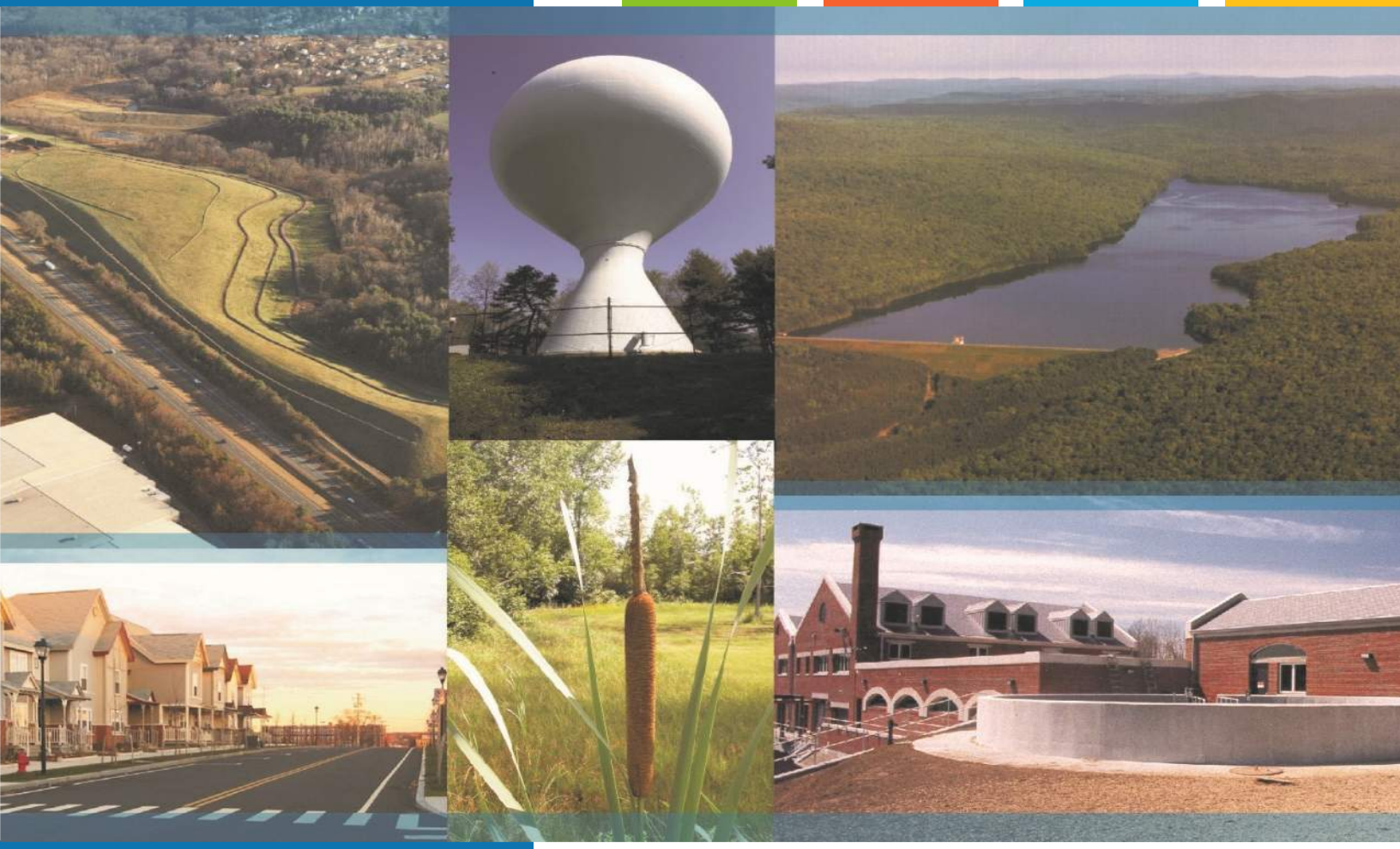
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.98	3.16	**1yr**	2.64	3.04	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.42	3.70	**2yr**	3.03	3.56	4.08	4.83	5.62	**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	4.33	4.96	**5yr**	3.84	4.77	5.37	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	3.11	3.95	5.33	6.20	**10yr**	4.72	5.96	6.82	7.83	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.57	**25yr**	1.76	2.51	2.95	4.07	5.15	7.77	8.34	**25yr**	6.88	8.02	9.15	10.33	11.40	**25yr**
50yr	0.67	1.02	1.27	1.82	2.46	3.12	**50yr**	2.12	3.05	3.59	5.00	6.32	9.73	10.46	**50yr**	8.62	10.06	11.45	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	7.76	12.18	13.11	**100yr**	10.78	12.61	14.32	15.68	17.08	**100yr**
200yr	0.92	1.39	1.76	2.54	3.55	4.64	**200yr**	3.06	4.54	5.33	7.58	9.53	15.29	16.45	**200yr**	13.53	15.82	17.94	19.34	20.91	**200yr**
500yr	1.14	1.70	2.19	3.18	4.52	6.02	**500yr**	3.90	5.89	6.92	10.01	12.54	20.67	22.22	**500yr**	18.29	21.37	24.18	25.50	27.33	**500yr**

Powered by ACIS Northeast Regional Climate Center

Coastal and Great Bay Region Precipitation Increase		
	24-hr Storm Event (in.)	24-hr Storm Event + 15% (in.)
1 Year	2.65	3.05
2 Year	3.20	3.68
10 Year	4.86	5.59
25 Year	6.16	7.08
50 Year	7.37	8.48
100 Year	8.83	10.15

www.tighebond.com

100% Recyclable



Proposed Mixed Use Development
Raynes Avenue
Portsmouth, NH

Long-Term Operation & Maintenance Plan

North Mill Pond Holdings, LLC

May 19, 2021

Tighe&Bond

100% Recyclable

Section 1 Long-Term Operation & Maintenance Plan

1.1 Contact/Responsible Party 1-1
1.2 Maintenance Items 1-1
1.3 Overall Site Operation & Maintenance Schedule 1-2
1.3.1 Disposal Requirements 1-2
1.4 Underground Detention System Maintenance Requirements 1-3
1.5 Contech Jellyfish Filter System Maintenance Requirements 1-3
1.6 Porous Asphalt Maintenance Requirements 1-4
1.7 Snow & Ice Management for Standard Asphalt and Walkways 1-5

Section 2 Chloride Management Plan

2.1 Background Information 2-1
2.2 Operational Guidelines – Chloride Management 2-1
2.2.1 Winter Operator Certification Requirements 2-1
2.2.2 Improved Weather Monitoring 2-1
2.2.3 Equipment Calibration Requirements 2-2
2.2.4 Increased Mechanical Removal Capabilities 2-2
2.3 Salt Usage Evaluation and Monitoring 2-3
2.4 Summary 2-3

Section 3 Invasive Species

Section 4 Annual Updates and Log Requirements

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

Maintenance Area	Contact/Responsible Party
Development Site	North Mill Pond Holdings, LLC 1359 Hooksett Road Hooksett NH, 03106
North Mill Pond Trail (City Easement)	City of Portsmouth DPW 680 Peverly Hill Road Portsmouth, NH 03801

(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
- Catchbasin Cleaning
- Pavement Sweeping
- Underground Detention System
- Contech Jellyfish Filtration System
- Porous Pavement

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	Responsible Party
Litter/Debris Removal	Weekly	North Mill Pond Holdings, LLC
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Bi-Annually	North Mill Pond Holdings, LLC
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring	North Mill Pond Holdings, LLC
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually	North Mill Pond Holdings, LLC
Jelly Fish Units	In accordance with Manufacturer's Recommendations	North Mill Pond Holdings, LLC
Underground Detention Basin - Visual observation of sediment levels within system	Annually	North Mill Pond Holdings, LLC
Porous Pavement - Clean using a vacuum sweeper	Bi-Annually	City of Portsmouth DPW

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 Contech Jellyfish Filter System Maintenance Requirements

Contech Jellyfish Filter System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Inspect vault for sediment build up, static water, plugged media and bypass condition	One (1) time annually and after any rainfall event exceeding 2.5" in a 24-hr period	Maintenance required for any of the following: - >4" of sediment on the vault floor - >1/4" of sediment on top of the cartridge - .4" of static water above the cartridge bottom more than 24 hours after a rain event - If pore space between media is absent. - If vault is in bypass condition during an average rainfall event.
Replace Cartridges	As required by inspection, 1–5 years.	- Remove filter cartridges per manufacturer methods. - Vacuum sediment from vault. - Install new cartridges per manufacturer methods

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter
Owner's Manual

Jellyfish® Filter

Table of Contents

Chapter 1
1.0 Owner Specific Jellyfish Product Information 4
Chapter 2
2.0 Jellyfish Filter System Operations & Functions 5
2.1 Components & Cartridges 6
2.2 Jellyfish Membrane Filtration Cartridges Assembly 7
2.3 Installation of Jellyfish Membrane Filtration Cartridges 7
Chapter 3
3.0 Inspection and Maintenance Overview 8
Chapter 4
4.0 Inspection Timing 8
Chapter 5
5.0 Inspection Procedure 8
5.1 Dry Weather Inspections 8
5.1 Wet Weather Inspections 9
Chapter 6
6.0 Maintenance Requirements 9
Chapter 7
7.0 Maintenance Procedure 9
7.1 Filter Cartridge Removal 9
7.2 Filter Cartridge Rinsing 9
7.3 Sediment and Flotables Extraction 10
7.4 Filter Cartridge Reinstallation and Replacement 10
7.5 Chemical Spills 10
5.6 Material Disposal 10

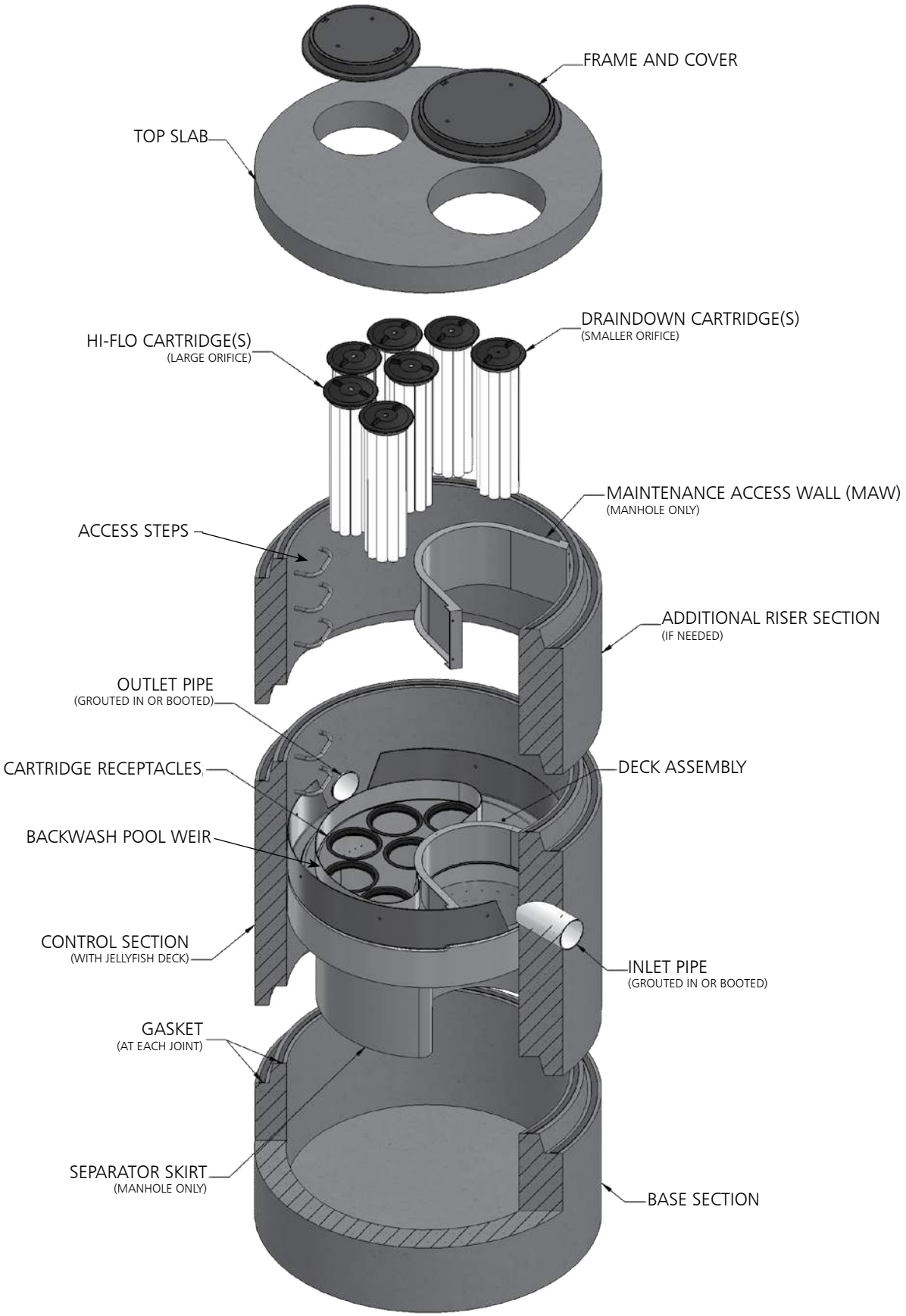
Jellyfish Filter Inspection and Maintenance Log 12

THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us:

Contech Engineered Solutions
9025 Centre Pointe Drive, Suite 400 | West Chester, OH 45069
513-645-7000 | 800-338-1122
www.ContechES.com
info@conteches.com


FRAME AND COVER
TOP SLAB
HI-FLO CARTRIDGE(S)
(LARGE ORIFICE)
DRAINDOWN CARTRIDGE(S)
(SMALLER ORIFICE)
MAINTENANCE ACCESS WALL (MAW)
(MANHOLE ONLY)
ACCESS STEPS
ADDITIONAL RISER SECTION
(IF NEEDED)
OUTLET PIPE
(GROUTED IN OR BOOTED)
CARTRIDGE RECEPTACLES
DECK ASSEMBLY
BACKWASH POOL WEIR
CONTROL SECTION
(WITH JELLYFISH DECK)
INLET PIPE
(GROUTED IN OR BOOTED)
GASKET
(AT EACH JOINT)
SEPARATOR SKIRT
(MANHOLE ONLY)
BASE SECTION

WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Project & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

Notes:

_____

_____

_____

_____

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

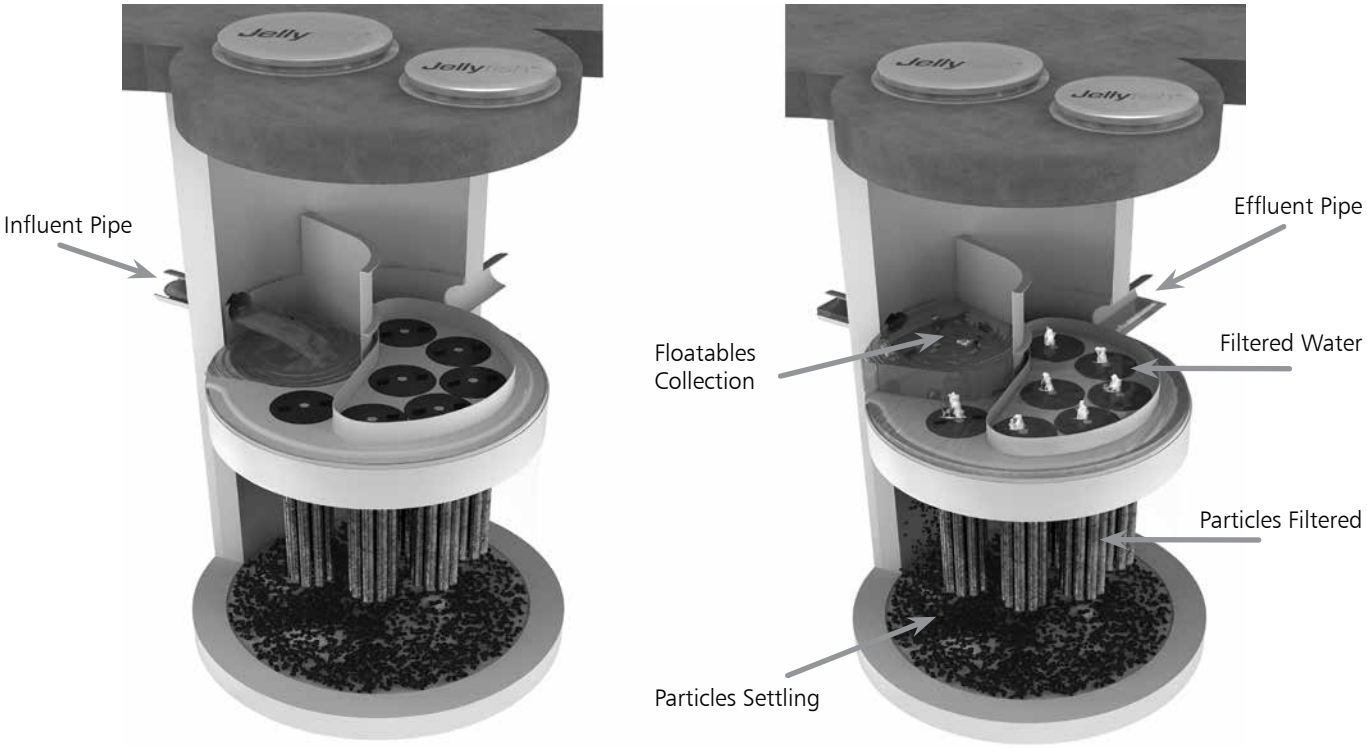
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



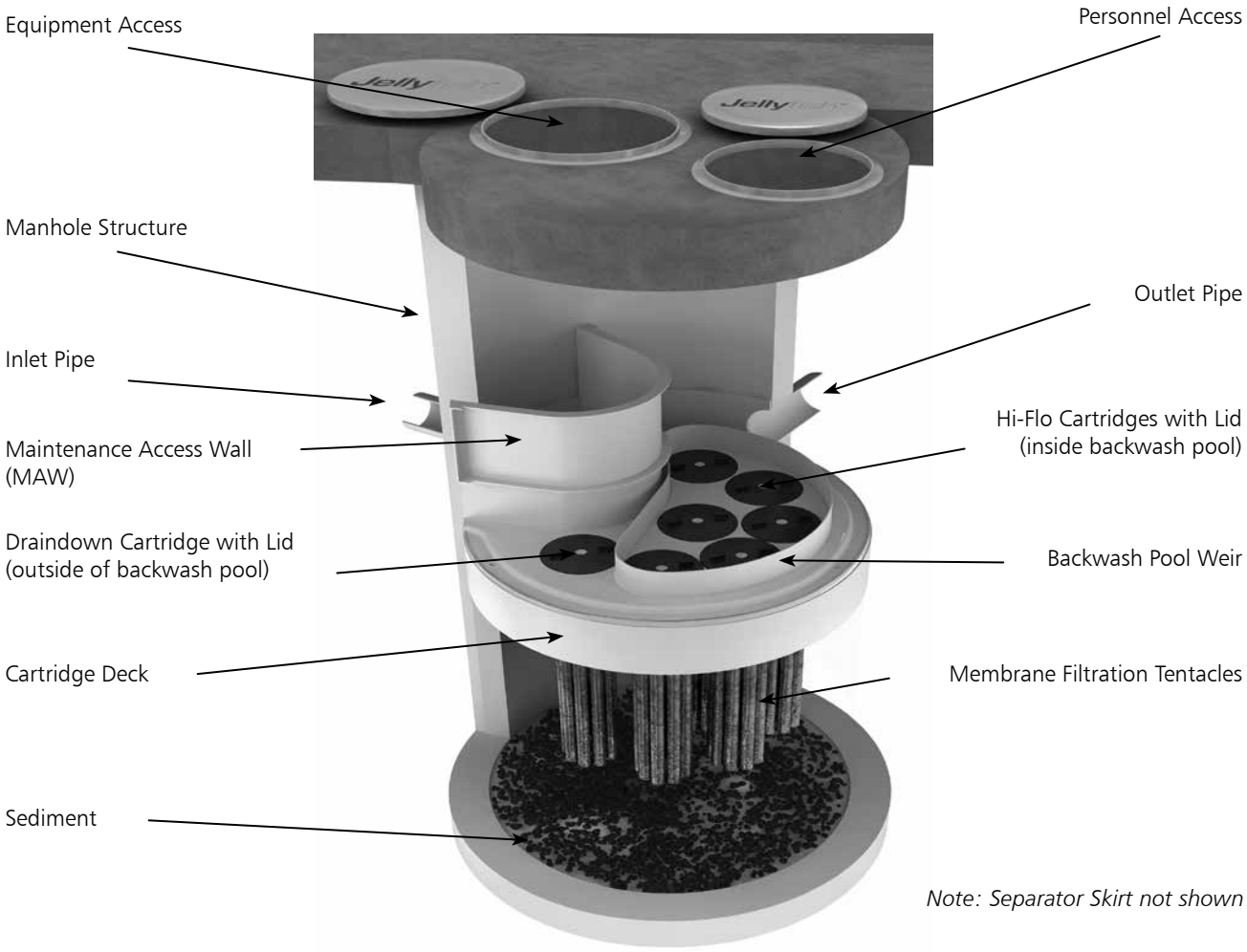
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.ContechES.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2 **Jellyfish Filter Components**



Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.

Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
  - Lids with a small orifice are to be inserted into the Draindown cartridge receptacles, outside of the backwash pool weir.
  - Lids with a large orifice are to be inserted into the Hi-Flo cartridge receptacles within the backwash pool weir.
  - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation.

3.0 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:

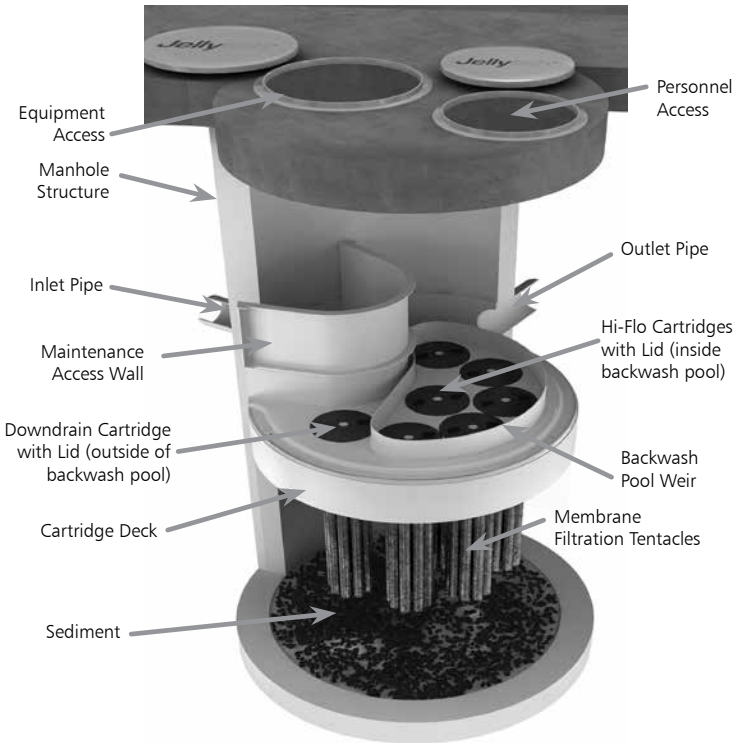
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

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

4.0 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*.



Note: Separator Skirt not shown

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.

5.0 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.

5.1 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.

5.2 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.

6.0 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.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

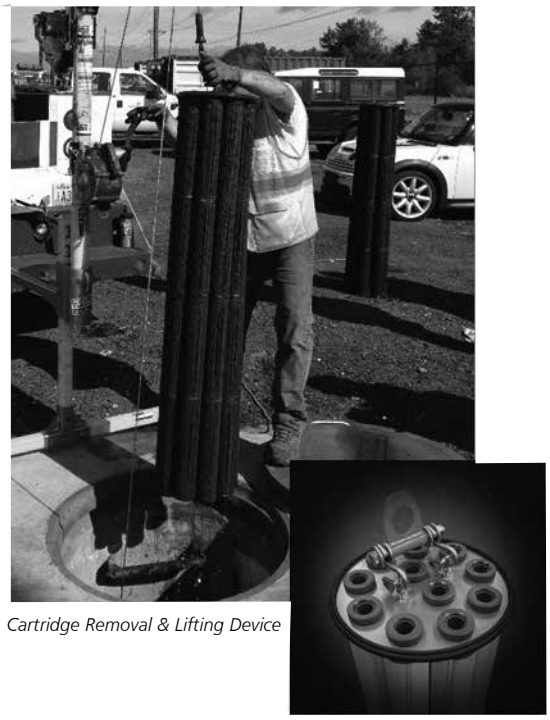
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. 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.

7.1 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.

7.2 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.
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.



Cartridge Removal & Lifting Device

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.

7.3 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.
3. Pressure wash cartridge deck and receptacles to remove all

Rinsing Cartridge with Contech Rinse Tool

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.
6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some

Vacuuming Sump Through MAW

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.

7.4 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.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 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

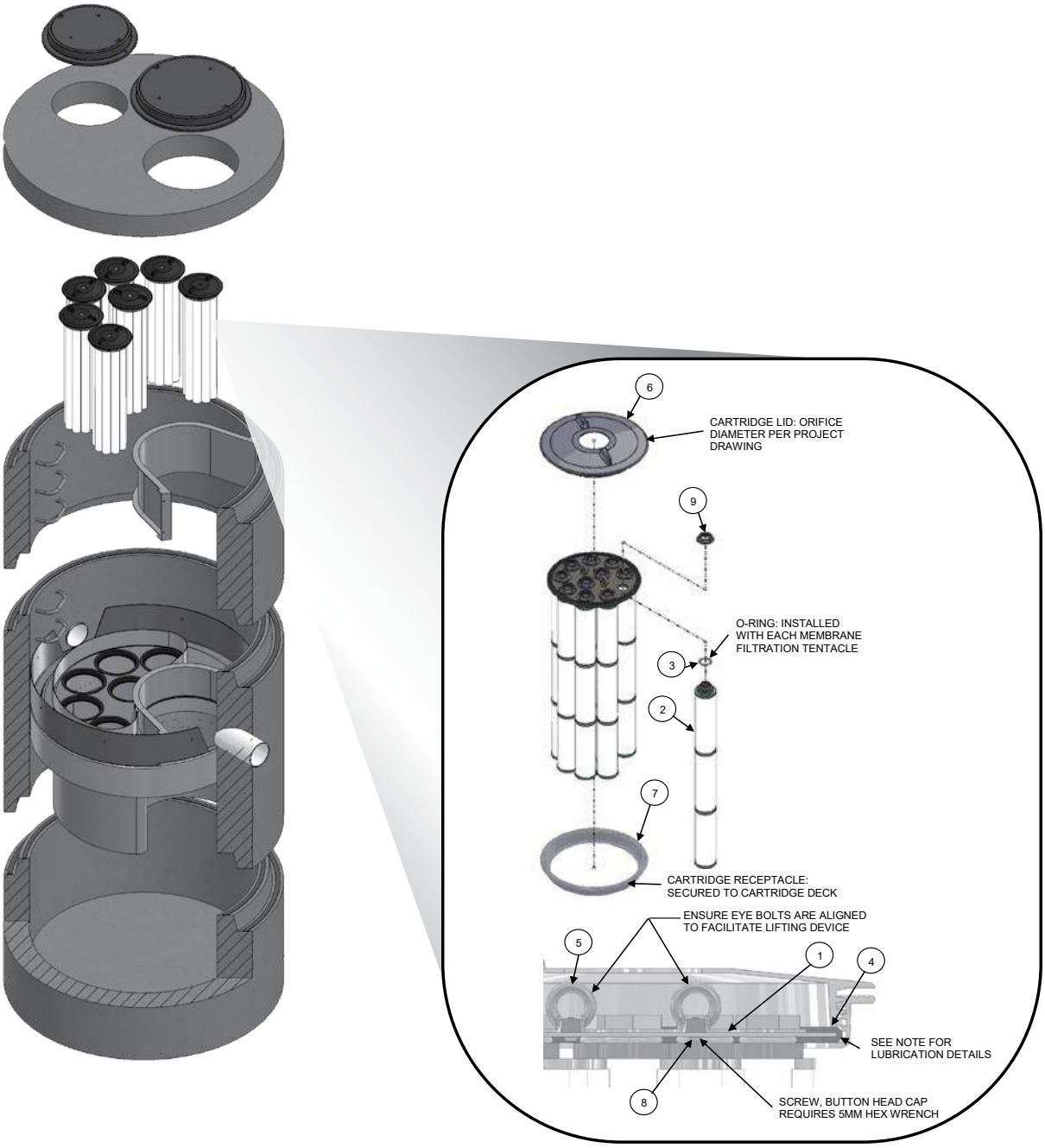


TABLE 1: BOM

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 Lid (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:_____

Road/Highway:____ Airport: _____ Residential: _____ Parking Lot:_____

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					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on 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:					

1.6 Porous Asphalt Maintenance Requirements

Porous Asphalt Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor for sediment build up, particularly in the winter.	Two (2) – Four (4) Times Annually.	- Clean with vacuum sweeper, bi-annually - Loose debris such as leaves or can be removed using a power/leaf blower or gutter broom. Fall and spring cleanup should be accompanied by pavement vacuuming.
Inspect Adjacent Vegetation	Two (2) – Four (4) Times Annually.	- Repair or replace any eroded areas.
Inspect for standing water -Within 30 minutes following a rain event.	One (1) – Two (2) Times Annually	- Use of a power washer or compressed air blower at an angle of 30 degrees or less can be effective, vacuum or vacuum sweeper if necessary.
Damage to pavement	As needed	- Repairs should be made as identified.

Porous Asphalt Winter Maintenance Guidelines:

- ***No winter sanding or salting of porous pavements is permitted***
- Porous surfaces are commonly not treated and plowed until 2 or more inches of snow accumulation.
- Plow after every storm. If possible, plow with a slightly raised blade, this will help prevent pavement scarring.

Additional Porous Asphalt Operation and Maintenance Requirements:

- Never reseal or repave with impermeable materials.
- Inspect annually for pavement deterioration or spalling.
- Monitor periodically to ensure the pavement surface drains effectively after storms.

1.7 Snow & Ice Management for Standard Asphalt and Walkways

There are no snow storage areas on site. The property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas. All snow removal will be hauled off-site and legally disposed of. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage is not permitted withing the 100' wetland buffer. 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,).

Section 2
Chloride Management Plan

Winter Operational Guidelines

The following Chloride Management Plan is for the Raynes Avenue, Mixed Use Development in Portsmouth, New Hampshire. The Plan includes operational guidelines including 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 Raynes Avenue, Mixed Use Development is located along the North Mill Pond in Portsmouth, New Hampshire.

2.2 Operational Guidelines – Chloride Management

All private contractors engaged at the development site for the purposes of winter operational snow removal and surface maintenance, are responsible for assisting in meeting compliance for the following protocols. 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 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 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 premises for the purpose of winter operational snow removal and surface maintenance shall provide to the property management two copies of the annual UNHT2 Green SnowPro certificate or equivalent for each operator utilized on the premises. The annual UNHT2 Green SnowPro certificate or equivalent for each operator will be available on file in the Facilities Management office and be present in the vehicle/carrier at all times.

2.2.2 Improved Weather Monitoring

The property manager 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 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 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 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 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 Facilities Management 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 Management Team in order to accurately dispense material. All private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance will be subject to spot inspections by members of the Property Management 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 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 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 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 premises. The property manager 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 Operational Manual and are to be used to qualify and retain all private contractors engaged at the Raynes Avenue 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 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 employees directly involved with winter operational activities, and all private contractors engaged at the 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.

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:				

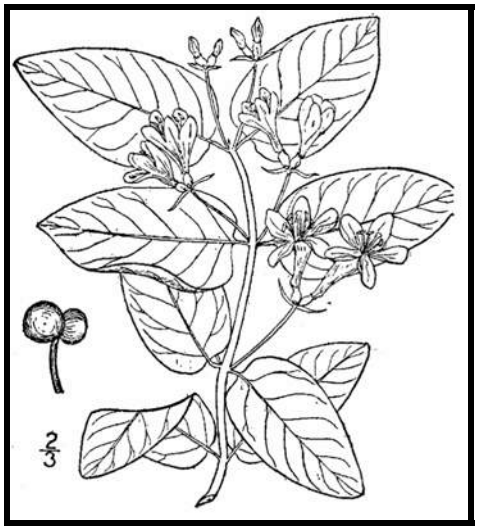
Section 3
Invasive Species

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

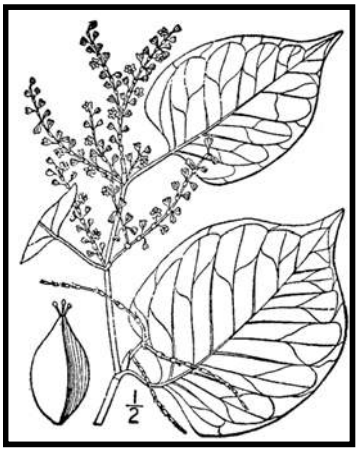
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations, and prohibits discrimination in its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, or veteran’s, marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game ,and U.S. Dept. of Agriculture cooperating.

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.

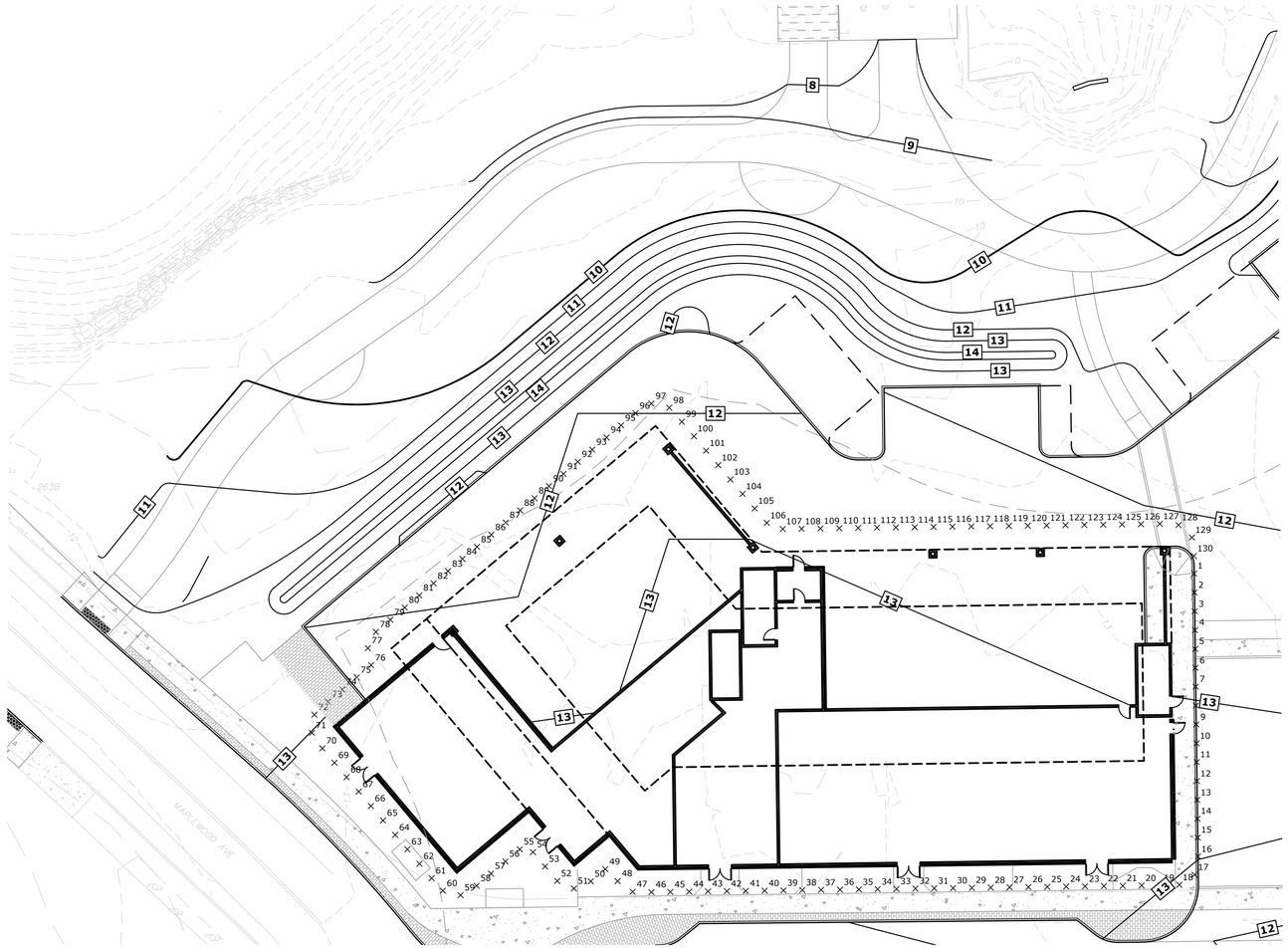
Copies of the Stormwater Maintenance report shall be submitted to the City of Portsmouth on an annual basis.

Stormwater Management Report						
Mixed Use Development		**Raynes Avenue – Map 123 Lots 10, 12, 13 & 14**				
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 1			❑Yes ❑No			
Jellyfish Filter 2			❑Yes ❑No			
Porous Pavement			❑Yes ❑No			

Stormwater Management Report						
City of Portsmouth		**North Mill Pond Trail**				
BMP Description	**Date of Inspection**	**Inspector**	**BMP Installed and Operating Properly?**	**Cleaning / Corrective Action Needed**	**Date of Cleaning / Repair**	**Performed By**
Porous Pavement			❑Yes ❑No			

MIXED USE BUILDING GRADE PLANE ELEVATIONS

POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT
1	12.15	60.25	47.33	25	13.23	60.25	47.33	49	13.90	49.75	36.83	73	12.45	28.75	15.83	96	12.00	60.25	47.33	120	12.40	60.25	47.33
2	12.20	60.25	47.33	26	13.27	60.25	47.33	50	13.85	49.75	36.83	74	12.35	28.75	15.83	97	11.95	60.25	47.33	121	12.35	60.25	47.33
3	12.25	60.25	47.33	27	13.30	60.25	47.33	51	13.85	49.75	36.83	75	12.30	28.75	15.83	98	11.95	60.25	47.33	122	12.30	60.25	47.33
4	12.55	60.25	47.33	28	13.33	60.25	47.33	52	13.85	49.75	36.83	76	12.25	28.75	15.83	99	12.05	60.25	47.33	123	12.25	60.25	47.33
5	12.85	60.25	47.33	29	13.36	60.25	47.33	53	13.90	49.75	36.83	77	12.15	49.75	36.83	100	12.15	60.25	47.33	124	12.20	60.25	47.33
6	12.90	60.25	47.33	30	13.40	60.25	47.33	54	13.95	49.75	36.83	78	12.10	49.75	36.83	101	12.25	60.25	47.33	125	12.15	60.25	47.33
7	12.95	60.25	47.33	31	13.45	60.25	47.33	55	13.95	28.75	15.83	79	12.05	49.75	36.83	102	12.35	60.25	47.33	126	12.10	60.25	47.33
8	13.00	60.25	47.33	32	13.50	60.25	47.33	56	13.90	28.75	15.83	80	11.95	49.75	36.83	103	12.45	60.25	47.33	127	12.05	60.25	47.33
9	13.05	60.25	47.33	33	13.53	60.25	47.33	57	13.90	28.75	15.83	81	11.90	60.25	47.33	104	12.55	60.25	47.33	128	12.05	60.25	47.33
10	13.10	60.25	47.33	34	13.56	60.25	47.33	58	13.85	28.75	15.83	82	11.85	60.25	47.33	105	12.65	60.25	47.33	129	12.05	60.25	47.33
11	13.15	60.25	47.33	35	13.59	60.25	47.33	59	13.85	28.75	15.83	83	11.75	60.25	47.33	106	12.75	60.25	47.33	130	12.10	60.25	47.33
12	13.20	60.25	47.33	36	13.62	60.25	47.33	60	13.82	28.75	15.83	84	11.70	60.25	47.33	107	12.80	60.25	47.33	AVERAGE GRADE PLANE ELEVATION			12.93
13	13.25	60.25	47.33	37	13.65	60.25	47.33	61	13.82	28.75	15.83	85	11.65	60.25	47.33	108	12.75	60.25	47.33				
14	13.30	60.25	47.33	38	13.68	60.25	47.33	62	13.82	28.75	15.83	86	11.70	60.25	47.33	109	12.70	60.25	47.33				
15	13.20	60.25	47.33	39	13.72	60.25	47.33	63	13.82	28.75	15.83	87	11.75	60.25	47.33	110	12.70	60.25	47.33				
16	13.05	60.25	47.33	40	13.74	60.25	47.33	64	13.82	28.75	15.83	88	11.80	60.25	47.33	111	12.65	60.25	47.33				
17	12.90	60.25	47.33	41	13.77	60.25	47.33	65	13.82	28.75	15.83	89	11.90	60.25	47.33	112	12.65	60.25	47.33				
18	12.85	60.25	47.33	42	13.80	60.25	47.33	66	13.82	28.75	15.83	90	12.00	60.25	47.33	113	12.60	60.25	47.33				
19	12.95	60.25	47.33	43	13.82	60.25	47.33	67	13.82	28.75	15.83	91	12.00	60.25	47.33	114	12.60	60.25	47.33				
20	13.00	60.25	47.33	44	13.82	60.25	47.33	68	13.82	28.75	15.83	92	12.10	60.25	47.33	115	12.55	60.25	47.33				
21	13.05	60.25	47.33	45	13.82	60.25	47.33	69	13.82	28.75	15.83	93	12.20	60.25	47.33	116	12.55	60.25	47.33				
22	13.10	60.25	47.33	46	13.82	60.25	47.33	70	13.82	28.75	15.83	94	12.20	60.25	47.33	117	12.50	60.25	47.33				
23	13.15	60.25	47.33	47	13.85	60.25	47.33	71	13.00	28.75	15.83	95	12.10	60.25	47.33	118	12.45	60.25	47.33				
24	13.20	60.25	47.33	48	13.85	60.25	47.33	72	12.95	28.75	15.83	96	12.00	60.25	47.33	119	12.45	60.25	47.33				



BUILDING ELEVATIONS AND HEIGHTS					
	GRADE PLANE ELEVATION	BUILDING ELEVATION		BUILDING HEIGHT	
		ALLOWED	PROPOSED	ALLOWED	PROPOSED
MIXED USE	12.90'	72.90'	72.67'	60.00'	59.77'
HOTEL	11.85'	71.85'	71.75'	60.00'	59.90'

Tighe&Bond

0 50' 100'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-EXHIBITS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

MIXED USE GRADE PLANE EXHIBIT

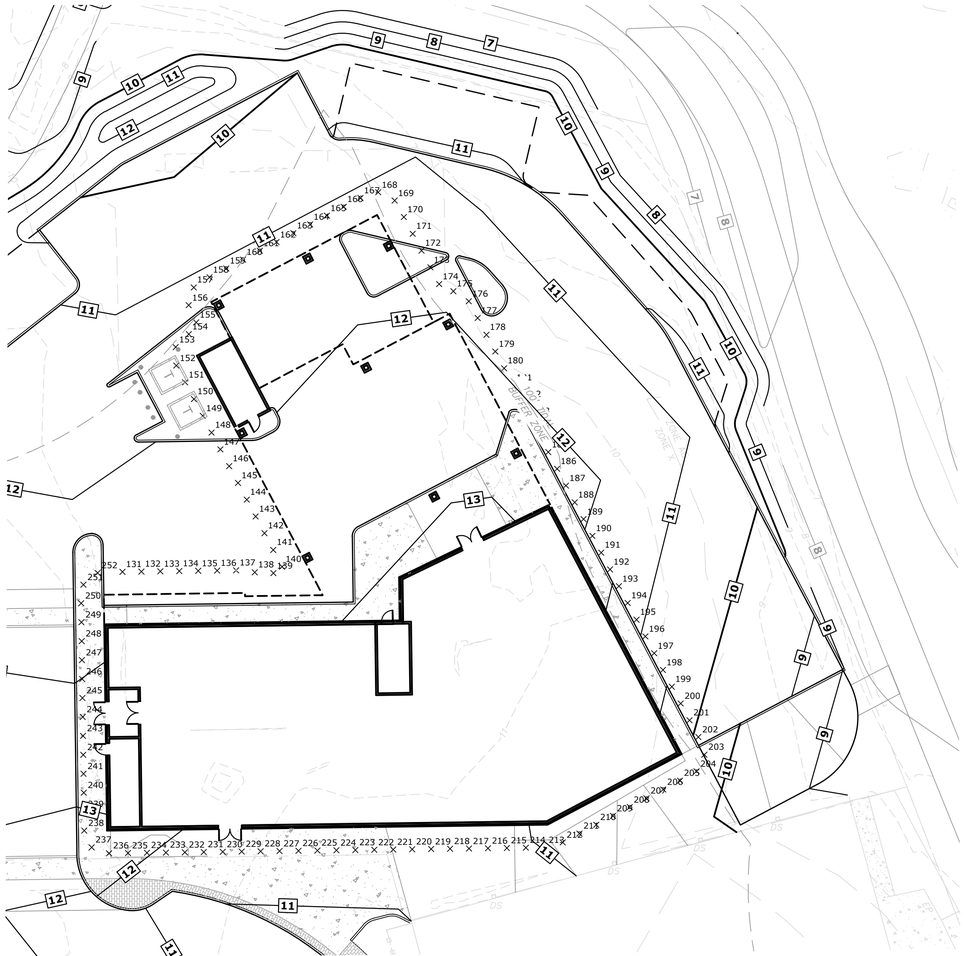
SCALE: AS SHOWN

1 OF 2

Last Saved: 11/19/2021
Plotted On: Nov 19, 2021 - 1:30pm By: CKrzoulk
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg

HOTEL BUILDING GRADE PLANE ELEVATIONS

POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT	POINT #	SURFACE ELEV	ROOF ELEV	BUILDING HEIGHT
131	12.45	71.75	59.90	155	11.85	59.75	47.90	179	11.96	71.75	59.90	203	10.40	71.75	59.90	227	12.70	71.75	59.90	251	12.90	71.75	59.90
132	12.50	71.75	59.90	156	11.20	59.75	47.90	180	11.98	71.75	59.90	204	10.45	71.75	59.90	228	13.10	71.75	59.90	252	12.70	71.75	59.90
133	12.60	71.75	59.90	157	11.10	59.75	47.90	181	12.00	71.75	59.90	205	10.50	71.75	59.90	229	13.15	71.75	59.90	AVERAGE GRADE PLANE ELEVATION			11.85
134	12.65	71.75	59.90	158	11.10	59.75	47.90	182	12.05	71.75	59.90	206	10.55	71.75	59.90	230	11.85	71.75	59.90				
135	12.70	71.75	59.90	159	11.10	59.75	47.90	183	12.10	71.75	59.90	207	10.65	71.75	59.90	231	11.85	71.75	59.90				
136	12.75	71.75	59.90	160	11.10	59.75	47.90	184	12.15	71.75	59.90	208	10.70	71.75	59.90	232	11.90	71.75	59.90				
137	12.80	71.75	59.90	161	11.10	59.75	47.90	185	12.25	71.75	59.90	209	10.75	71.75	59.90	233	11.95	71.75	59.90				
138	12.85	71.75	59.90	162	11.10	59.75	47.90	186	12.30	71.75	59.90	210	10.80	71.75	59.90	234	13.05	71.75	59.90				
139	12.90	71.75	59.90	163	11.10	59.75	47.90	187	12.35	71.75	59.90	211	10.85	71.75	59.90	235	12.30	71.75	59.90				
140	12.90	71.75	59.90	164	11.10	59.75	47.90	188	12.35	71.75	59.90	212	10.90	71.75	59.90	236	12.50	71.75	59.90				
141	12.80	71.75	59.90	165	11.10	59.75	47.90	189	12.05	71.75	59.90	213	11.00	71.75	59.90	237	12.50	71.75	59.90				
142	12.75	71.75	59.90	166	11.10	59.75	47.90	190	11.90	71.75	59.90	214	11.02	71.75	59.90	238	12.85	71.75	59.90				
143	12.65	71.75	59.90	167	11.10	59.75	47.90	191	11.70	71.75	59.90	215	11.05	71.75	59.90	239	13.00	71.75	59.90				
144	12.55	71.75	59.90	168	11.10	59.75	47.90	192	11.50	71.75	59.90	216	11.10	71.75	59.90	240	13.25	71.75	59.90				
145	12.45	71.75	59.90	169	11.15	59.75	47.90	193	11.35	71.75	59.90	217	11.15	71.75	59.90	241	13.30	71.75	59.90				
146	12.35	71.75	59.90	170	11.25	59.75	47.90	194	11.20	71.75	59.90	218	11.20	71.75	59.90	242	13.25	71.75	59.90				
147	12.25	71.75	59.90	171	11.35	59.75	47.90	195	11.05	71.75	59.90	219	11.25	71.75	59.90	243	13.15	71.75	59.90				
148	12.65	71.75	59.90	172	11.90	59.75	47.90	196	10.80	71.75	59.90	220	11.30	71.75	59.90	244	13.10	71.75	59.90				
149	12.50	71.75	59.90	173	11.80	59.75	47.90	197	10.65	71.75	59.90	221	11.20	71.75	59.90	245	13.00	71.75	59.90				
150	12.40	71.75	59.90	174	11.90	59.75	47.90	198	10.50	71.75	59.90	222	11.15	71.75	59.90	246	12.95	71.75	59.90				
151	12.25	71.75	59.90	175	11.90	71.75	59.90	199	10.30	71.75	59.90	223	11.30	71.75	59.90	247	12.90	71.75	59.90				
152	12.10	71.75	59.90	176	11.90	71.75	59.90	200	10.20	71.75	59.90	224	11.50	71.75	59.90	248	12.85	71.75	59.90				
153	11.95	71.75	59.90	177	11.92	71.75	59.90	201	10.05	71.75	59.90	225	11.90	71.75	59.90	249	12.80	71.75	59.90				
154	11.90	71.75	59.90	178	11.94	71.75	59.90	202	9.95	71.75	59.90	226	12.30	71.75	59.90	250	12.75	71.75	59.90				



BUILDING ELEVATIONS AND HEIGHTS

	GRADE PLANE ELEVATION	BUILDING ELEVATION		BUILDING HEIGHT	
		ALLOWED	PROPOSED	ALLOWED	PROPOSED
MIXED USE	12.90'	72.90'	72.67'	60.00'	59.77'
HOTEL	11.85'	71.85'	71.75'	60.00'	59.90'

Tighe&Bond

0 50' 100'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	11/24/2021	PB Submission
J	10/20/2021	TAC Resubmission
I	8/23/2021	TAC Resubmission
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-EXHIBITS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

HOTEL GRADE PLANE EXHIBIT

SCALE: AS SHOWN

2 OF 2

Last Saved: 11/19/2021
Plotted On: Nov 19, 2021 - 1:31pm By: CKrzcuik
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

FRONT LOT LINE BUILDOUT EXHIBIT

CITY OF PORTSMOUTH ZONING 10.5A60:

Front lot line buildout

The portion of the width of the required **front yard** or front building setback that is occupied by a **building**.

FRONT LOT LINE BUILDOUT:

	REQUIRED	PROPOSED
FRONT LOT LINE BUILDOUT	50%	78.42%(1)

(1) - TOTAL FRONT LOT LINE LENGTH SUBTRACTS FRONTAGE FOR REQUIRED GREENWAY COMMUNITY SPACE AREA

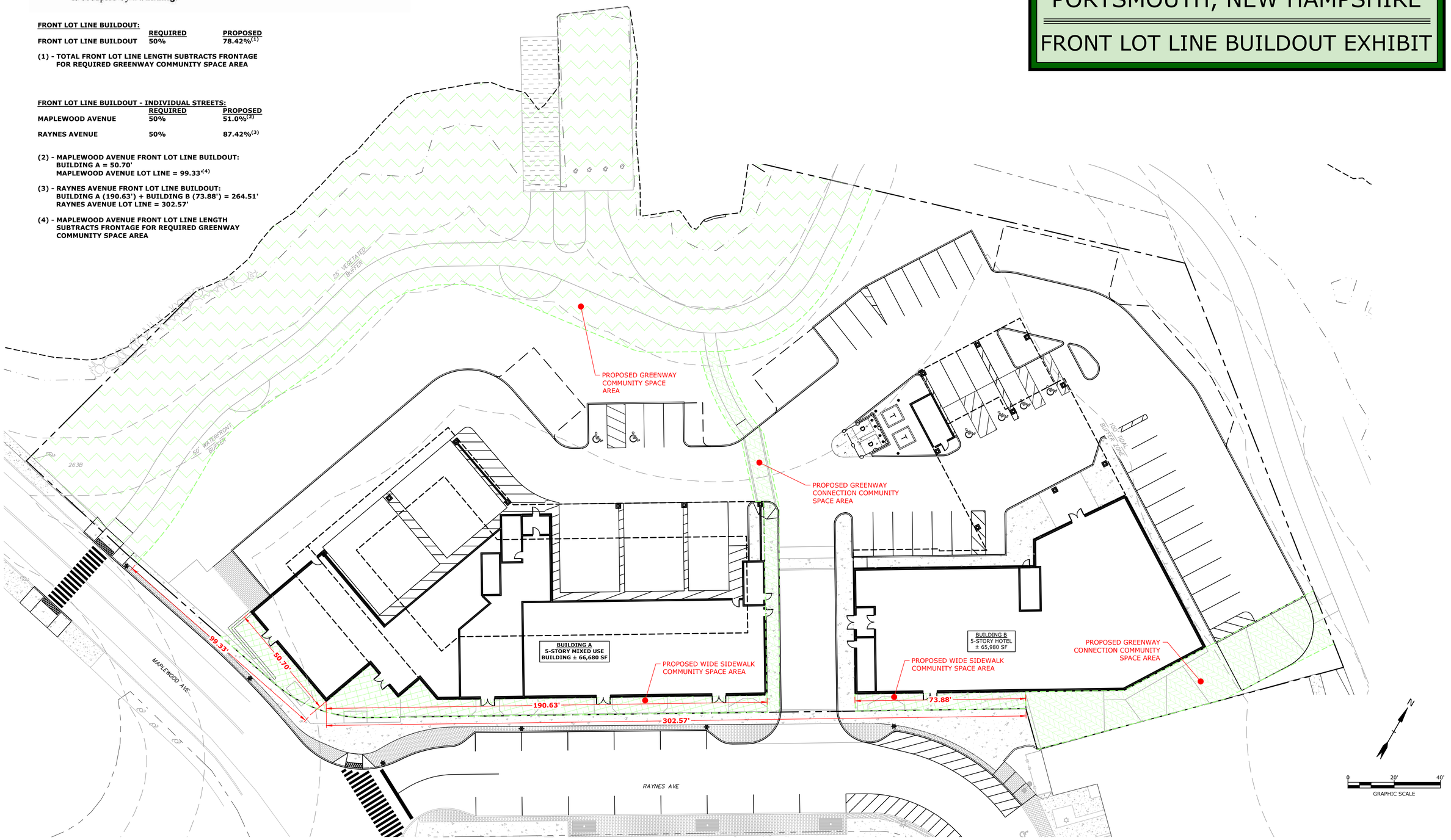
FRONT LOT LINE BUILDOUT - INDIVIDUAL STREETS:

	REQUIRED	PROPOSED
MAPLEWOOD AVENUE	50%	51.0%(2)
RAYNES AVENUE	50%	87.42%(3)

(2) - MAPLEWOOD AVENUE FRONT LOT LINE BUILDOUT:
BUILDING A = 50.70'
MAPLEWOOD AVENUE LOT LINE = 99.33'(4)

(3) - RAYNES AVENUE FRONT LOT LINE BUILDOUT:
BUILDING A (190.63') + BUILDING B (73.88') = 264.51'
RAYNES AVENUE LOT LINE = 302.57'

(4) - MAPLEWOOD AVENUE FRONT LOT LINE LENGTH SUBTRACTS FRONTAGE FOR REQUIRED GREENWAY COMMUNITY SPACE AREA



November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 19, 2021 3:00 PM By: CKRZCUIK
Plot Date: Tuesday, November 23, 2021 Plotted By: Colter Krzcuik
T&B File Location: J:\P\0595 Pro Con General Proposals\0595-007 Raynes Ave Hotel\Drawings - Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg Layout Tab: BUILDOUT

0 20 40 80 SCALE: 1" = 20'-0"

SITE LANDSCAPE PLAN

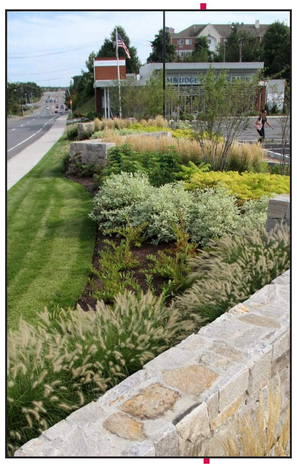
RAYNES AVE - PORTSMOUTH, NH

11/15/2021

Tighe&Bond

1 QU BI
BUFFER SEED MIX
PLANTING BED AT SEATING NICHE
1 CH VI
1 CE OC
BUFFER SEED MIX
1 CH VI
OVERLOOK SEATING NICHE WITH UNIT PAVERS AND CHAIR BENCHES
1 CH TH
1 HA VE
3 HA VE
1 CH TH
1 AC RU
1 CE OC
5 HA VE
2 BE AL
1 JU VI
1 JU VI
1 BE AL
1 AC RU
1 CH VI
1 AC RU
1 JU VI
1 AC RU
1 BE AL
1 CH TH
1 TH OC
BIKE PARKING
5 TH OC
PERENNIALS AND ORNAMENTAL GRASS
1 AC RU
1 CH VI
1 CE OC
3 HA VE
3 AC RU
PERENNIALS AND ORNAMENTAL GRASS
GRANITE POST INDICATING PATH
VEHICULAR UNIT PAVERS WITH FLUSH GRANITE BAND ON EITHER SIDE
PERENNIALS AND ORNAMENTAL GRASS
DECORATIVE DUMPSTER ENCLOSURE FENCE AND GATE
EVERGREEN SCREENING
ENTRANCE WITH UNIT PAVING, BOLLARDS; FLAGGED WITH BENCHES & RAISED SEASONAL/ANNUAL PLANTERS
1 CE OC
3 JU VI
1 CH VI
PLANTING BED AT TRAIL ENTRANCE
PERENNIALS AND ORNAMENTAL GRASS
BIKE PARKING
1 CH TH
1 CE OC
PROPERTY LINE
GRANITE POST INDICATING PATH
PROPOSED CONNECTION TO TRAIL NETWORK
WAYFINDING SIGNAGE; TO BE COORDINATED WITH THE CITY
ARRIVAL & DEPARTURE ZONE
CAST IN PLACE CONCRETE SIDEWALK
PLANTING BED AT TRAIL ENTRANCE
SHADE TREE & METAL TREE GRATE WITH SAND BASED STRUCTURAL SOIL
PROPOSED MIXED USE BUILDING
BOLLARDS
RAISED VEHICULAR TABLE
CAST IN PLACE CONCRETE SIDEWALK
PROPOSED HOTEL
VEHICULAR UNIT PAVER ALLEY FOR FLEXIBLE PROGRAM USE; FIRE EMERGENCY ACCESS
PLANTING BED
VEHICULAR UNIT PAVER FOR FIRE EMERGENCY ACCESS
PLANTING BED
RETAIL SPILL OUT ZONE
SEATING NICHE
RETAIL SPILL OUT ZONE
SEATING NICHE
ARRIVAL & DEPARTURE ZONE
RETAIL SPILL OUT ZONE
BRICK PAVING BAND
3 AC KA
PERENNIALS AND ORNAMENTAL GRASS

PORTSMOUTH KIOSK 1



TRAIL ENTRANCE PLANTINGS

SCALE: N.T.S

SITE LANDSCAPE PRECEDENT IMAGERY

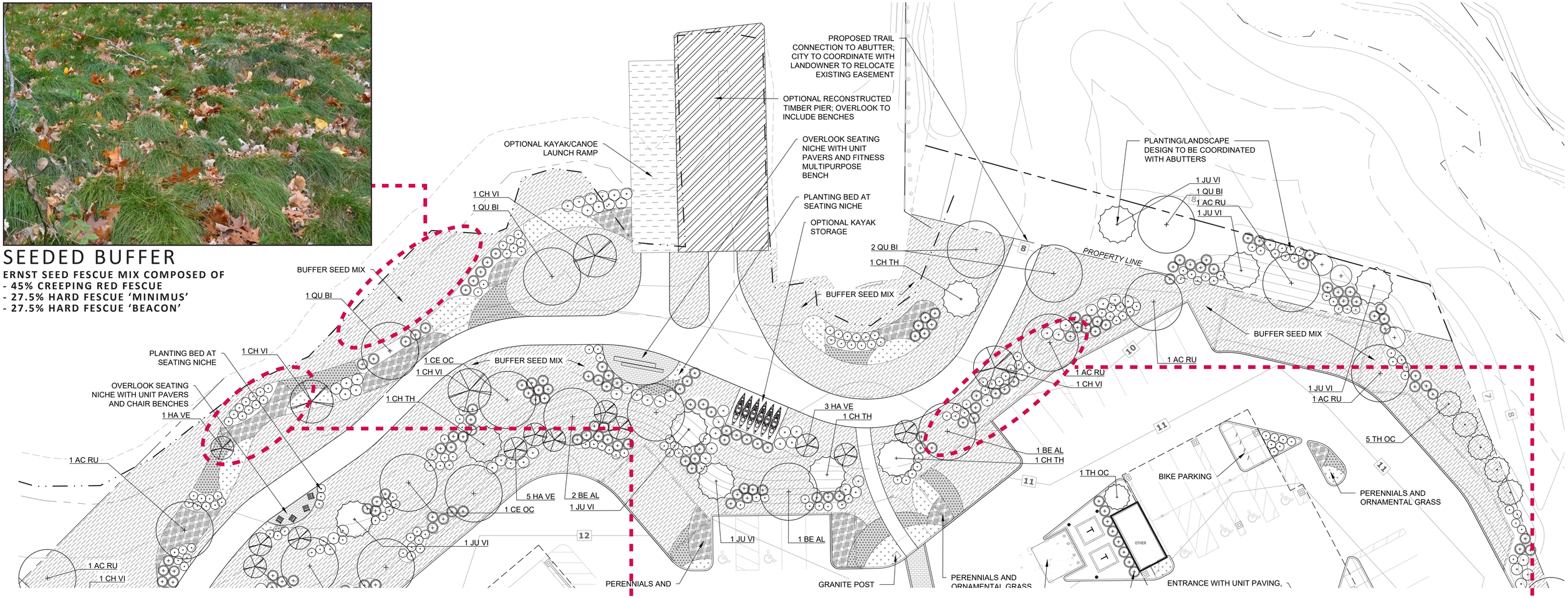
RAYNES AVE - PORTSMOUTH, NH

11/15/2021

Tighe&Bond

SEEDED BUFFER

ERNST SEED FESCUE MIX COMPOSED OF
- 45% CREEPING RED FESCUE
- 27.5% HARD FESCUE 'MINIMUS'
- 27.5% HARD FESCUE 'BEACON'



RESTORATION PLANTING NOTES

1. INVASIVE PLANT MATERIAL WILL BE REMOVED USING MECHANICAL, WHOLE PLANT REMOVAL STRATEGIES AND CHIPPED AND COMPOSTED AT AN APPROPRIATE FACILITY OR BURNED ON SITE ACCORDING TO LOCAL FIRE DEPARTMENT RULES AND REGULATIONS.

2. DISTURBED SOILS WILL BE AUGMENTED AS NEED WITH A CUSTOM BLENDED SOIL OF ONE PART LOAM, ONE PART COMPOST AND ONE PART CLEAN SAND.

3. SEEDED AREAS ARE TO BE COVERED WITH SALT MARSH HAY TO RETAIN SOIL MOISTURE AND PROTECT AGAINST SEED PREDATION BY BIRDS AND SMALL MAMMALS.

4. NATIVE PLANT MATERIAL WILL BE LAID OUT AND INSTALLED BY AN ECOLOGICAL RESTORATION SPECIALIST OR PERSONS TRAINED IN HORTICULTURAL PRACTICES. EXACT PLANT LOCATIONS WILL BE DETERMINED IN THE FIELD BASED ON SITE-SPECIFIC PLANTING CONDITIONS AND MICRO-TOPOGRAPHY.

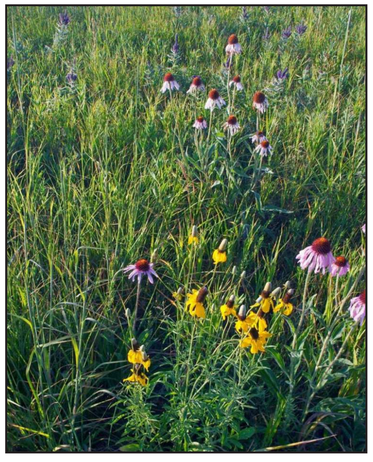
5. THE NEW PLANTINGS WILL BE IRRIGATED FOR ONE FULL GROWING SEASON OR UNTIL THE SEED AND PLANT MATERIAL IS ESTABLISHED.

6. MONTHLY INSPECTIONS WILL BE CONDUCTED FOR THE FIRST GROWING SEASON AND TREATMENT/ REMOVAL OF INVASIVE SPECIES WILL BE IMPLEMENTED AS NEEDED DURING THE ESTABLISHED PERIOD.

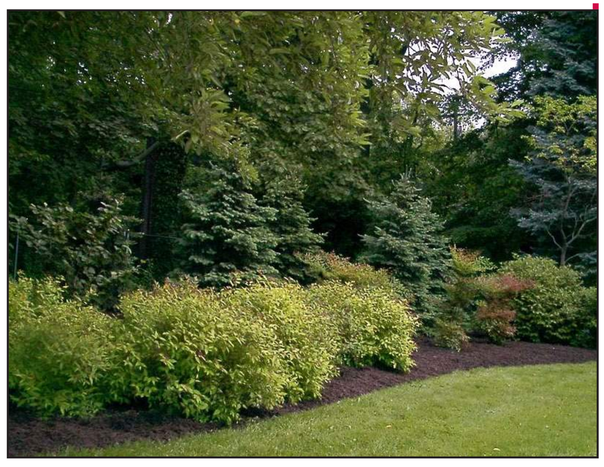
7. CARE IS TO BE TAKEN IN REMOVING ANY NEW COLONIZING INVASIVE PLANT MATERIAL TO MINIMIZE DISTURBANCE TO ESTABLISHING NATIVE PLANT SPECIES.

8. PRACTICES IN ASSOCIATION WITH FERTILIZERS AND PESTICIDES WILL COMPLY WITH ORDINANCES 10.1018.24 AND 10.1018.25.

SHRUB, PERENNIAL AND GRASS COMBO



MIXED HEIGHT PARKING BUFFER



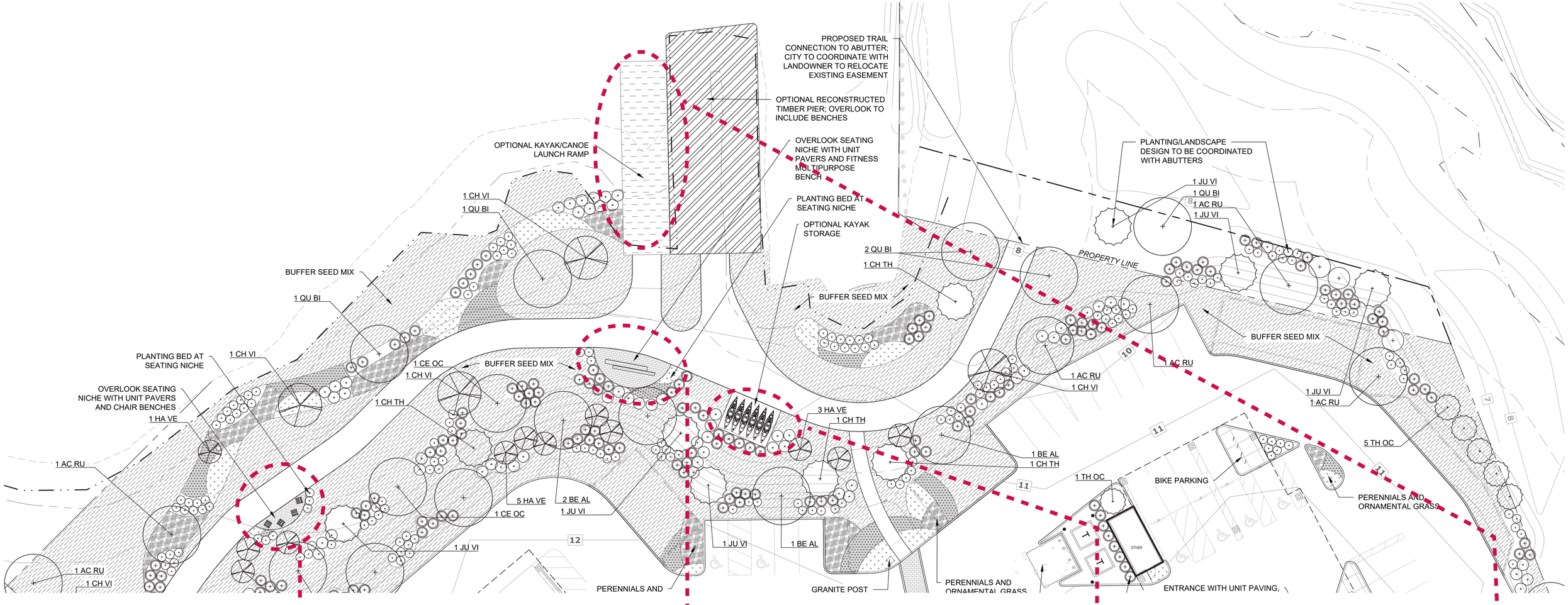
SCALE: N.T.S

SITE LANDSCAPE PRECEDENT IMAGERY

RAYNES AVE - PORTSMOUTH, NH

11/15/2021

Tighe&Bond



SEATING NICHE ONE

SEATING NICHE TWO

OPTIONAL KAYAK STORAGE

OPTIONAL KAYAK LAUNCH

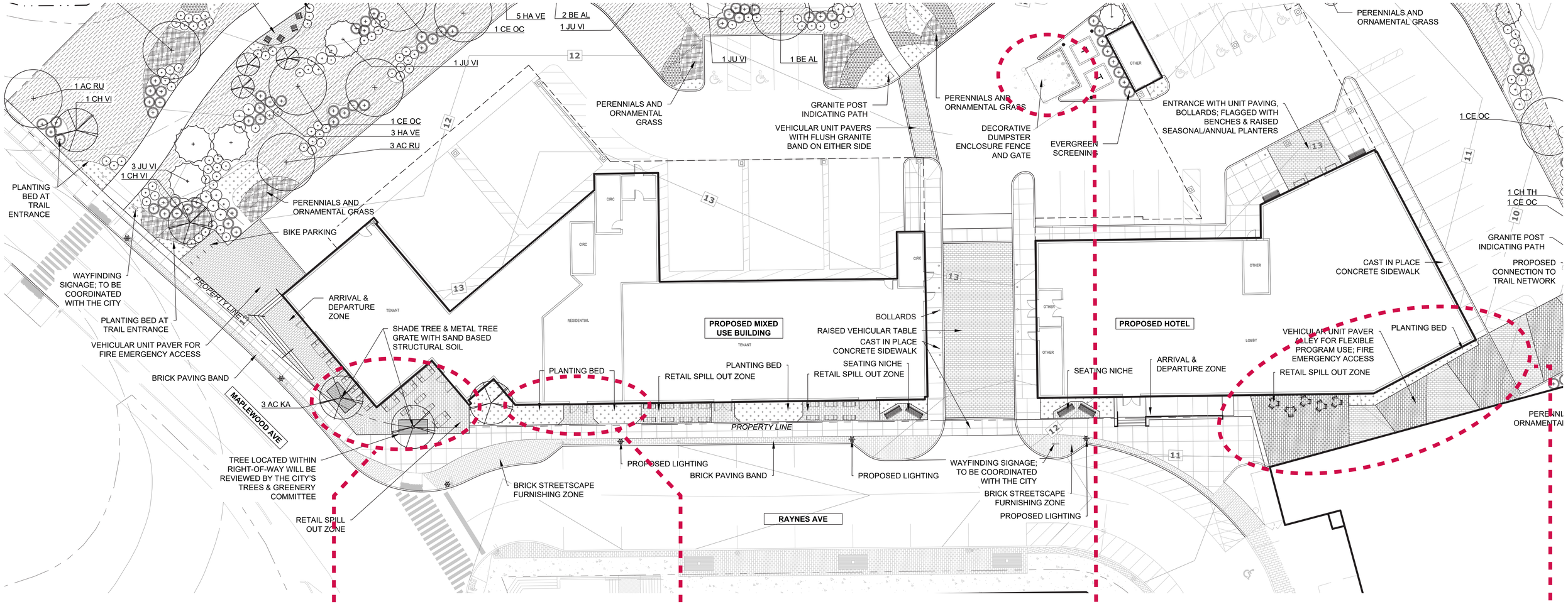
SCALE: N.T.S

SITE LANDSCAPE PRECEDENT IMAGERY

RAYNES AVE - PORTSMOUTH, NH

11/15/2021

Tighe&Bond

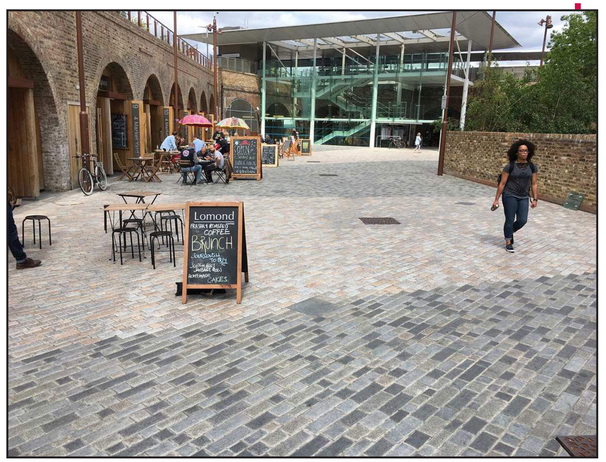


RETAIL SPILL OUT AT CORNER

PLANTING BED AT LOBBY

DUMPSTER ENCLOSURE

ALTERNATING PAVING PATTERN



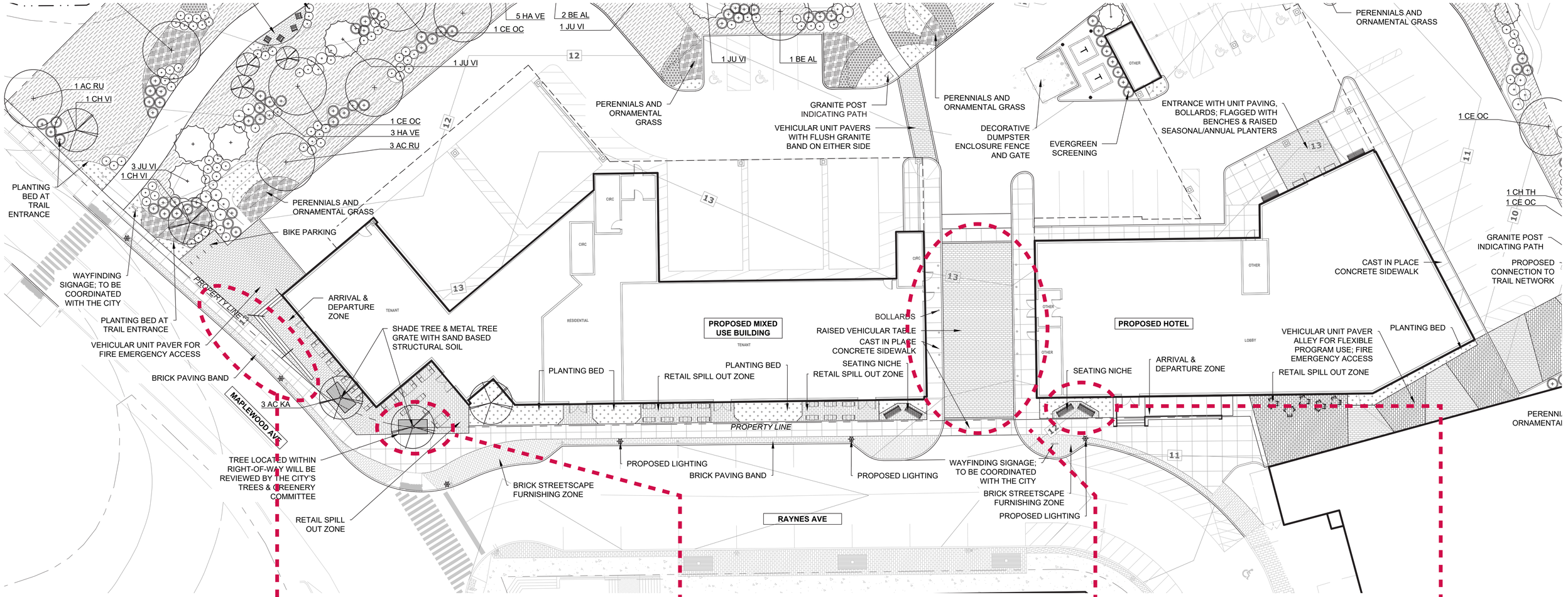
SCALE: N.T.S

SITE LANDSCAPE PRECEDENT IMAGERY

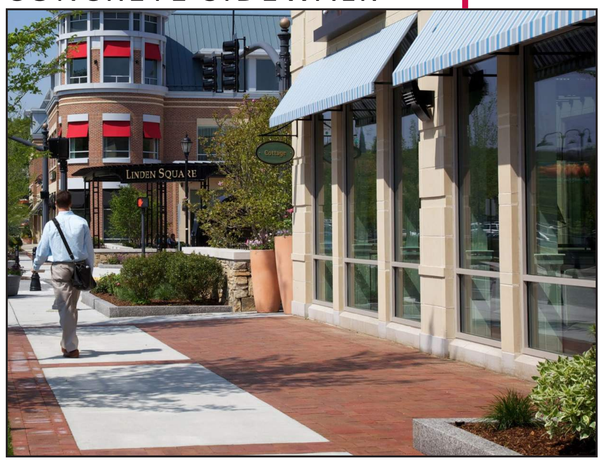
RAYNES AVE - PORTSMOUTH, NH

11/15/2021

Tighe&Bond



BRICK PAVING FIELD / CONCRETE SIDEWALK



TREE GRATE

RAISED UNIT PAVER TABLE

SEATING NICHE

SCALE: N.T.S

SITE LANDSCAPE PRECEDENT IMAGERY

RAYNES AVE - PORTSMOUTH, NH

11/15/2021

Tighe&Bond

Maplewood and Raynes Avenues, Portsmouth, NH Wetland & Buffer Report

TO: Patrick Crimmins, PE

FROM: Leonard A. Lord, PhD, CSS, CWS

DATE: January 7, 2021

PROJECT: P-0595-007

On October 29, 2019, Tighe & Bond delineated and assessed tidal wetlands and their 100-foot buffers at abutting parcels located at 203 Maplewood and 31 Raynes Avenues in Portsmouth, NH. An adjacent, third parcel at 1 Raynes Avenue was reviewed January 6, 2021. The 203 Maplewood and 31 Raynes Avenue parcels include frontage along the northwestern end of North Mill Pond, while the 1 Raynes Avenue parcel is set back from it.

Methods

The 2019 wetland delineation was based on criteria specified in the *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1* (January 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012). The Highest Observable Tide Line (HOTL) was delineated based on the definition found in the NH Department of Environmental Services (NHDES) Wetland Rules Env-Wt 101.49/Env-Wt 602.23. Wetlands were classified based on the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979).

The 2021 wetland boundary had been previously delineated and survey located by others in 2015. The review of that boundary was completed using the same criteria described above. Measurements were used from known points that were easily located in the field to verify the previously delineation. This wetland boundary was accepted as being accurate by Tighe & Bond with no adjustments needed.

The only wetlands found on the parcels are tidal wetlands. The wetlands delineated in 2019 were marked with sequentially numbered flagging labelled 1B-1 to 1B-27. This area was reviewed again in 2021 and confirmed that no changes had taken place that would affect the delineation.

Important wetland functions and values were also assessed and summarized in the vicinity of the parcel. The assessment was based on the *Maine Citizens Guide to Evaluating, Restoring, and Managing Tidal Marshes* (Bryan et al., 1997) and *The Highway Methodology Workbook Supplement—Wetland Functions and Values: A Descriptive Approach*, NAEEP-360-1-30a, US Army Corps of Engineers, New England Division, (September 1999).

Wetlands

Wetlands along all three parcels were found to have been highly disturbed and filled in the distant past. Wetlands along the 203 Maplewood and 31 Raynes Avenue parcels in the western portion of site were generally classified as estuarine intertidal rocky shore, rubble, and regularly flooded (E2RS2N), though some areas exhibited more of a cobble-gravel substrate. The wetland edge in this area slopes sharply and is armored in some areas with rip rap. The northern portion of the wetland edge includes an old boat ramp, an old pier filled with sand

and crushed stone, and a culvert outlet and headwall. Sparse halophytic vegetation along the upper portion of the tidal wetland edge includes sea lavender (*Limonium carolinianum*), salt meadow grass (*Spartina patens*), and seaside goldenrod (*Solidago sempervirens*).

Most of the wetlands within 100 feet of 1 Raynes Avenue lie to the east and north of that parcel. Wetlands closest to Raynes Avenue were classified as estuarine emergent, persistent, regularly flooded high saltmarsh (EEM1N) with smaller areas of intertidal rocky shore. Much of this area was filled for a railroad as evidenced by remaining tracks and disturbed soils evidentially containing a high proportion of coal waste. There is also a utility line and steel structure in the wetland just to the northeast. This saltmarsh is dominated by salt meadow grass with lesser amounts of sea-blite (*Sueda linearis*), sea lavender, and seaside goldenrod. This area also includes patches of common reed (*Phragmites australis*) along the upper edge of the marsh.

Important wetland functions in this portion of North Mill Pond include recreation potential and aesthetic quality, though both functions are impacted by the density and character of the surrounding urban development.

Tidal Buffer

Much of the 100-foot upland tidal buffer along the two western parcels at 203 Maplewood and 31 Raynes Avenues consists of maintained lawn, commercial buildings, and parking lots. There are small patches of shrubby vegetation and small trees at the tops of the slopes between the lawn and tidal wetlands. Species in these patches include autumn olive (*Elaeagnus umbellata*), staghorn sumac (*Rhus typhina*), Japanese knotweed (*Polygonum cuspidatum*), Norway maple (*Acer platanoides*), and Asiatic bittersweet (*Celastrus orbiculatus*).

The 1 Raynes Avenue Parcel to the east consists of nearly 100% impermeable surfaces associated with the existing building and paved parking lot. The vegetated portion of the 100-foot upland tidal buffer off the parcel to the north and east is 40-100 feet wide and is dominated by shrubs and small trees. Common species include common buckthorn (*Rhamnus cathartica*) eastern red cedar (*Juniperis virginiana*) and gray birch (*Betula populifolia*) in addition to the species listed above for the buffer to the west.

The on-site vegetated portions of this highly developed tidal buffer provide some vegetated permeable surfaces to help reduce and filter runoff, but otherwise do little to enhance and protect the downgradient tidal wetland. The off-site buffer along 1 Raynes Avenue is likely to provide some screening and habitat for small birds and mammals foraging along North Mill Pond in addition to treating runoff.

Photographic Log

Client: ProCon

Site: Maplewood & Raynes Avenue, Portsmouth, NH

Job Number: P-0595-007

Photograph No.: 1	**Date:** 1/9/2021	**Direction Taken:** Northeast
Description: Steep wetland bank armored with riprap along the southern wetland edge just off Maplewood Avenue.		

Photograph No.: 2	**Date:** 1/9/2021	**Direction Taken:** Southwest
Description: Culvert outlet, steep bank, and filled pier along the northeast edge of 31 Raynes Avenue.		

Photographic Log

Client: ProCon

Site: Maplewood & Raynes Avenue, Portsmouth, NH

Job Number: P-0595-007

Photograph No.: 3	**Date:** 1/9/2021	**Direction Taken:** North
Description: Grassed portion of the tidal buffer. Tidal wetland extends over the top of the slope into the lawn at the red arrows.		

Photograph No.: 4	**Date:** 1/9/2021	**Direction Taken:** Southeast
Description: Commercial buildings and parking lot in the tidal buffer viewed from near the wetland edge, with the 31 Raynes Avenue building to the left and 203 Maplewood building to the right.		

Photographic Log

Client: ProCon

Site: Maplewood & Raynes Avenue, Portsmouth, NH

Job Number: P-0595-007

Photograph No.: 5	**Date:** 1/9/2021	**Direction Taken:** North
Description: View of an old boat launch to the left and an old pier framed with wood and filled with sand and crushed stone to the right at the northern portion of 31 Raynes Avenue.		

Photograph No.: 6	**Date:** 1/9/2021	**Direction Taken:** Northwest
Description: Shrubby vegetation in the tidal buffer at the northeast corner of 31 Raynes Avenue.		

Client: ProCon

Site: Maplewood & Raynes Avenue, Portsmouth, NH

Job Number: P-0595-007

Photograph No.: 7	**Date:** 1/6/2021	**Direction Taken:** Northwest

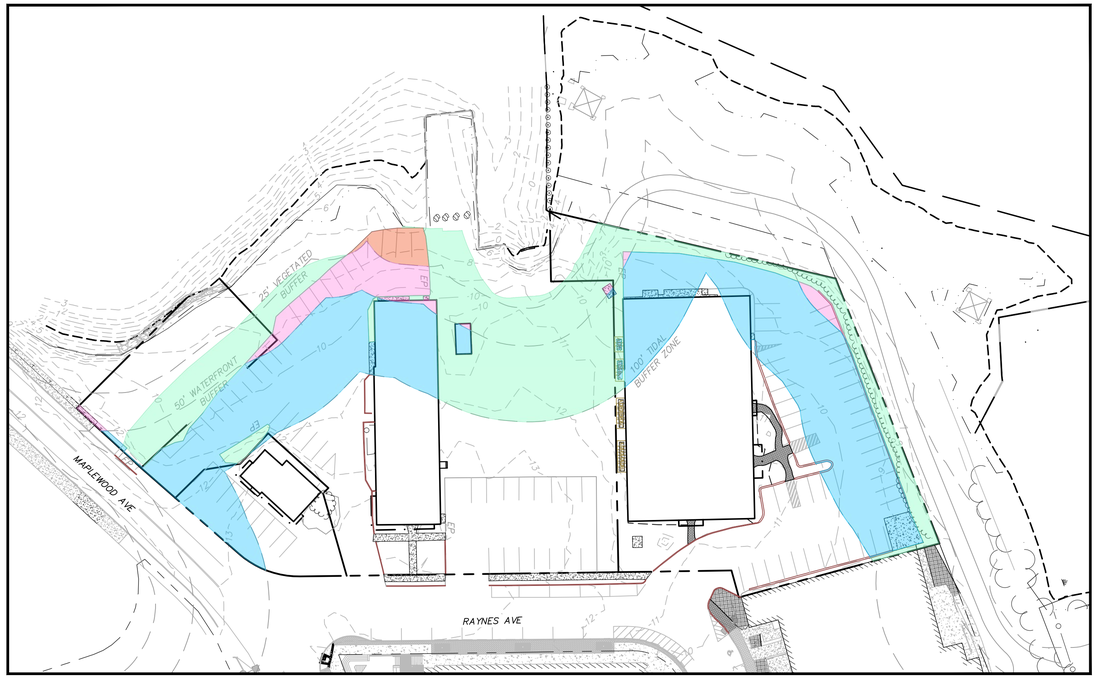
Description: Narrow band of saltmarsh on the adjacent parcel east of 1 Raynes Avenue.

Photograph No.: 8	**Date:** 1/6/2021	**Direction Taken:** Northwest

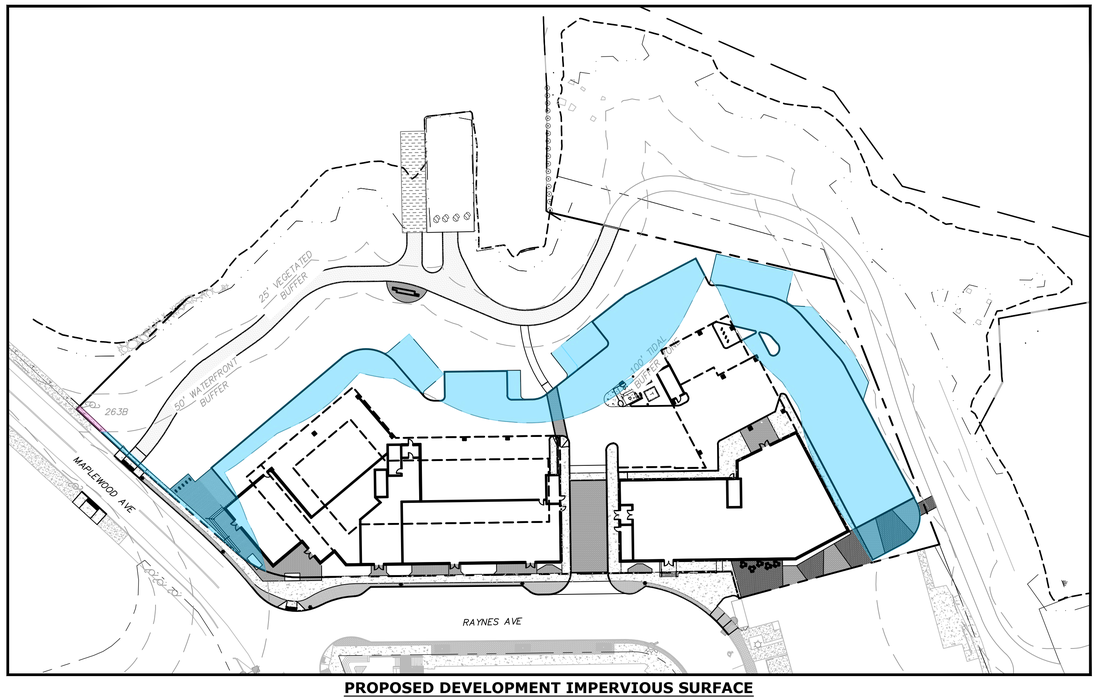
Description: Pavement along the eastern edge of 1 Raynes Avenue, with shrubby vegetation in the tidal buffer off the parcel.

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

WETLAND BUFFER IMPERVIOUS SURFACE EXHIBIT



EXISTING CONDITIONS IMPERVIOUS SURFACE



PROPOSED DEVELOPMENT IMPERVIOUS SURFACE

Impervious Surface Within Buffer Area		
Wetland Buffer Setback	**Existing Impervious Surface**	**Current Proposed Site Plan**
0 - 25 FT	848 SF	0 SF
25 - 50 FT	3,006 SF	67 SF (1)
50 - 100 FT	24,473 SF	21,190 SF
Total Impervious Surface	**28,327 SF**	**21,257 SF**
IMPERVIOUS SURFACE NET REDUCTION		**7,070 SF (2)**

(1) Reconstructed City Sidewalk Area

(2) Total net reduction includes impervious surface for reserve parking spaces if constructed in the future. If reserve spaces are not constructed, total impervious surface reduction will be 10,107 SF for the project.

AREA OF TEMPORARY WETLAND BUFFER IMPACTS FOR CONSTRUCTION

N

0 50' 100'

GRAPHIC SCALE

Tighe&Bond

November 24, 2021
P-0595-007-C-DSGN.dwg

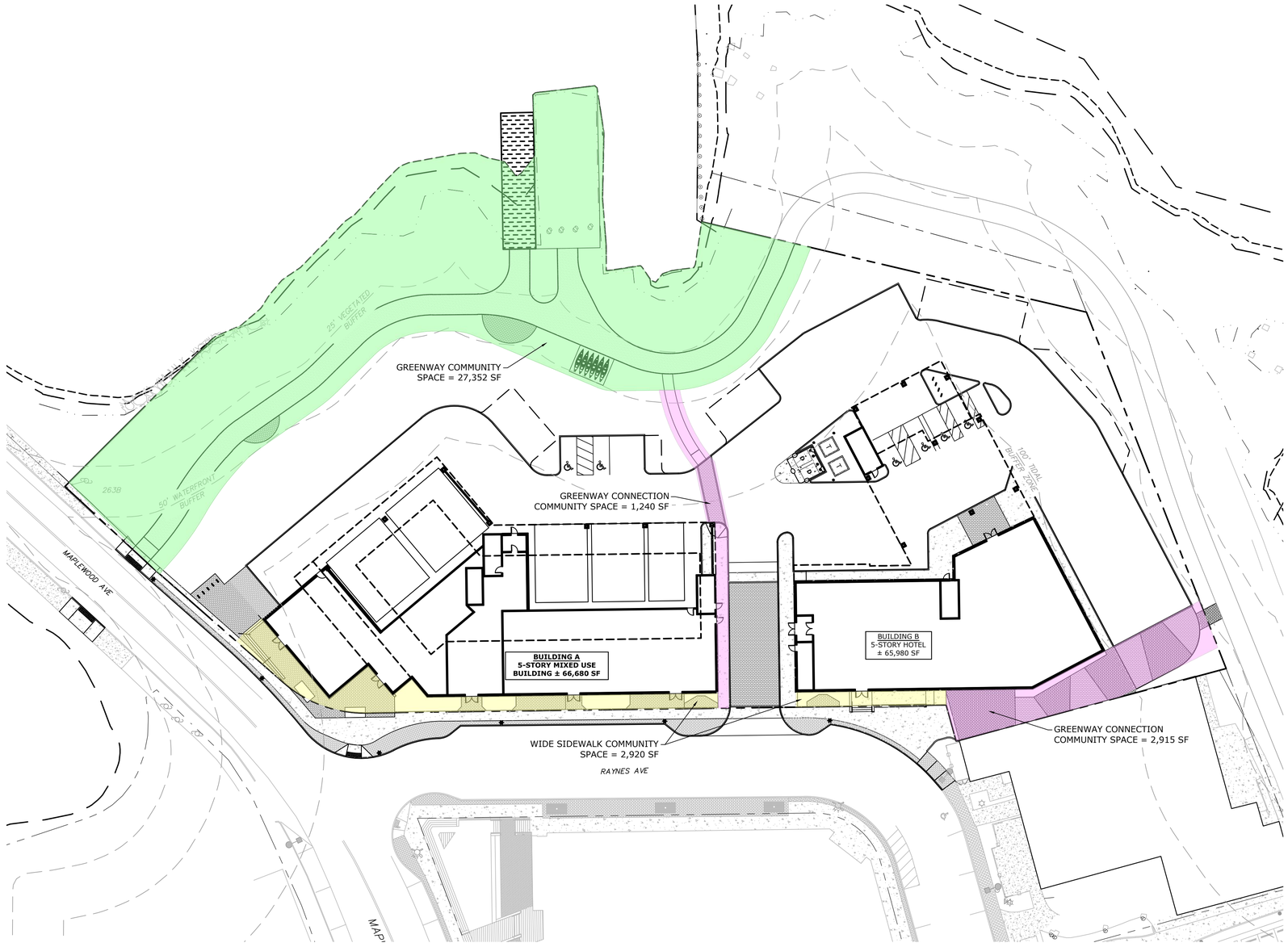
Last Save Date: November 19, 2021 2:25 PM By: CKRZCUJK
Plot Date: Friday, November 19, 2021 Plotted By: Colter Krzcuik
Plot File Location: J:\P0595 Prtl Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg Layout Tab: 1 OF 1

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

COMMUNITY SPACE EXHIBIT

COMMUNITY OPEN SPACE:

	REQUIRED	PROVIDED
GREENWAY COMMUNITY SPACE		27,352 SF
GREENWAY CONNECTION COMMUNITY SPACE		4,155 SF
WIDE SIDEWALK COMMUNITY SPACE		2,920 SF
TOTAL LOT AREA: 110,415 SF COMMUNITY OPEN SPACE (20% OF TOTAL)	21,274 SF 20%	34,427 SF 31.2%



N

0 30' 60'

GRAPHIC SCALE

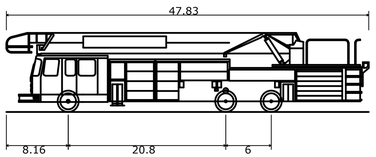
Tighe&Bond

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 19, 2021 3:00 PM By: CKRZCUIK
Plot Date: Tuesday, November 23, 2021 Plotted By: Colter Krzcuik
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg Layout Tab: COMMUNITY

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

FIRE TRUCK TURNING EXHIBIT



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°

LEGEND

VEHICLE OVERHANG

VEHICLE WHEEL BASE

25' VEGETATED BUFFER

50' WATERFRONT BUFFER

100' TIDAL BUFFER ZONE

263B

VEHICLE BODY OVERHANG (TYP)

VEHICLE WHEEL BASE (TYP)

MAPLEWOOD AVE

RAYNES AVE

N

0 20' 40'

GRAPHIC SCALE

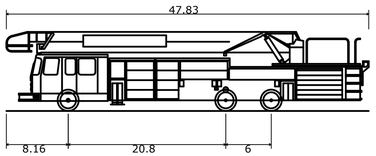
Tighe&Bond

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 19, 2021 1:28 PM By: CKRZCUIK
Plot Date: Friday, November 19, 2021 Plotted By: Colter Krzcuik
TGB File Location: J:\VP\0595 Pro Con General Proposals\0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg Layout Tab: FIRE TRUCK 1

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

FIRE TRUCK TURNING EXHIBIT

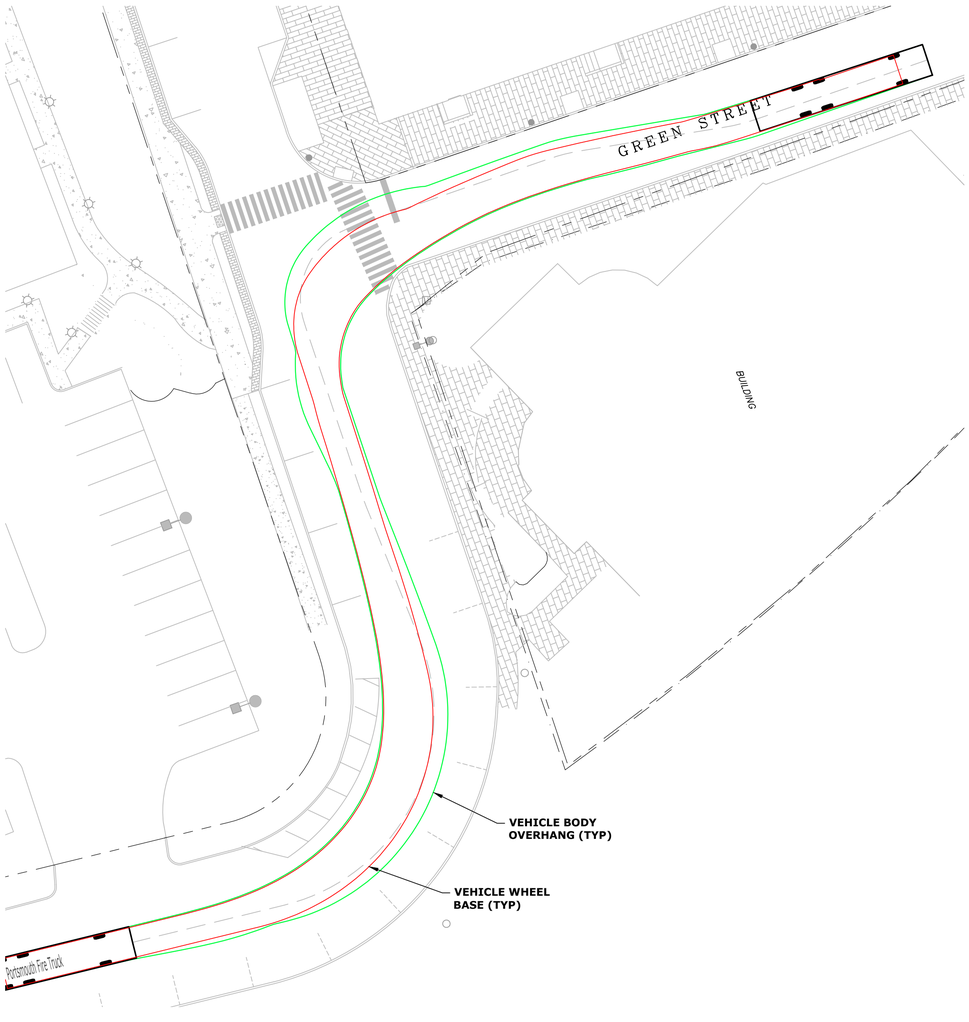


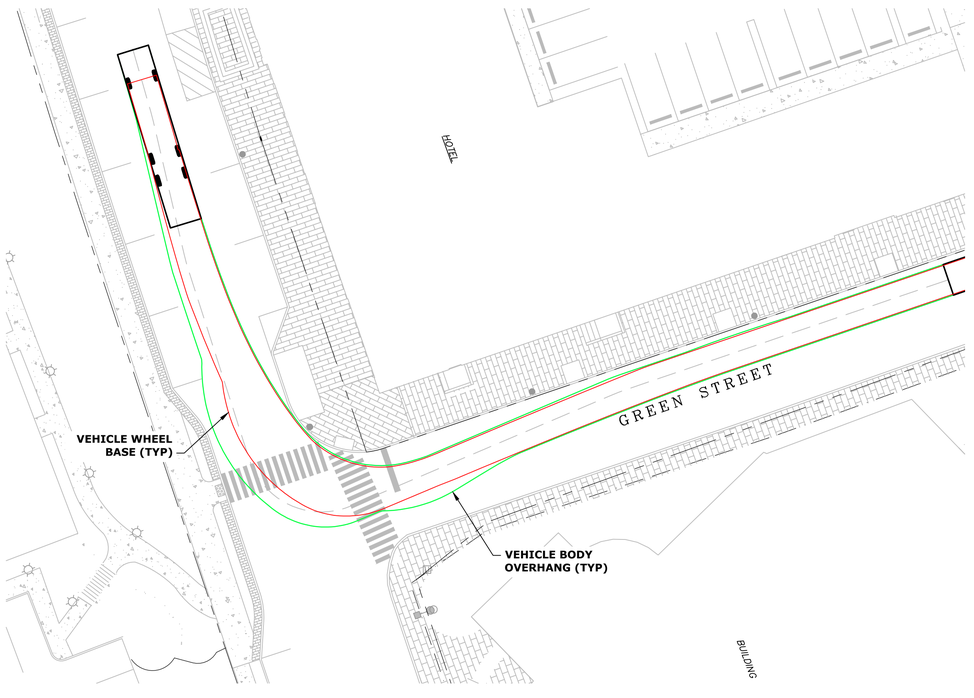
Portsmouth Fire Truck	
Overall Length	47.830ft
Overall Width	8.500ft
Overall Body Height	10.432ft
Min Body Ground Clearance	0.862ft
Track Width	8.000ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	38.00°

LEGEND

VEHICLE OVERHANG

VEHICLE WHEEL BASE





N

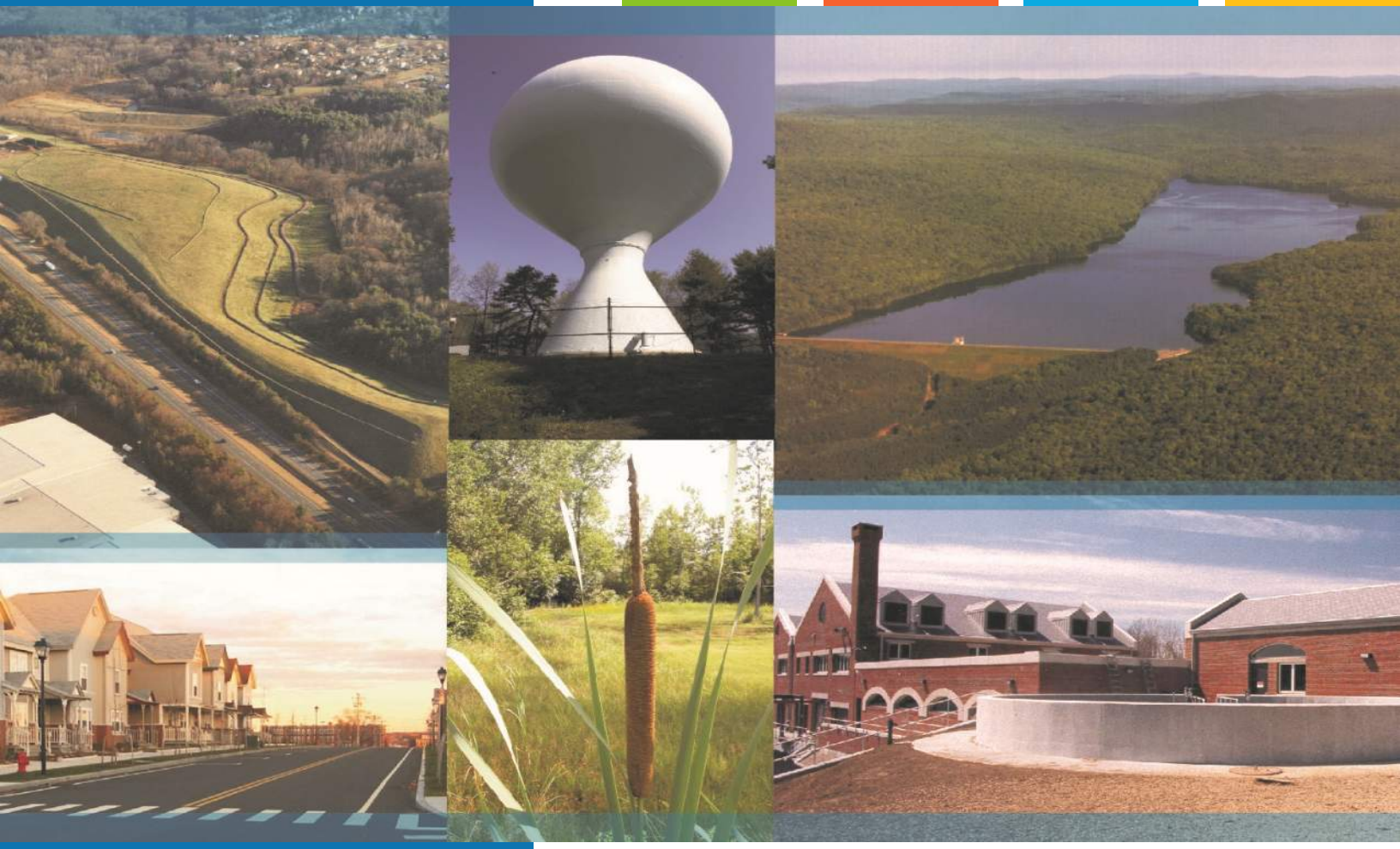
0 20' 40'

GRAPHIC SCALE

Tighe&Bond

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 19, 2021 1:28 PM By: CKRZCUIK
Plot Date: Friday, November 19, 2021 Plotted By: Colter Krzcuik
Xref File Location: J:\P\0595\Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg Layout Tab: FIRE TRUCK 2



Raynes Avenue Development
Portsmouth, NH

Traffic Impact Study

NORTH MILL POND HOLDINGS, LLC

Revised August 2, 2021

Tighe&Bond

100% Recyclable

Table of Contents

Section 1 Introduction

Section 2 Existing Conditions

2.1 Roadway Descriptions 2-1
2.2 Study Area Intersection Descriptions 2-1
2.3 Existing Traffic Data 2-3
2.3.1 Seasonal Variation 2-3

Section 3 No Build Conditions

3.1 Planned Roadway and Intersection Projects 3-1
3.2 Traffic Growth 3-2
3.3 Traffic Operations Analysis 3-3

Section 4 Build Conditions

4.1 Site Access 4-1
4.2 Trip Generation 4-1
4.3 Arrival and Departure Distribution 4-2
4.4 Traffic Operations Analysis 4-3

Section 5 Conclusions and Recommendations

Appendix

A. Tables
B. Figures
C. Site Plans
D. Capacity Analysis Methodology
E. Capacity Analyses Worksheets
F. Trip Generation
G. 111 Maplewood Avenue Traffic Evaluation
H. 111 Maplewood Avenue Traffic Evaluation Response to Comments
I. Raw Traffic Volume Data (June 2021)
J. City of Portsmouth Continuous Count Station Data (Market Street at Nobles Island)

Section 1
Introduction

Tighe & Bond has prepared this *Traffic Evaluation* to summarize the potential changes in the traffic operations resulting from the construction of a 128-room hotel, 60-unit residential building, 5,200 square feet (sf) of retail space, and 4,400 sf of restaurant space (the Project) located on the north side of Raynes Avenue in Portsmouth, New Hampshire (the Site).

The Site is bounded by Raynes Avenue to the south, Maplewood Avenue to the west, and Mill Pond to the north and east. The Site is currently developed with three buildings consisting of the Vanguard Key Club (1 Raynes Avenue), a vacant office building (31 Raynes Avenue), and a vacant laundromat (203 Maplewood Avenue). Paved/ unpaved parking areas and lawn/landscaping are provided for the existing uses. A portion of the parking area is currently used for paid parking.

Vehicular access to the Site will be provided via a new driveway located just west of the existing Vanguard Key Club curb cut, along the north side of Raynes Avenue. The project includes approximately 112 parking spaces on site with additional parking provided off-site. The Project will close the two existing curb cuts on the north side of Raynes Avenue, as well as the nondelineated curb cut on Maplewood Avenue.

The trip generation analysis indicates that the Project can be expected to generate approximately 122 new vehicular trips during the weekday afternoon peak hour (71 entering trips, 51 exiting trips), and 195 new vehicular trips during the Saturday midday peak hour (108 entering trips, 87 exiting trips).

A traffic operations analysis was conducted for the study intersections during the weekday afternoon peak hour and Saturday midday peak hour. The analysis was conducted for the following four scenarios:

- 2022 No-Build Scenario – Future Projected Traffic Volumes without Site Generated Traffic and Existing Roadway Geometry
- 2022 Build Scenario – Future Projected Traffic Volumes with Site Generated Traffic and Proposed Roadway Geometry
- 2032 No-Build Scenario – Future Projected Traffic Volumes without Site Generated Traffic (10-year Horizon) and Existing Roadway Geometry
- 2032 Build Scenario – Future Projected Traffic Volumes with Site Generated Traffic (10-year Horizon) and Proposed Roadway Geometry

The Study builds off the approved 111 Maplewood Avenue Traffic Evaluation, conducted for a proposed office and retail development on the same block in 2019. Due to the expected reduction in traffic volumes as a result of the COVID-19 pandemic, traffic counts were not collected to support this traffic evaluation for the afternoon peak hour. Saturday midday peak hour traffic volumes were collected in June 2021. The June 2021 counts were validated by comparing 2021 traffic volumes to historical traffic volumes as further detailed in Section 2.3. The traffic counts were projected to and analyzed for the expected 2022 opening year and 10-year Horizon year of 2032 per NHDOT guidelines.

The remainder of the report summarizes the evaluation which includes a description of the study area, traffic volumes during the weekday afternoon and Saturday midday peak periods, trip generation estimates for the Project, estimated trip distribution patterns for the new site generated trips, traffic volume projections for the analysis scenarios, traffic operations analysis for the study area intersections, and a summary of the study findings.

Section 2
Existing Conditions

This section includes a description of existing study area roadway geometry, intersection geometry, intersection traffic control, and data collection efforts within the study area. Figure 1 shows the location of the Site in relation to the surrounding roadway network and study area.

2.1 Roadway Descriptions

Raynes Avenue is a two-lane roadway (one lane in each direction) that runs east-west between Maplewood Avenue and Vaughan Street. On-street parallel parking and sidewalks are provided on both sides of Raynes Avenue in the vicinity of the Project. The roadway has a posted speed limit of 25 miles per hour (mph) near the site.

The other study area roadways (Maplewood Avenue, Vaughan Street, Deer Street, Russell Street, and Market Street) within the study area have similar urban characteristics: two-lane roadways, on-street parallel parking, sidewalks, and low speed limits (25 mph or less). Land uses near the Site are a mix of commercial businesses, restaurants, hotels and residential.

2.2 Study Area Intersection Descriptions

Seven existing intersections were included for analysis in the study area. The study area is consistent with the study area used in the previously approved 111 Maplewood Avenue Traffic Evaluation.

Maplewood Avenue at Raynes Avenue

Raynes Avenue intersects Maplewood Avenue from the east to form a three-way unsignalized intersection. All approaches at this intersection provide a single lane. Sidewalks are provided on both sides of Maplewood Avenue. On-street parallel parking is provided on both sides of Maplewood Avenue and Raynes Avenue. Maplewood Avenue operates with the right of way while the minor street approach of Raynes Avenue operates under stop control. A bike lane is striped along both sides of Maplewood Avenue.

Maplewood Avenue at Vaughan Street

Vaughan Street and a private driveway intersect Maplewood Avenue from the east and the west, respectively, to form a four-way unsignalized intersection. All approaches at this intersection provide a single lane. Sidewalks are provided on both sides of Maplewood Avenue, but no crosswalks are provided at the intersection. On-street parallel parking is provided on both sides of Maplewood Avenue west of Vaughan Street and on both sides of Vaughan Street. A bike lane is striped along both sides of Maplewood Avenue north of the intersection and along Maplewood Avenue northbound approach south of the intersection. Maplewood Avenue operates with the right of way while the minor street approaches of Vaughan Street and the private driveway operate as the stop-controlled approaches.

Maplewood Avenue at Deer Street

Deer Street intersects Maplewood Avenue from the east and west to form a four-way signalized intersection. Maplewood Avenue southbound approach consists of left turn only lane and a right/through shared lane. Maplewood Avenue northbound approach consists of an exclusive left turn lane, exclusive through lane and an exclusive right turn lane. Deer Street eastbound approach consists of a single lane. Deer Street westbound approach consists of an exclusive left turn lane and a right and through shared lane. The intersection is equipped with an exclusive actuated pedestrian phase. Each leg of the intersection has painted crosswalks.

Vaughan Street at Green Street

Green Street intersects Vaughan Street from the east, forming a three-way unsignalized intersection. Both roadways provide a single lane of travel in each direction. Vehicles exiting from Green Street operate under stop control. The width of Green Street ranges between 17 and 24 feet of pavement with no delineation of travel lanes or shoulders. A brick paver sidewalk exists on the east side of Green Street, south of the railroad tracks. On-street parking is allowed on the south side of Vaughan Street at the intersection.

Deer Street at Russell Street

Russell Street intersects Deer Street from the north to form a three-way unsignalized intersection. The southbound approach on Russell Street provides a single lane that operates under a stop control. The westbound and eastbound approaches on Deer Street both provide a single lane. The intersection provides sidewalks on all sides of the intersection approaches. A crosswalk is available for pedestrians crossing Deer Street east of Russell Street. On Street parking is available on all approaches.

Russell Street at Green Street

Green Street intersects Russell Street from the west to form a three-way unsignalized intersection. The eastbound approach of Green Street provides a single lane that operates under stop control. The northbound and southbound approaches on Russell Street also both provide a single multi-use lane. Sidewalk is provided on both sides of Russell Street, but no crosswalks are provided at the intersection. On-street metered parking is provided on Russell Street south of Green Street.

Market Street at Russell Street

Russell Street intersects Market Street from the south, forming a three-way unsignalized intersection. Market Street eastbound consists of a through lane and a channelized right turn lane that operates as free flow movements. The westbound approach consists of a single through lane. The intersection geometry is designed to prohibit westbound left turns from Market Street to Russell Street. The Russell Street approach is a single lane that is wide enough for right turning vehicles to bypass waiting left turning vehicles. The Russell Street approach operates under stop control. Pedestrian crosswalks are provided along Russell Street and the westbound Market Street approach with sidewalks provided on all approaches. It is noted that the intersection is fully signalized with mast arms, vehicular and pedestrian signal heads, etc. However, the signal indications are in flashing mode, with yellow indications facing Market Street and red indication facing Russell Street.

2.3 Existing Traffic Data

Evaluation of the traffic impacts related to the Project requires the quantification of existing roadway and traffic conditions throughout the study area. As previously stated, turning movement counts were not conducted at this time for the weekday afternoon peak hour due to expected lower than normal traffic volumes in the study area due to the effects of the COVID-19 pandemic. Existing traffic volumes from the previously approved 111 Maplewood Avenue traffic study were used to develop the existing traffic volumes for the Study. For the Saturday midday, turning movement counts were collected in June 2021.

Manual turning movement counts at the study area intersections for the previous study were collected in January 2019 during the weekday afternoon peak period (4:00 PM to 6:00 PM). The raw traffic count data is provided in the 111 Maplewood Traffic Evaluation, enclosed in Appendix G. Traffic counts for the Saturday midday peak period (11:00 AM to 1:00 PM) were collected in June 2021 prior to the end of the school year. The raw traffic counts for the Saturday midday peak hour are included in Appendix I.

The June 2021 Saturday midday turning movement counts collected were confirmed by comparing the automatic traffic recorder (ATR) volumes collected during the same week to historical NHDOT volumes at the same location, on Maplewood Avenue approximately 100 feet southeast of Raynes Avenue. As shown in Table 1 below, traffic volumes were observed to have been higher in 2021 than those collected prior to the pandemic, and the turning movement counts were assumed to be sufficient as a basis for this study as collected.

TABLE 1

Maplewood Avenue Historical Average Daily Traffic (ADT)

Year	ADT (vehicles per day)	Source
2017	7,300	NHDOT August 2020 ATR (ID 82379035)
2018	6,603	NHDOT Growth Estimate
2019	6,682	NHDOT Growth Estimate
2020	5,727	NHDOT August 2020 ATR (ID 82379035)
2021	10,607	Tighe & Bond June 2021 ATR

Evidence of traffic volumes returning to typical levels is also represented in daily traffic volume data collected by the City at Market Street at Nobles Island since February 2020. Saturday traffic volumes in June 2020 were approximately 9,000 vpd but have since approached 13,000 vpd one year later. The 7-day rolling average traffic volume at this location is provided in Appendix J.

2.3.1 Seasonal Variation

The raw traffic counts were seasonally adjusted to peak month conditions based on nearby traffic volume count stations proximate to Portsmouth. Seasonal adjustment factors based on data available from the Urban Highway (Group 4) continuous count stations were applied to the traffic count data. A seasonal adjustment factor of 19 percent was used for the weekday afternoon peak hour volumes based on 2014 to 2016 monthly traffic volume data, while an adjustment factor of 2 percent was applied to the Saturday midday peak hour volumes based on the 2019 monthly traffic volume data.

Section 3
No-Build Conditions

The following section describes the estimation of traffic volumes in the study area for the No-Build Conditions. The 2022 and 2032 No-Build Conditions will serve as the baseline for comparison purposes to measure the impacts of the Project.

3.1 Planned Roadway and Intersection Projects

Information obtained from the City traffic department staff was used to identify planned roadway improvement and new development projects in the area that could affect future traffic conditions. The following improvements, described in record studies prepared for other projects in the area, were considered when developing the No-Build conditions analysis.

- *Market Street/Russell Street reconstruction:* The City is in the early planning stages for the construction of a roundabout at the intersection of Market Street/Russell Street. At this time, no detailed plans have been developed. Therefore, this improvement is not included in the future conditions presented in this study. It is anticipated that a roundabout configuration would have a beneficial effect on the traffic operations and safety at the intersection.
- *North End Portsmouth Development (also referred to as the "Harbor Corp Project") Off-Site Improvements:* The timetable for this project is currently unknown. However, since the development related traffic volumes are included in the No-Build analysis, traffic improvements proposed for this development were also take into consideration, where applicable.
- *Maplewood Avenue Corridor Project:* The Maplewood Avenue corridor improvement project includes full depth pavement construction/reclamation, sidewalk construction, drainage/water/sewer improvements, traffic calming measures, pavement striping, and improvements to bicycle accommodations. The Project extends between Woodbury Avenue to the west and Dennett Street to the east. Construction will be completed in late 2020/ early 2021.
- *Maplewood Avenue Road Diet:* The City has conducted preliminary planning for a possible Maplewood Avenue Road Diet Project. The concept of the road diet would consider one through travel lane along Maplewood Avenue with auxiliary turn lanes provided, where necessary, at the intersections with Deer Street, Hanover Street, and Islington Street. This would present an opportunity for landscaped islands and/or improved bicycle accommodations. These improvements were not included in the future-year conditions as the construction timetable is unknown.
- *Maplewood Avenue Railroad Crossing:* NHDOT is currently designing improvements for several rail crossings in the State. As part of the project, the DOT is seeking to reconstruct the at-grade crossing along Maplewood Avenue immediately north of Deer Street, as well as the railroad crossing on Green Street immediately west of Russell Street. The improvements are set to include new signage, railroad gates and signals where appropriate. This project has been delayed and implementation dates are currently unknown.

- As part of the Deer Street Garage and Mixed-Use Development, the eastbound shared left-through-right lane is proposed to be restriped as a dedicated left-turn lane and shared through-right lane. This is reflected in the analyses in 2032 under No Build and Build conditions.

3.2 Traffic Growth

The 2022 No-Build Condition traffic volumes were developed by growing the existing traffic volumes for the weekday afternoon and Saturday midday peak hours to the projected build year. Two components of traffic growth were incorporated. The first component was to estimate an annual average traffic growth rate. Based on a review of recent studies in the vicinity of the Project, a one percent per year background traffic growth rate was assumed in the analysis.

The second component to determining traffic growth was identifying any proposed development projects that are near or within the study area. Based on discussions with the City of Portsmouth staff during the previous study, it was determined that the following projects are either planned, under construction, or partially occupied. Traffic volumes related to these projects were obtained from record studies and distributed through the study area to develop the 2022 and 2032 No Build Condition traffic volumes. Because the opening year is three years after the previously approved 111 Maplewood Avenue study that this study is based on, the no-build development traffic volumes were added to the 2022 No Build volumes. This approach is considered conservative as the developments described below may not actually be fully constructed and/or occupied by 2022. The following developments were incorporated into the no-build traffic volumes:

- *Deer Street Garage and Mixed-Use Development:* This project will be located in the northwest corner of the Maplewood Avenue/Deer Street intersection. The traffic study for the project indicates that the full build-out of the project consists of a 600-stall municipal public parking garage with 4,700 sf of integral retail; and four mixed-use buildings. The four mixed-use buildings include a combination of 80 residential apartments, 108 hotel rooms, 41,300 sf of office, 20,000 sf of retail, 9,900 sf of restaurants, a 4,700 sf bar, and a 2,700 sf bank.
- *299 Vaughan Street:* This project is located at the corner of the intersection Vaughan Street and Green Street. It involves the demolition of an auto parts store and construction of a 143-room hotel with approximately 2,900 square feet of leasable commercial/retail space. This project has been constructed and is occupied.
- *40 Bridge Street:* This project consists of constructing a 4,025 sf restaurant and six residential condos. The project has been constructed.
- *75 Congress Street:* This project consists of constructing 10 residential condos. Due to the low traffic-generating nature of this land use and the limited number of units, traffic generated by the development was assumed to be included as part of the 1.0 percent annual background growth rate.
- *Harbor Corp Redevelopment:* This project consists of constructing a 98-room hotel and conference center, 14 condominium units, a 40,000 sf grocery store, and a 540-space parking garage.
- *172 Hanover Street:* The project consists of renovating a 7,000 sf restaurant that has been vacant for several years.

- *30 Maplewood Avenue:* The vacancy assumptions for this development that were included in the Deer Street garage traffic study were used in the current study as well.
- *46-64 Maplewood Avenue:* This project consists of constructing 22 residential apartments and 13,475 sf of retail space. The project has been constructed.
- *173-175 Market Street:* This project consists of constructing 3,331 sf of commercial space, 1,759 sf of office space, and six residential condos. The project has been constructed.
- *111 Maplewood Avenue:* This project includes 74,000 sf of office space with ancillary commercial space. The project is currently under construction and is expected to be completed in 2021.

It is assumed that other smaller developments or small vacancies in existing developments are captured by the background traffic growth rate assumptions used in the previous study analysis.

It is also important to note that the Saturday midday traffic volumes collected in June 2021 may include background development volumes of projects that are already partially or fully occupied that were also added to the no-build development volumes previously discussed. This measure was taken due to the uncertainty of building occupancy levels of new developments in the area due to potential effects on the pandemic.

The 2022 and 2032 No Build conditions volumes for the weekday afternoon and Saturday midday peak hours are shown in Figures 2 to 5.

3.3 Traffic Operations Analysis – No-Build Conditions

Capacity and queue analyses were conducted for the 2020 and 2032 No Build Conditions during the afternoon peak hour using Trafficware Synchro Studio 10 – Traffic Analysis Software. The software conducts the analysis based up on the methodology provided in the Highway Capacity Manual, 6th Edition, 2016. The analysis results are categorized in terms of Level of Service (LOS), which describes the qualitative intersection operation 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 D. The queue analysis results are summarized in terms of the 50th percentile queue length, and the 95th percentile queue length. The 50th percentile queue length represents the approximate average queue length, and the 95th percentile queue length represents the design queue length under peak traffic conditions. Tables 2 and 3 summarize the capacity and queue analyses results, respectively, Capacity analyses worksheets with full inputs, settings, and results are provided in Appendix E.

The analysis for the Maplewood Avenue at Deer Street signalized intersection indicates that failing operations are experienced at the intersection under 2022 No Build conditions. The intersection operations improve slightly under 2032 No Build conditions with signal optimization and the addition of an eastbound dedicated left-turn on Deer Street that will be implemented with the Deer Street development. Vehicular queues exceed available storage on the westbound left-turn lanes during both 2022 and 2032 No Build conditions during both time periods.

The unsignalized intersections experience failing operations at multiple approaches under 2022 and 2032 No Build conditions during both time periods. When the ambient

background growth rate is applied to develop 2032 No Build traffic volumes, vehicular delays at several side street approaches increase further. The failing operations experienced on several side street approaches are consistent with the operations shown on previous traffic studies in the area. Significant queuing is experienced on the eastbound left approach at the intersection of Market Street at Russell Street and the westbound approach at the intersection of Raynes Avenue at Maplewood Avenue under 2022 and 2032 No Build conditions during both time periods.

Section 4
Build Conditions

The Project includes a new 128-room hotel, 60-unit residential building, 5,200 square feet (sf) of retail space, and 4,400 sf of restaurant space. Approximately 162 parking spaces will be provided, 25 of which will be provided at 145 Maplewood Avenue across the street from the development. The following sections describe the methodology to estimate the total number of site generated trips and their distribution within the study area roadway network.

4.1 Site Access

Site access will be provided via one unsignalized full access driveway on Raynes Avenue, just west of the existing Vanguard Key Club driveway. The existing driveways at the Vanguard Key Club, vacant laundry business, and vacant office building will be closed as part of the project.

Adequate sight distance will be provided at the proposed site driveway.

Vaughan Street and Raynes Avenue will be converted to one-way in coordination with the City as part of the project. The one-way conversion and proposed pavement markings and signage are shown on the Site Plan (C-102.1) and Neighborhood Signage Plan (C-102.2) found in Appendix C. As shown on the plans, Vaughn Street and Raynes Avenue will provide a single lane northwest-bound with adjacent parallel parking, shoulders, and/or bump-outs for pedestrian access. At the intersection with Maplewood Avenue, Raynes Avenue is proposed to be widened to provide a two-lane approach with an exclusive left turn and an exclusive right turn lane. The two-lane exiting Raynes Avenue is recommended based on the consolidation of the existing two exiting access points to Maplewood Avenue and the results of the No-Build Capacity Analyses detailed in Section 2.3.

4.2 Trip Generation

Site generated traffic volumes for the Project were estimated using rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 10th edition, 2017. ITE provides data to estimate the total number of vehicular trips associated with a site based on the specific land uses. To estimate the trip generation for the Project, ITE Land Use Code (LUC) 310 – Hotel, LUC 220 – Multifamily Housing (Mid-Rise), LUC 820 – Retail/Shopping Center, and LUC 931 – Quality Restaurant were used. The proposed trip generation for the weekday afternoon and Saturday midday peak hours is presented in Table 4.

Mixed-use developments typically generate shared trips, also known as internal capture. The internal capture rate for the proposed development was determined using the *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* by the Transportation Research Board, 2011. The total internal capture rate is estimated to be 22 percent for entering vehicles, and 29 percent for exiting vehicles during the afternoon peak hour. While shared trips may occur during the Saturday peak hour, there is no internal capture rate available from the NCHRP reference. Because there was no deduction for shared trips, the estimated

Saturday midday trips generated by the development is considered conservative. The detailed calculation spreadsheet is included in Appendix F.

Pass-by trips, or vehicles that are already on the roadway adjacent to the site (Raynes Avenue) were deducted from the trip generation estimate according to rates suggested by ITE. A pass-by trip rate of 34% was used for the retail component and a pass-by rate of 43% be used for the restaurant portion of the project during the weekday afternoon peak hour. A pass-by rate of 26% was used for the retail use during the Saturday midday peak hour. ITE does not outline a pass-by rate for the restaurant land use code utilize in the trip generation. Similar pass-by rates were utilized for previously approved developments in the area.

Because there were no existing counts available for the three existing driveways on the site frontage on Raynes Avenue, existing site traffic volumes were not deducted from the trip generation estimate. This results in a conservative existing traffic volume estimate as it was observed that a portion of the parking areas are currently used as paid parking areas. Additional parking on the east side of the site is currently utilized by the Vanguard Key Club.

As a result of the proposed conversion to one-way traffic on Raynes Avenue and Vaughan Street as previously mentioned, future no-build traffic volumes and site generated traffic volumes were redistributed through the roadway network based on traffic patterns utilized under the Build condition. The redistributed traffic volumes are shown on Figures 6 to 9.

4.3 Arrival and Departure Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on a review of previous traffic studies conducted for nearby projects and observed travel patterns.

The following arrival/ departure distributions are anticipated for the hotel and restaurant trips based on the previously approved 299 Vaughan Street Development TIS:

- 30% to/from the west via Maplewood Avenue
- 30% to/from the east via Maplewood Avenue
- 40% to/from the northwest via Market Street

The following arrival/ departure distributions are anticipated for the retail trips based on the previously approved 111 Maplewood Avenue Development TIS:

- 30% to/from the west via Maplewood Avenue
- 55% to/from the east via Maplewood Avenue
- 15% to/from the northwest via Market Street

The following arrival/ departure distributions are anticipated for the residential trips based on the Deer Street Parking Garage Development TIAS:

- 55% to/from the west via Maplewood Avenue
- 35% to/from the west via Maplewood Avenue
- 10% to/from the northwest via Market Street

The trip distribution patterns for the hotel, restaurant, residential, and retails use are shown in Figures 10 to 12. The vehicular trips associated with the Project were assigned to the study area and are shown in Figures 13 and 14 for the weekday afternoon and Saturday midday peak hours, respectively.

4.4 Traffic Operations Analysis – Build Condition

The Build condition traffic operations analyses are based on the 2022 and 2032 Build traffic volumes. These volumes were developed by adding the site generated trips to the 2022 and 2032 No-Build traffic volumes. The Build condition traffic volumes are shown in Figures 15 to 18. The Build Condition analyses are summarized in Tables 2 and 3 for LOS and queues, respectively, with capacity analysis worksheets included in Appendix E.

The analyses show that the signalized intersection of Maplewood Avenue at Deer Street experiences improved operations under the 2022 Build condition over the 2022 No-Build Condition as a result of minor timing and phasing modifications to the signal. Under 2032 Build conditions, the intersection continues to experience failing operations with timing and phasing modifications. It is important to note that the additional traffic volume generated by the development does not have a detrimental effect on the intersection operations. The failing operations shown are consistent with other previously approved developments in the area.

At the unsignalized locations within the study area, failing operations continue to be experienced on the side street approaches under 2022 and 2032 Build conditions. The westbound approaches at the intersection of Maplewood Avenue at Raynes Avenue experience degradation in level of service and increased vehicular queues due to the conversion of Vaughan Street and Raynes Avenue to one-way. However, the poor operations at Maplewood Avenue and Raynes Avenue are offset by the improved operations at the intersection of Maplewood Avenue at Vaughan Street. The one-way conversion of Vaughan Street and Raynes Avenue shifts the capacity issues further north on Maplewood Avenue away from the railroad crossing and signalized intersection. Minor increases in delays and queuing are experienced at the other side street approaches in the study area under Build conditions. The failing operations on side streets are typical in congested urban areas.

The proposed development is not expected to significantly degrade intersection operations beyond what is already expected to be experienced under 2022 and 2032 No Build conditions.

Section 5
Conclusions and Recommendations

The Raynes Avenue redevelopment proposes to demolish the three existing buildings on the Site and construct a mixed-use development which will include a 128-room hotel, 60 residential units, 5,200 square feet (sf) of retail space, and 4,400 sf of restaurant space. The Site will provide approximately 112 parking spaces. Site access will be provided via a single full-access driveway on the north side of Raynes Avenue. The proposed redevelopment is expected to be constructed by the end of 2022.

The proposed redevelopment is expected to generate 122 new vehicular trips (71 entering, 51 exiting) during the afternoon peak hour and 195 new vehicular trips (108 entering, 87 exiting) during the Saturday midday peak hour. The site trip generation includes an internal capture credit of 22% and 29% for entering and exiting vehicles, respectively during the weekday afternoon peak hour. Pass-by trip rates of 34% and 26% were used for the retail use during the weekday afternoon and Saturday midday peak hours, respectively. A 43% pass-by rate was used for the restaurant use during the weekday afternoon peak hour. This methodology is in line with the industry standard and consistent with methodology utilized in similar traffic studies conducted by others within Portsmouth.

Capacity analysis indicates that when potential future projects in the area are all constructed, substantial traffic volumes will be added to the study area network which will cause increases congestion at a number of intersections within the study area, especially for the side street movements. Site generated traffic represents a relatively small percentage of the cumulative traffic volume expected to be generated by the potential future projects.

As the planned projects get implemented, and the traffic improvements associated with the projects are designed, additional consideration should be given to accommodate side street movements. System-wide traffic improvement measures, such as promotion of reduced automobile usage, enhanced transit services to the area and promotion of remote/underutilized parking areas can also be considered by the City to reduce the volume of vehicular traffic generated within the downtown street network during peak times.

Based on the results of the foregoing analysis, it is the professional opinion of Tighe & Bond that the additional traffic expected to be generated from the Raynes Avenue development is not expected to significantly impact traffic operations within the study area.

APPENDIX A
Tables

TABLE 2
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Afternoon Peak Hour				Saturday Midday Peak Hour			
	Lane Use	**2022 No Build**	**2022 Build**	**2032 No Build**	**2032 Build**	**2022 No Build**	**2022 Build**	**2032 No Build**	**2032 Build**
Traffic Signal - Maplewood Avenue at Deer Street									
Overall		**F / 603.4**	**F / 596.8**	**F / 128.9**	**F / 130.5**	**D / 50.9**	**E / 78.6**	**C / 25.5**	**C / 28.6**
	EB	F / 1902.1	F / 1902.1	-- / --	-- / --	F / 111.1	F / 220.8	-- / --	-- / --
	EBL	-- / --	-- / --	F / 263.1	F / 257.6	-- / --	-- / --	C / 27.4	C / 29.3
Deer Street	EBTR	-- / --	-- / --	F / 96.7	F / 95.1	-- / --	-- / --	C / 24.3	C / 24.3
	WBL	F / 399.9	F / 399.9	F / 253.6	F / 249.7	F / 117.0	F / 179.1	C / 34.7	D / 36.7
	WBTR	D / 41.7	D / 41.7	E / 56.0	E / 55.6	C / 28.5	C / 30.7	A / 0.5	C / 28.1
	NBL	B / 16.7	B / 16.9	C / 31.6	C / 30.8	C / 31.9	C / 34.0	B / 15.8	B / 16.2
	NBT	C / 20.8	C / 21.4	E / 62.5	E / 72.7	D / 38.5	D / 42.2	C / 30.8	C / 32.8
Maplewood Avenue	NBR	A / 3.7	A / 4.0	A / 5.9	A / 6.5	A / 5.5	A / 5.5	A / 3.7	A / 3.7
	SBL	A / 8.5	A / 8.6	D / 42.2	D / 41.8	C / 20.6	C / 22.3	B / 18.4	B / 19.5
	SBTR	B / 14.5	B / 14.9	F / 126.1	F / 134.7	C / 24.5	C / 28.1	C / 32.4	C / 34.6
Unsignalized TWSC - Raynes Avenue at Site Driveway									
Overall		**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**
Site Driveway	SBR	-- / --	B / 11.1	-- / --	B / 11.4	-- / --	A / 9.8	-- / --	A / 9.8
Unsignalized TWSC - Maplewood Avenue at Raynes Avenue									
Overall		**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**
	WB	F / 231.7	-- / --	F / 431.1	-- / --	C / 19.1	-- / --	C / 21.8	-- / --
Raynes Avenue	WBL	-- / --	F / 870.6	-- / --	F / 1241.7	-- / --	F / 66.8	-- / --	F / 96.3
	WBR	-- / --	E / 42.9	-- / --	F / 65.2	-- / --	B / 13.1	-- / --	B / 13.8
Maplewood Avenue	SB	B / 11.3	-- / --	B / 11.9	-- / --	A / 8.7	-- / --	A / 8.8	-- / --
Unsignalized TWSC - Maplewood Avenue at Vaughan Street									
Overall		**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**
Vaughan Street	WB	F / 375.7	-- / --	F / 610.7	-- / --	D / 25.5	-- / --	D / 26.8	-- / --
Maplewood Avenue	SB	B / 10.8	C / 16.1	B / 11.3	E / 37.8	A / 8.8	A / 3.8	A / 8.9	A / 4.2
Unsignalized TWSC - Vaughan Street at Green Street									
Overall		**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**
Green Street	WB	A / 9.6	-- / --	A / 9.8	-- / --	A / 9.2	-- / --	A / 9.2	-- / --
	WBR	-- / --	B / 11.4	-- / --	B / 11.7	-- / --	B / 10.5	-- / --	B / 10.6
Vaughan Street	SB	A / 7.7	-- / --	A / 7.7	-- / --	A / 7.5	-- / --	A / 7.4	-- / --
Unsignalized TWSC - Deer Street at Russell Street									
Overall		**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**
Deer Street	EB	A / 8.5	A / 8.5	A / 8.7	A / 8.7	A / 8.2	A / 8.2	A / 8.3	A / 8.3
Russell Street	SB	E / 49.0	E / 49.0	F / 83.9	F / 83.9	C / 16.7	C / 16.7	C / 18.5	C / 18.5
Unsignalized TWSC - Russell Street at Green Street									
Overall		**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**
Russell Street	NB	A / 9.3	A / 9.4	A / 9.5	A / 9.6	A / 8.1	A / 8.2	A / 8.2	A / 8.3
Green Street	EB	F / 64.7	F / 96.5	F / 103.7	F / 159.2	C / 15.2	C / 17.1	C / 15.9	C / 18.1
Unsignalized TWSC - Market Street at Russell Street									
Overall		**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**-- / --**
Russell Street	EBL	F / 685.7	F / 719.6	F / 966.1	F / 1005.9	F / 73.0	F / 96.2	F / 128.3	F / 163.8
	EBR	B / 10.5	B / 10.5	B / 10.9	B / 10.9	B / 11.4	B / 11.4	B / 11.9	B / 11.9

TABLE 3

Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Afternoon Peak Hour				Saturday Midday Peak Hour			
	Lane Use	**Available Storage**	**2022 No Build**	**2022 Build**	**2032 No Build**	**2032 Build**	**2022 No Build**	**2022 Build**	**2032 No Build**	**2032 Build**
Traffic Signal - Maplewood Avenue at Deer Street										
	EB	590	465 / 430	1186 / 982	-- / --	-- / --	240 / 331	343 / 332	**-- / --**	**-- / --**
	EBL	590	-- / --	-- / --	247 / 236	475 / 415	-- / --	-- / --	78 / 110	78 / 110
Deer Street	EBTR	590	-- / --	-- / --	199 / 200	348 / 300	**-- / --**	**-- / --**	61 / 97	61 / 97
	WBL	100	306 / 381	466 / 530	356 / 426	411 / 474	203 / 341	260 / 337	131 / 191	142 / 204
	WBTR	350	113 / 149	183 / 224	160 / 202	212 / 255	86 / 145	103 / 140	0 / 0	89 / 149
	NBL	100	7 / 19	26 / 57	19 / 39	29 / 55	29 / 65	31 / 67	18 / 39	18 / 39
	NBT	350	220 / 309	281 / 396	327 / 496	450 / 655	295 / 484	372 / 544	260 / 374	291 / 416
Maplewood Avenue	NBR	350	2 / 35	14 / 52	0 / 45	17 / 67	0 / 56	0 / 50	0 / 46	0 / 46
	SBL	150	15 / 28	21 / 36	29 / 51	37 / 71	45 / 82	51 / 81	40 / 71	40 / 71
	SBTR	>500	183 / 226	277 / 334	451 / 573	691 / 804	277 / 405	358 / 441	311 / 451	340 / 494
Unsignalized TWSC - Raynes Avenue at Site Driveway										
Site Driveway	SBR	90	-- / --	8	-- / --	8	-- / --	10	-- / --	10
Unsignalized TWSC - Maplewood Avenue at Raynes Avenue										
Raynes Avenue	WB	175	325	-- / --	443	-- / --	25	-- / --	33	-- / --
	WBL	175	-- / --	603	-- / --	695	-- / --	133	-- / --	168
	WBR	50	-- / --	140	-- / --	193	-- / --	18	-- / --	20
Maplewood Avenue	SB	>500	15	-- / --	18	-- / --	3	-- / --	5	-- / --
Unsignalized TWSC - Maplewood Avenue at Vaughan Street										
Vaughan Street	WB	325	293	--	370	--	15	--	15	--
Maplewood Avenue	SB	>500	3	16	3	1	0	14	0	15
Unsignalized TWSC - Vaughan Street at Green Street										
Green Street	WB	420	8	-- / --	10	-- / --	5	-- / --	5	-- / --
	WBR	420	-- / --	15	-- / --	15	-- / --	13	-- / --	15
Vaughan Street	SB	400	5	--	8	--	3	--	3	--
Unsignalized TWSC - Deer Street at Russell Street										
Deer Street	EB	390	33	33	35	35	18	18	20	20
Russell Street	SB	650	368	368	525	525	100	100	118	118
Unsignalized TWSC - Russell Street at Green Street										
Russell Street	NB	410	0	0	0	0	0	0	0	0
Green Street	EB	420	123	175	168	235	10	20	10	23
Unsignalized TWSC - Market Street at Russell Street										
Russell Street	EBL	580	1275	1335	1525	1585	265	328	370	447
	EBR	150	0	0	0	0	3	3	3	3

TABLE 4
Site Generated Traffic Summary

Proposed - 128 Room Hotel **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Afternoon	36	34	70
Saturday Midday	52	41	93

Proposed - 60 Residential Units **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Afternoon	16	10	26
Saturday Midday	13	13	26

Proposed - 5,200 SF Retail Space **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Afternoon	10	10	20
Saturday Midday	12	11	23

Proposed - 4,400 SF Restaurant Space **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Afternoon	23	11	34
Saturday Midday	28	19	47

Total Trips **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Afternoon	85	65	150
Saturday Midday	105	84	189

Internal Capture[1] **Peak Hour Period**	**22%** **Enter**	**29%** **Exit**	**25%** **Total**
Weekday Afternoon	19	19	38
Saturday Midday		NO DATA AVAILABLE	

Pass-By Trips (Retail)[2] **Peak Hour Period**	**Enter**	**Exit**	**34%** **Total**
Weekday Afternoon	1	1	2
Saturday Midday	3	3	6

Pass-By Trips (Restaurant)[3] **Peak Hour Period**	**Enter**	**Exit**	**43%** **Total**
Weekday Afternoon	4	4	8
Saturday Midday		NO DATA AVAILABLE	

Net Vehicular Trips (Total minus Internal Capture) **Peak Hour Period**	**Enter**	**Exit**	**Total**
Weekday Afternoon	**71**	**51**	**122**
Saturday Midday	**108**	**87**	**195**

Source: Institute of Transportation Engineering, Trip Generation, 10th Edition, 2017.
Land Use - 221 Multifamily Housing (Mid-Rise)
310 Hotel
820 Retail
931 Quality Restaurant

[1]NCHRP Report 684-Enhancing Internal Trip Capture Estimation for Mixed-Use Developments, Transportation Research Board, Washington, DC, 2011

[2]Average Pass-By Trip Percentage based on Pass-By and Non-Pass-By Trips Weekday, PM and Saturday Midday Peak Period, Land Use Code 820-Shopping Center, Trip Generation, 10th Edition, 2017

[3]Average Pass-By Trip Percentage based on Pass-By and Non-Pass-By Trips Weekday, PM Peak Period, Land Use Code 932-High-Turnover (Sit-Down) Restaurant, Trip Generation, 10th Edition, 2017

APPENDIX B
Figures

LEGEND

STUDY AREA INTERSECTION

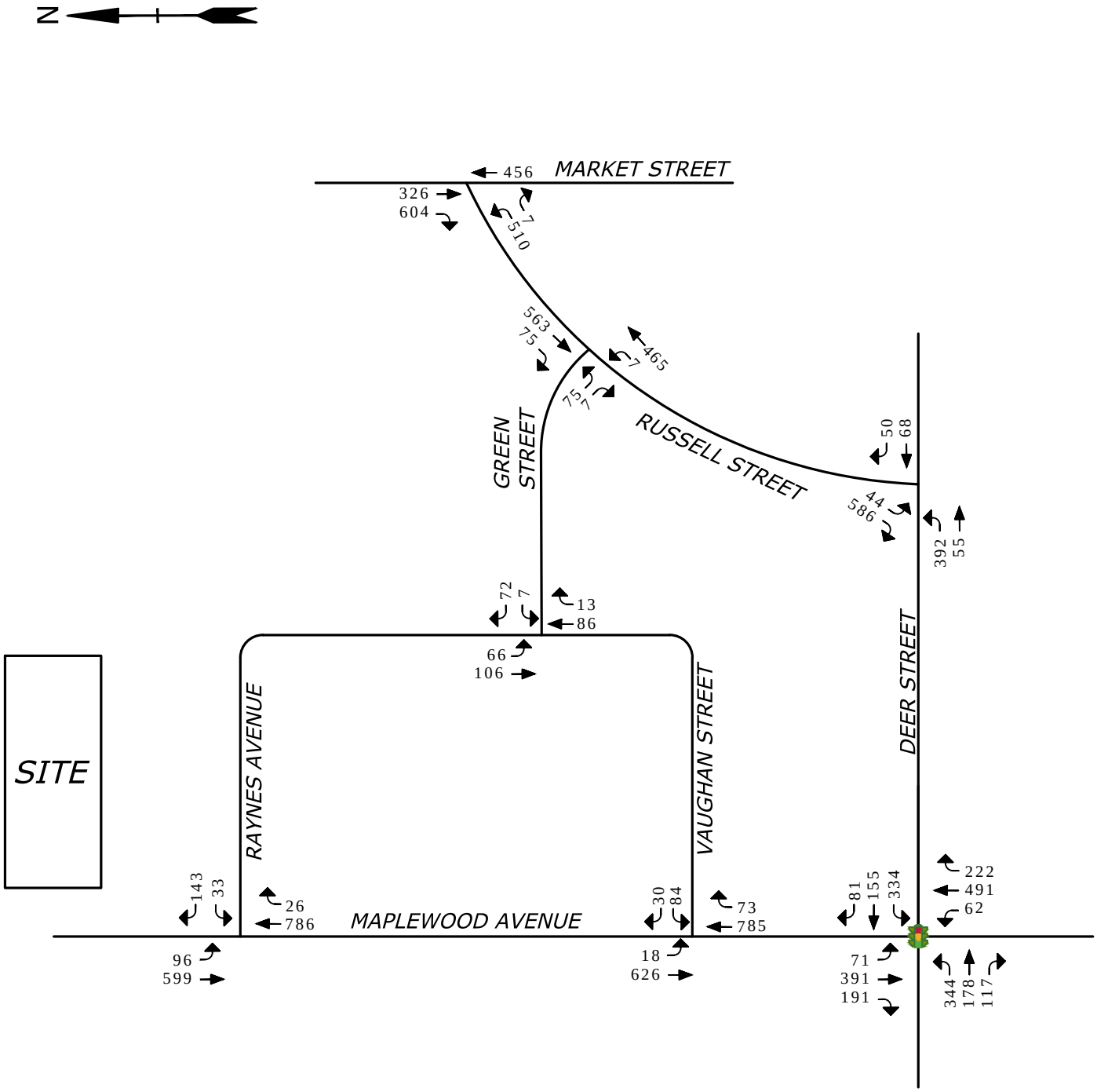
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

STUDY AREA

DATE: 7/14/2021
SCALE: 1" = 200'
FIGURE 1

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

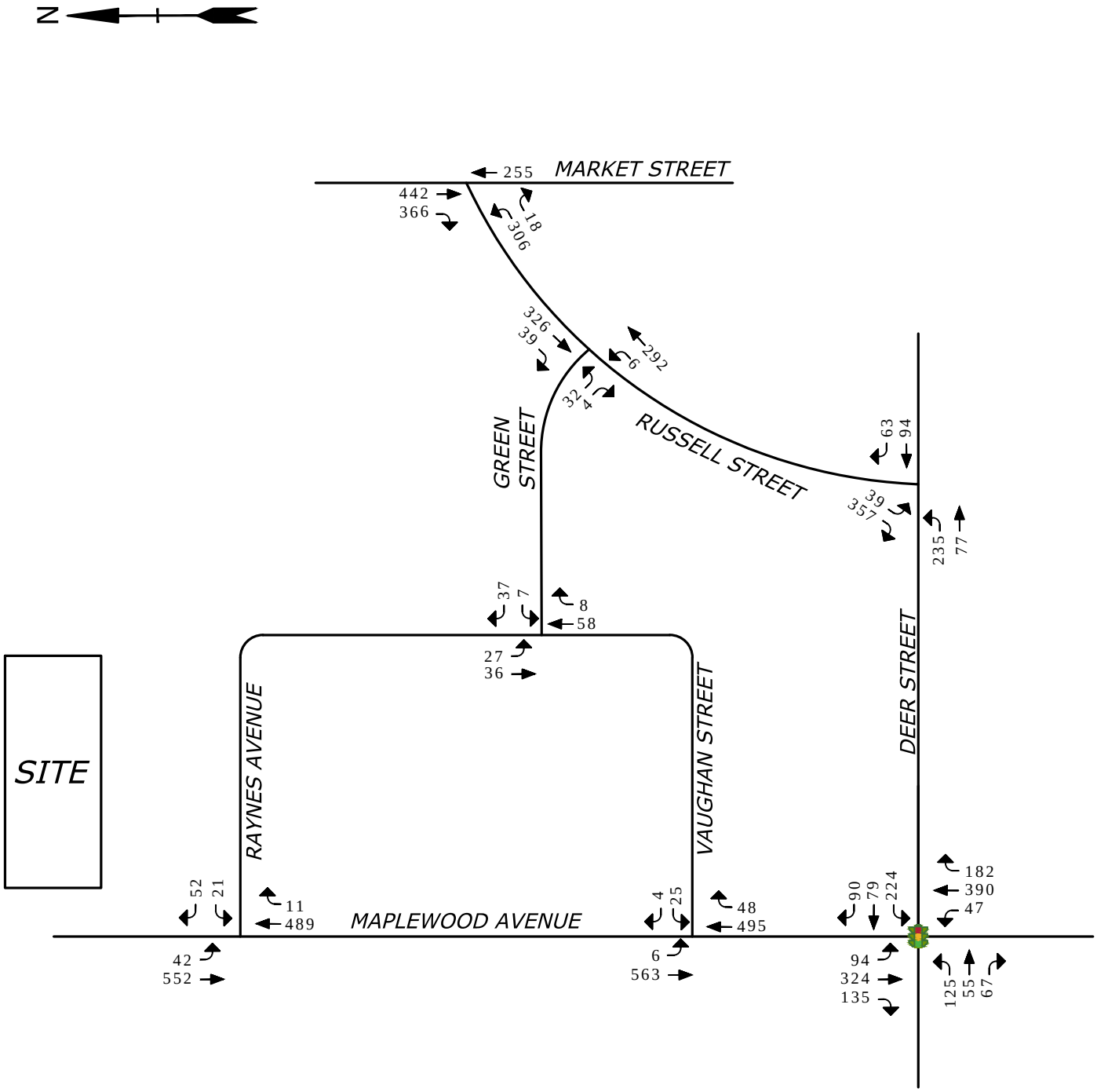
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2022 NO BUILD WEEKDAY AFTERNOON
PEAK HOUR TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 2

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

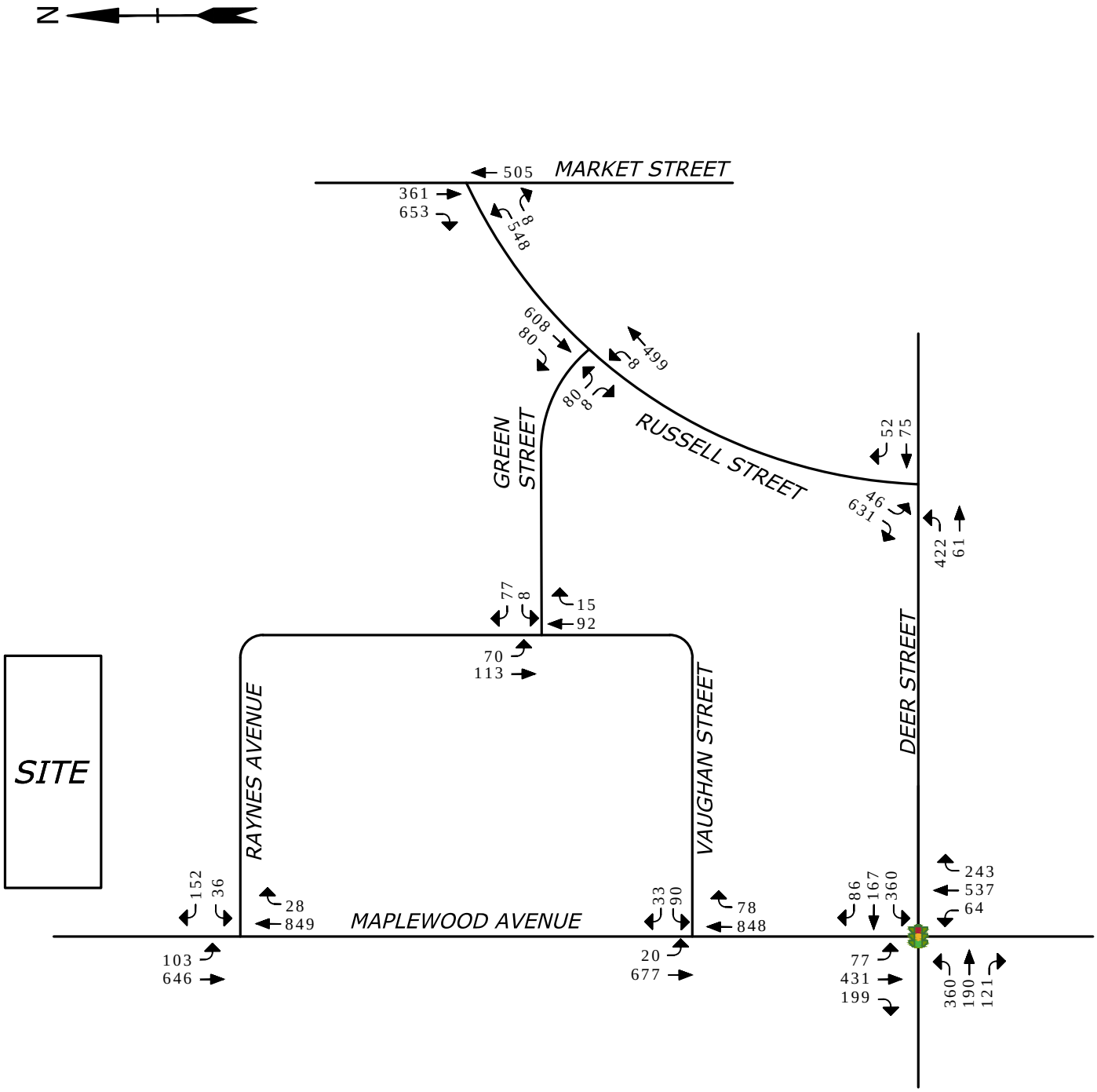
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2022 NO BUILD SATURDAY MIDDAY PEAK HOUR TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 3

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

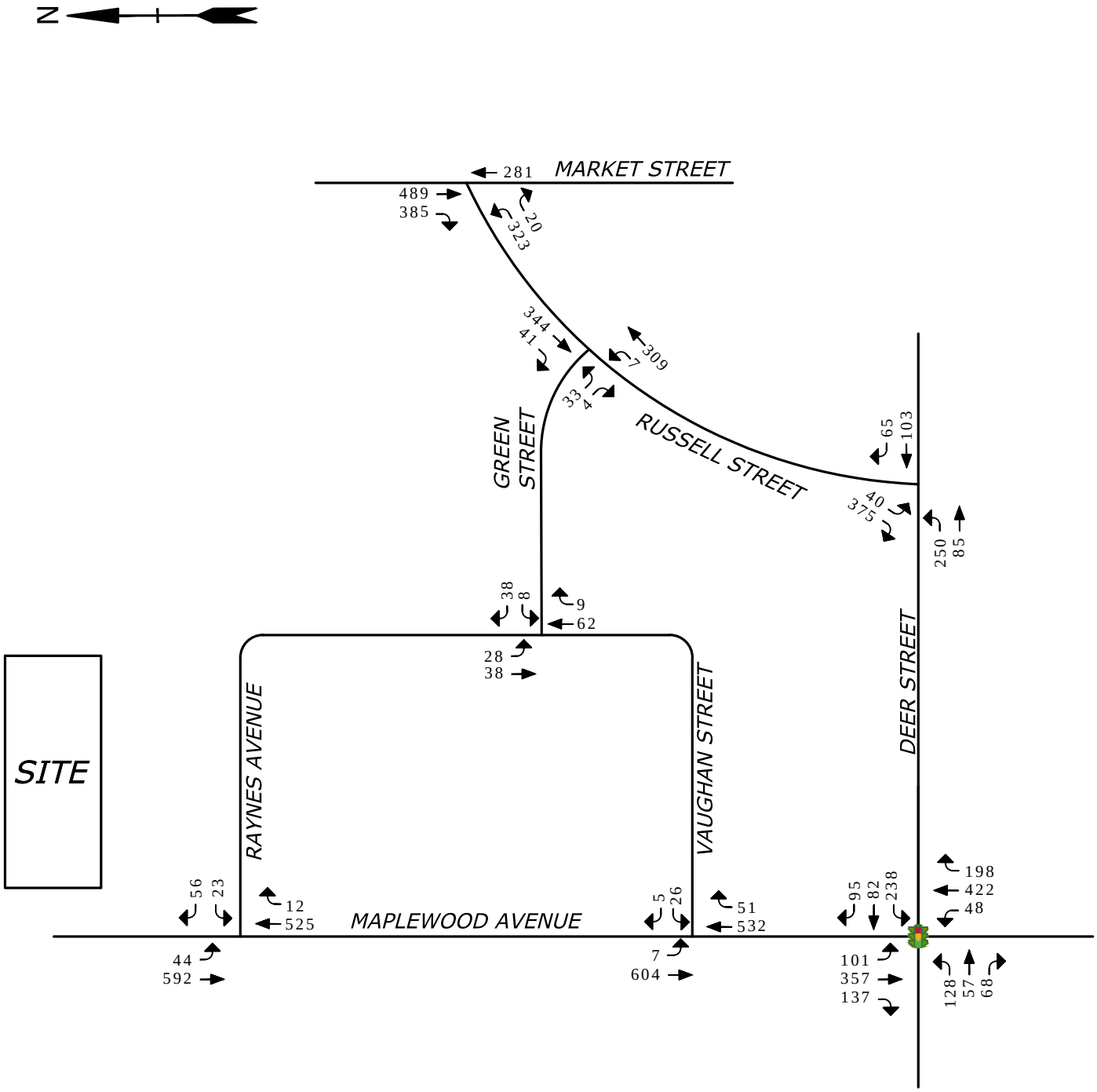
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2032 NO BUILD WEEKDAY AFTERNOON
PEAK HOUR TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 4

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

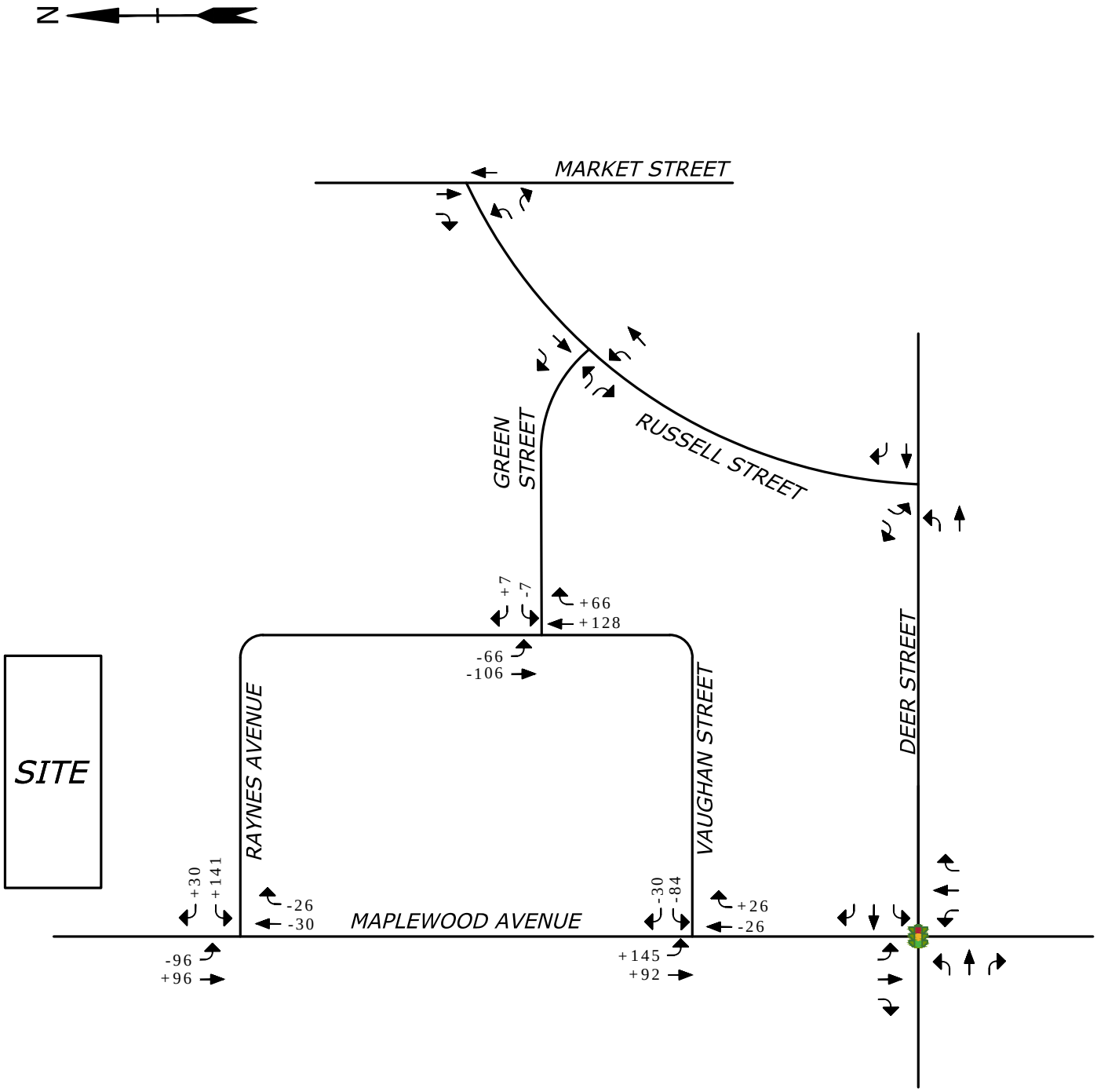
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2032 NO BUILD SATURDAY MIDDAY PEAK HOUR TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 5

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

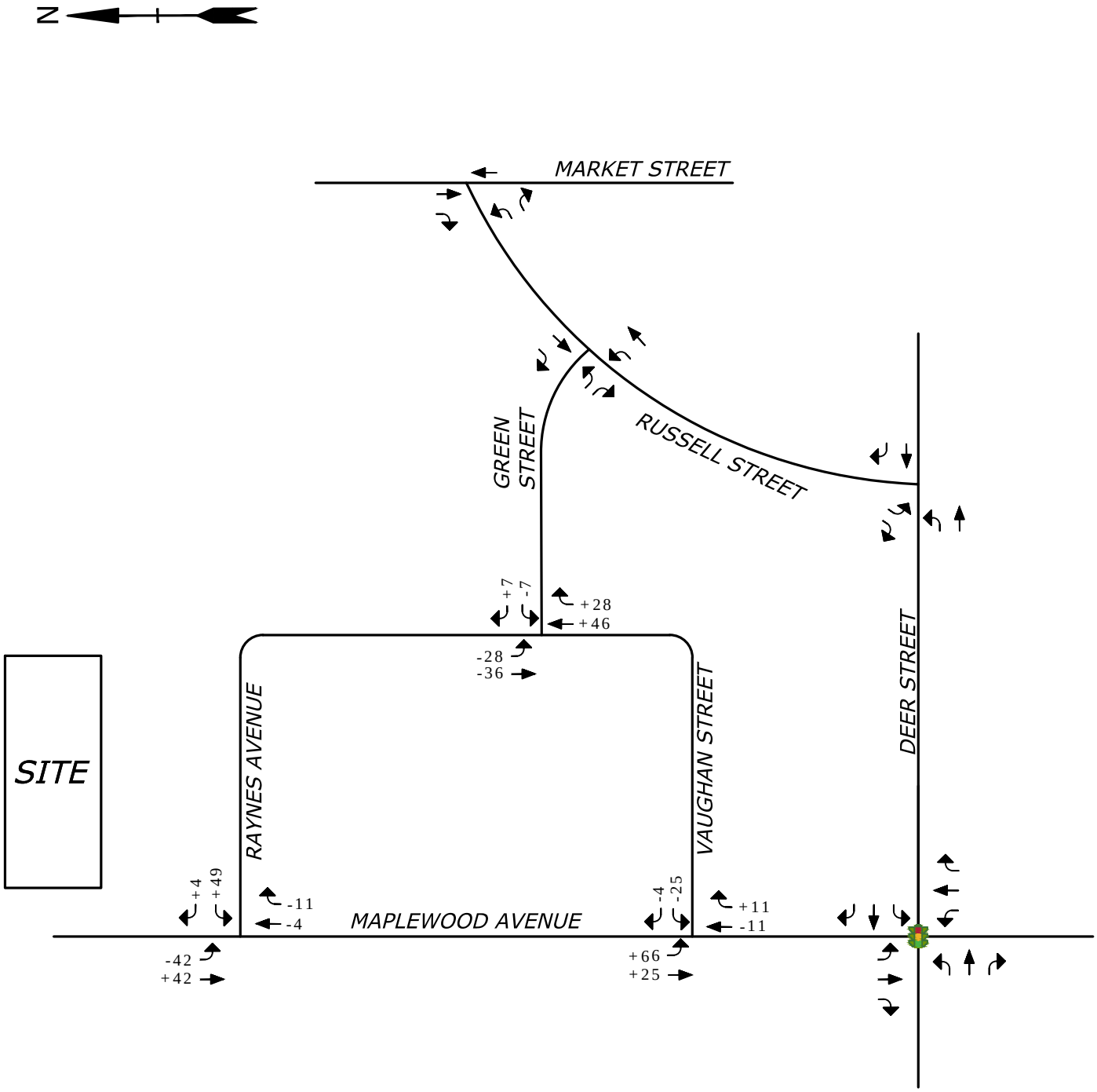
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2022 NO BUILD WEEKDAY AFTERNOON PEAK HOUR REDISTRIBUTED TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 6

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

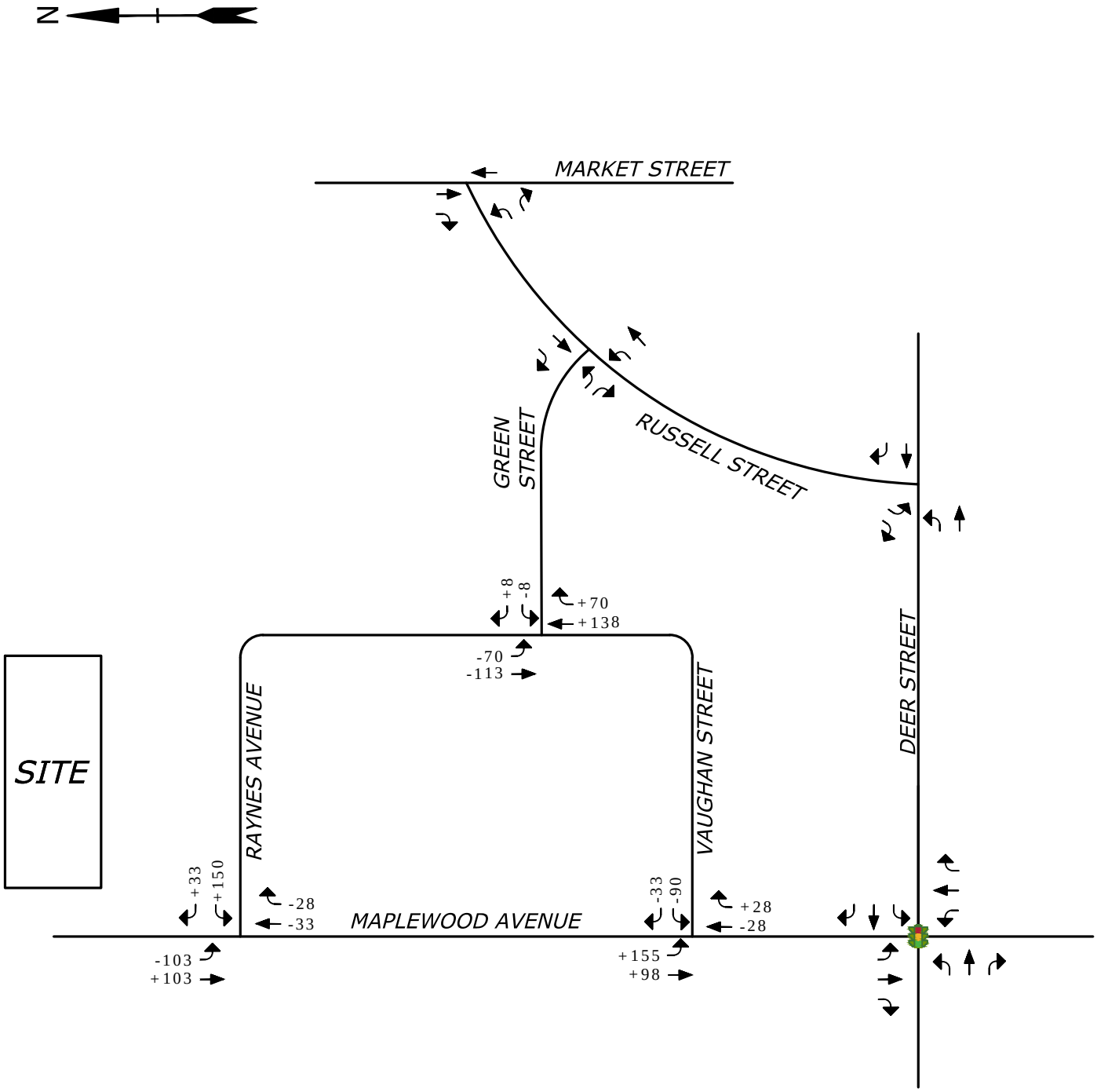
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2022 NO BUILD SATURDAY MIDDAY PEAK HOUR REDISTRIBUTED TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 7

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

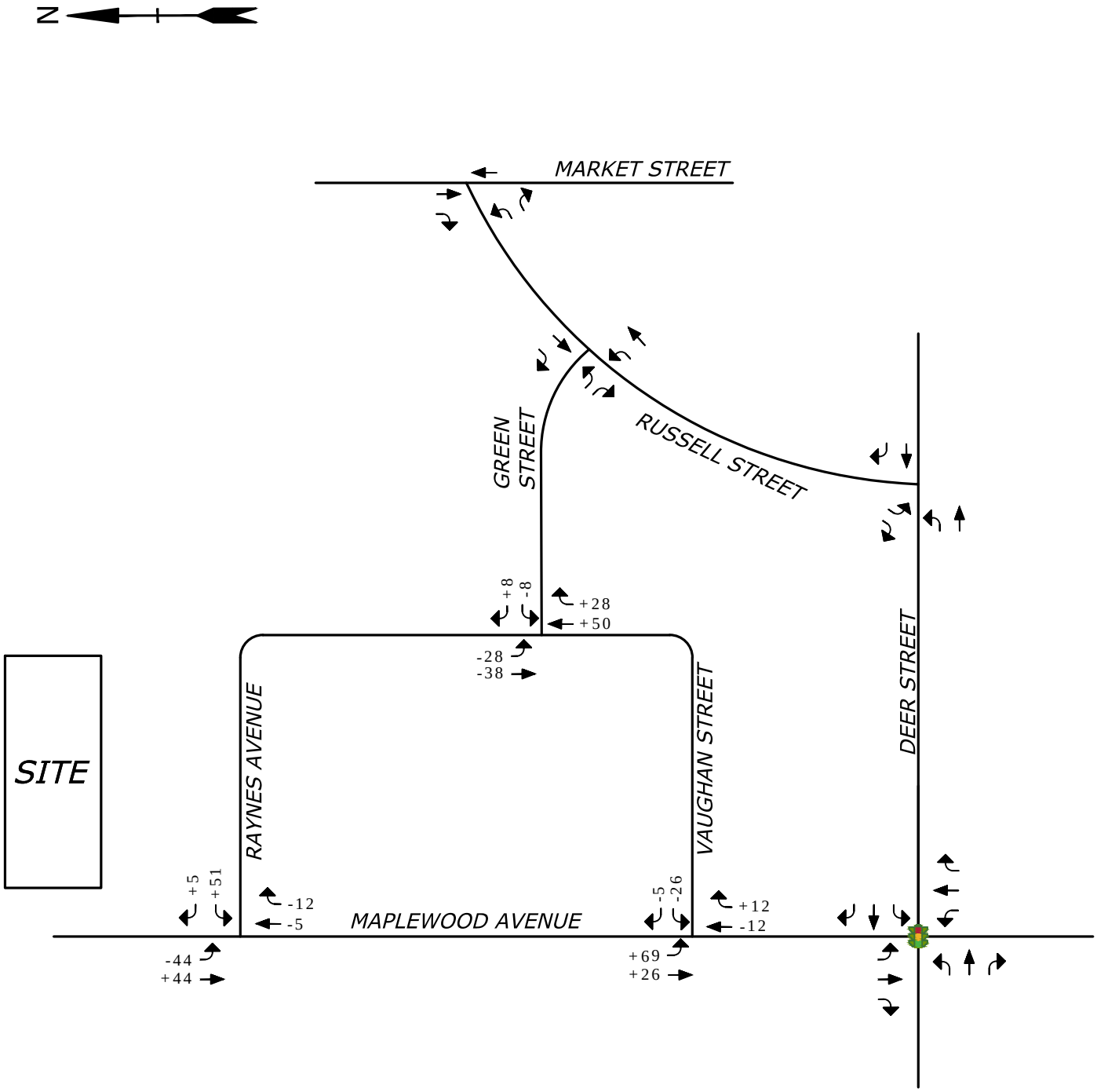
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2032 NO BUILD WEEKDAY AFTERNOON PEAK HOUR REDISTRIBUTED TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 8

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

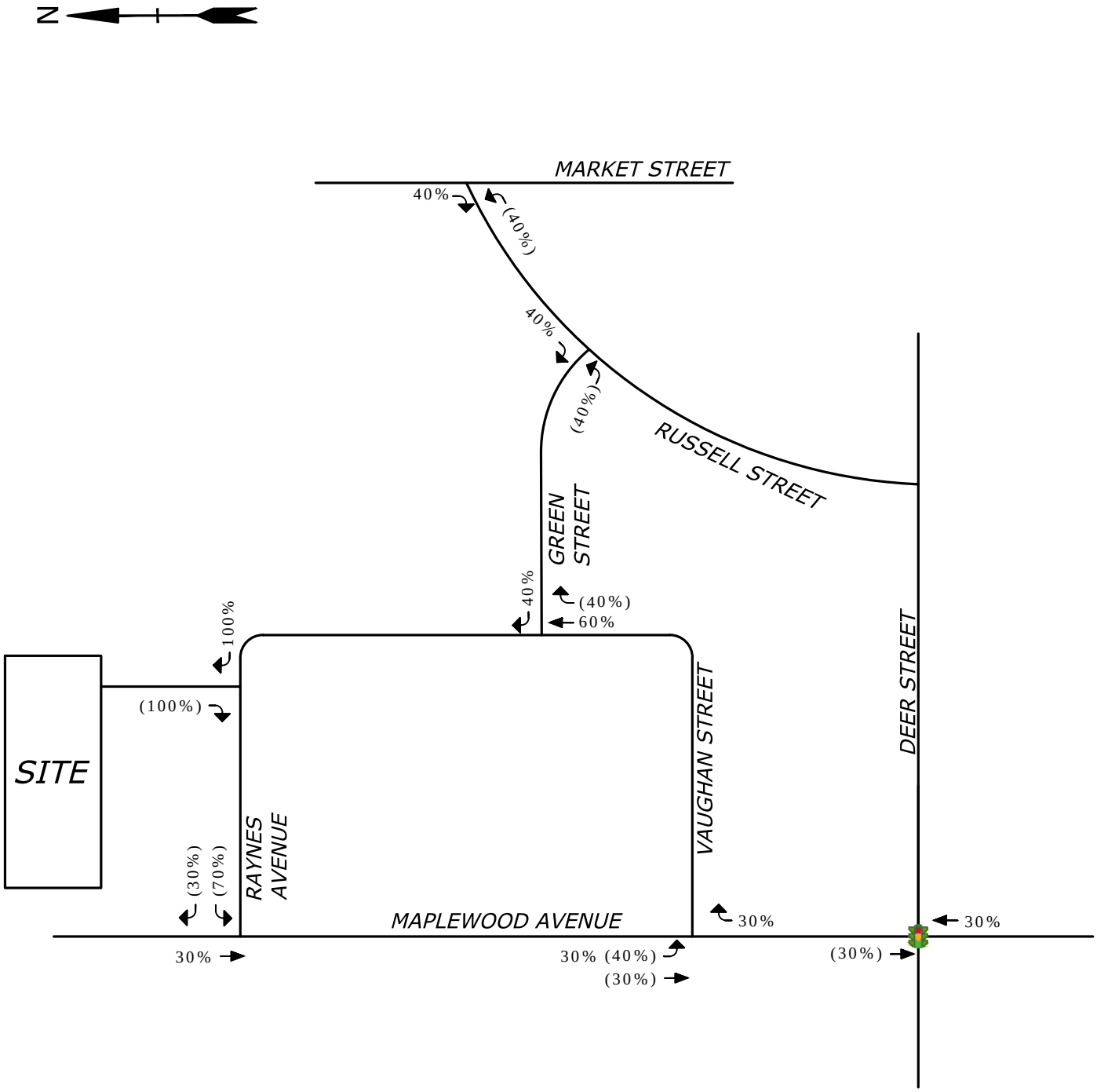
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2032 NO BUILD SATURDAY MIDDAY PEAK HOUR REDISTRIBUTED TRAFFIC VOLUMES

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 9

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

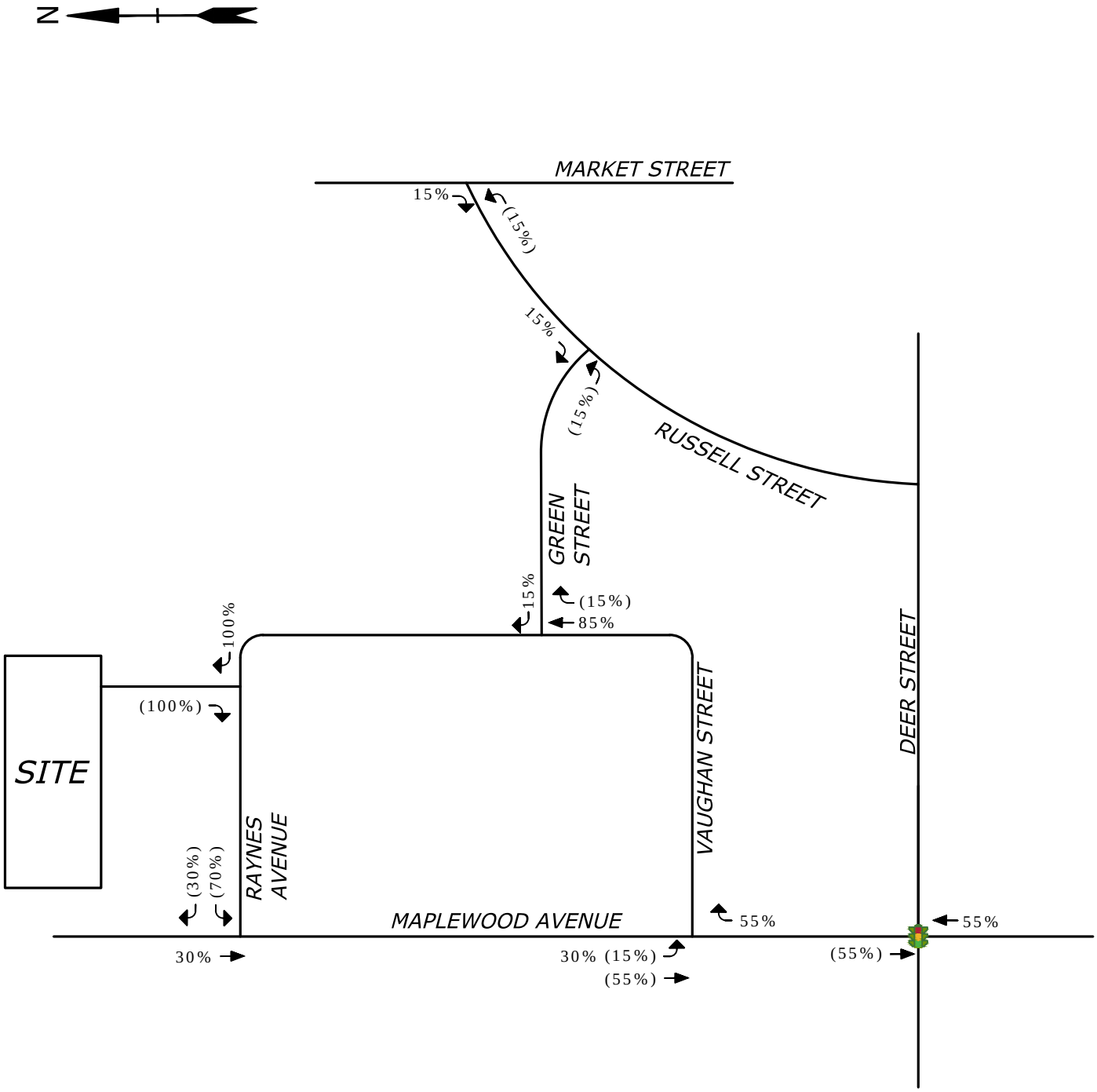
TRAFFIC SIGNAL
XX ENTERING
(XX) EXITING

PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

HOTEL AND RESTAURANT TRIP DISTRIBUTION

DATE: 7/14/2021	Tighe&Bond www.tighebond.com
SCALE: NO SCALE	
FIGURE 10	

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL
XX ENTERING
(XX) EXITING

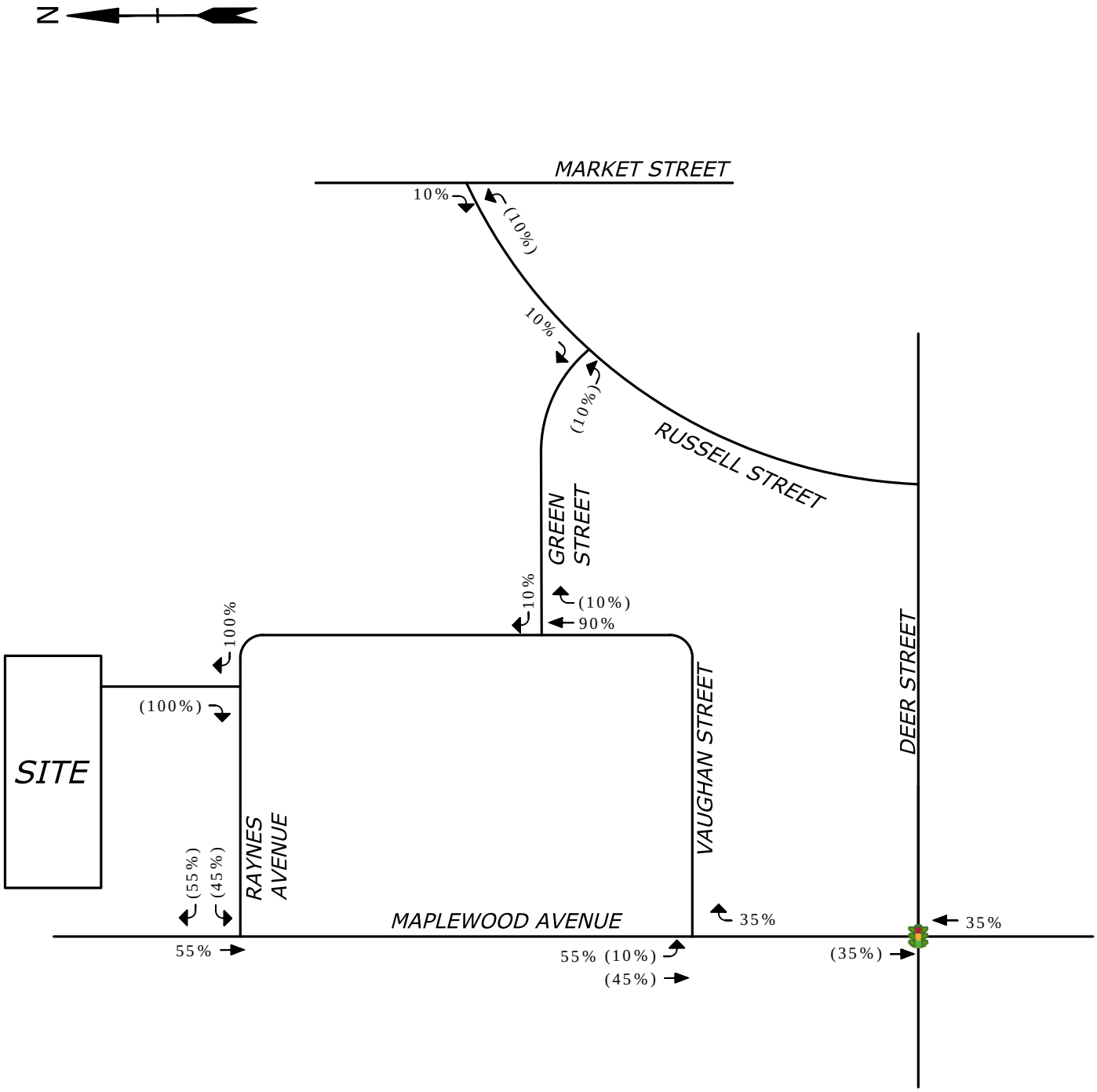
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

RETAIL TRIP DISTRIBUTION

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 11

Tighe&Bond
www.tighebond.com

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL
XX ENTERING
(XX) EXITING

PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

RESIDENTIAL TRIP DISTRIBUTION

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 12

Tighe&Bond
www.tighebond.com

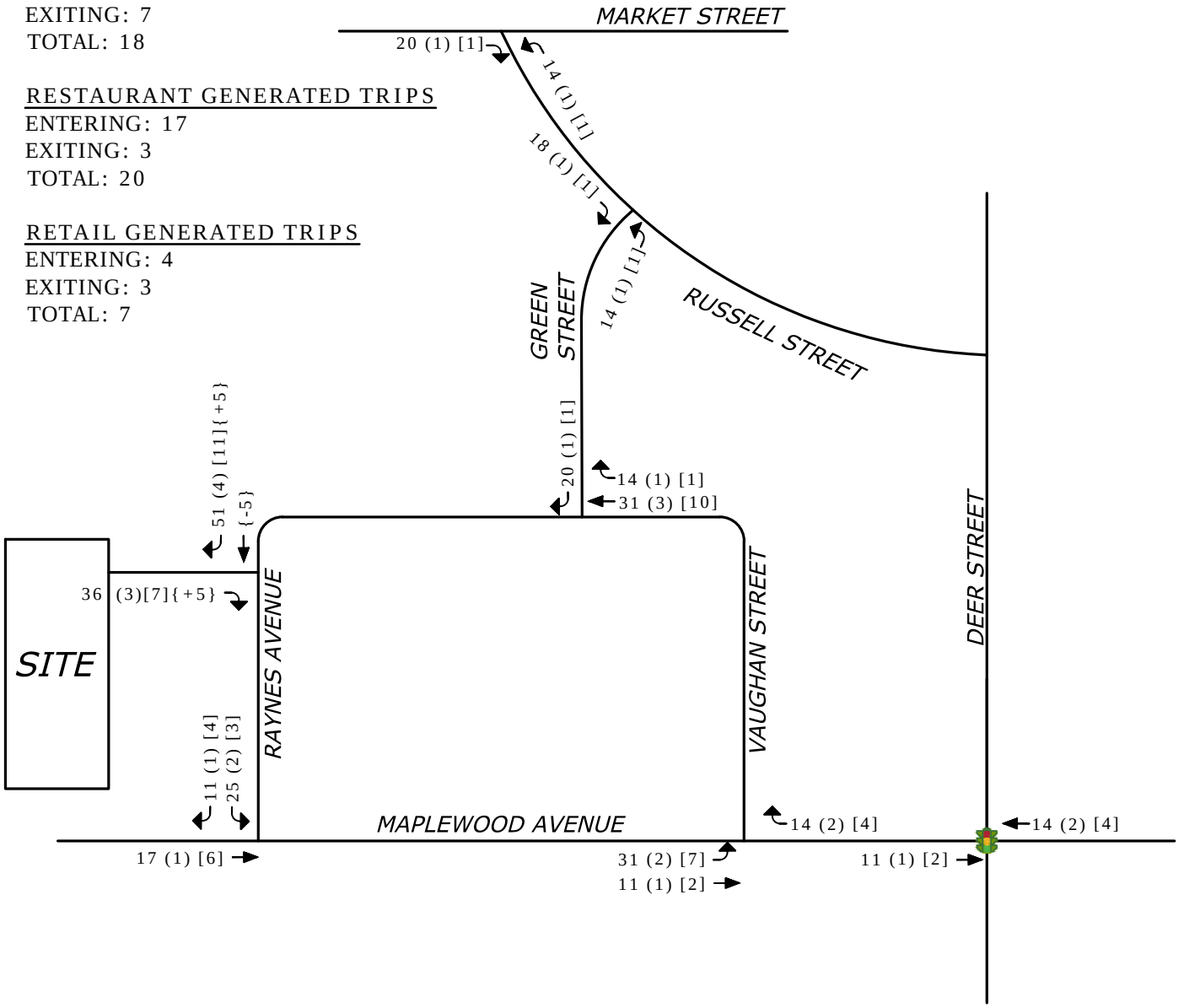
Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg

HOTEL GENERATED TRIPS
ENTERING: 34
EXITING: 33
TOTAL: 67

RESIDENTIAL GENERATED TRIPS
ENTERING: 11
EXITING: 7
TOTAL: 18

RESTAURANT GENERATED TRIPS
ENTERING: 17
EXITING: 3
TOTAL: 20

RETAIL GENERATED TRIPS
ENTERING: 4
EXITING: 3
TOTAL: 7



LEGEND

TRAFFIC SIGNAL

XX HOTEL & RESTAURANT TRIPS
(XX) RETAIL TRIPS
[XX] RESIDENTIAL TRIPS
{XX} PASS-BY TRIPS

PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

WEEKDAY AFTERNOON PEAK HOUR SITE GENERATED TRIPS

DATE: 7/14/2021
SCALE: NO SCALE
FIGURE 13

Tighe&Bond
www.tighebond.com

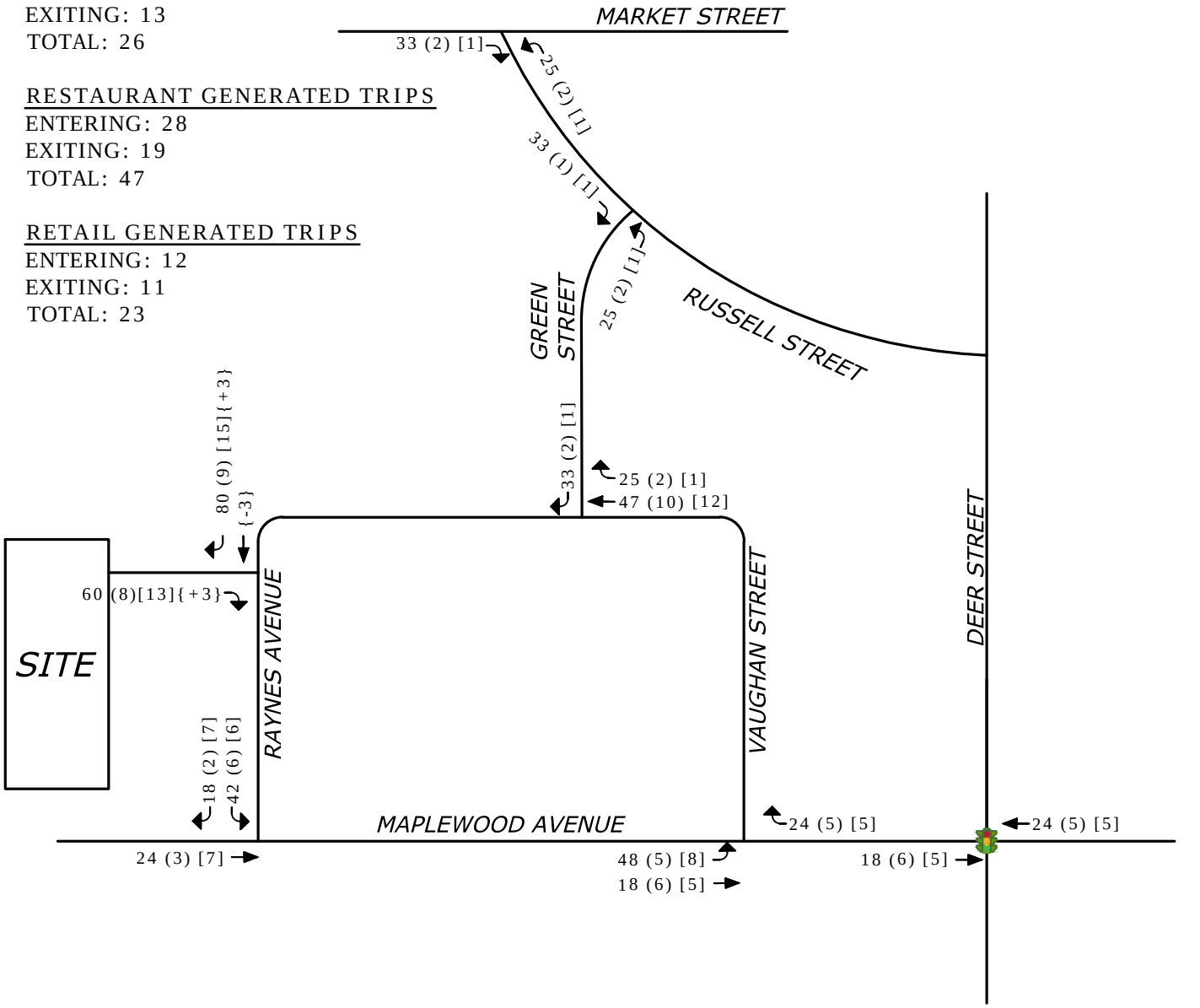
Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg

HOTEL GENERATED TRIPS
ENTERING: 52
EXITING: 41
TOTAL: 93

RESIDENTIAL GENERATED TRIPS
ENTERING: 13
EXITING: 13
TOTAL: 26

RESTAURANT GENERATED TRIPS
ENTERING: 28
EXITING: 19
TOTAL: 47

RETAIL GENERATED TRIPS
ENTERING: 12
EXITING: 11
TOTAL: 23



LEGEND

TRAFFIC SIGNAL

XX HOTEL & RESTAURANT TRIPS
(XX) RETAIL TRIPS
[XX] RESIDENTIAL TRIPS
{XX} PASS-BY TRIPS

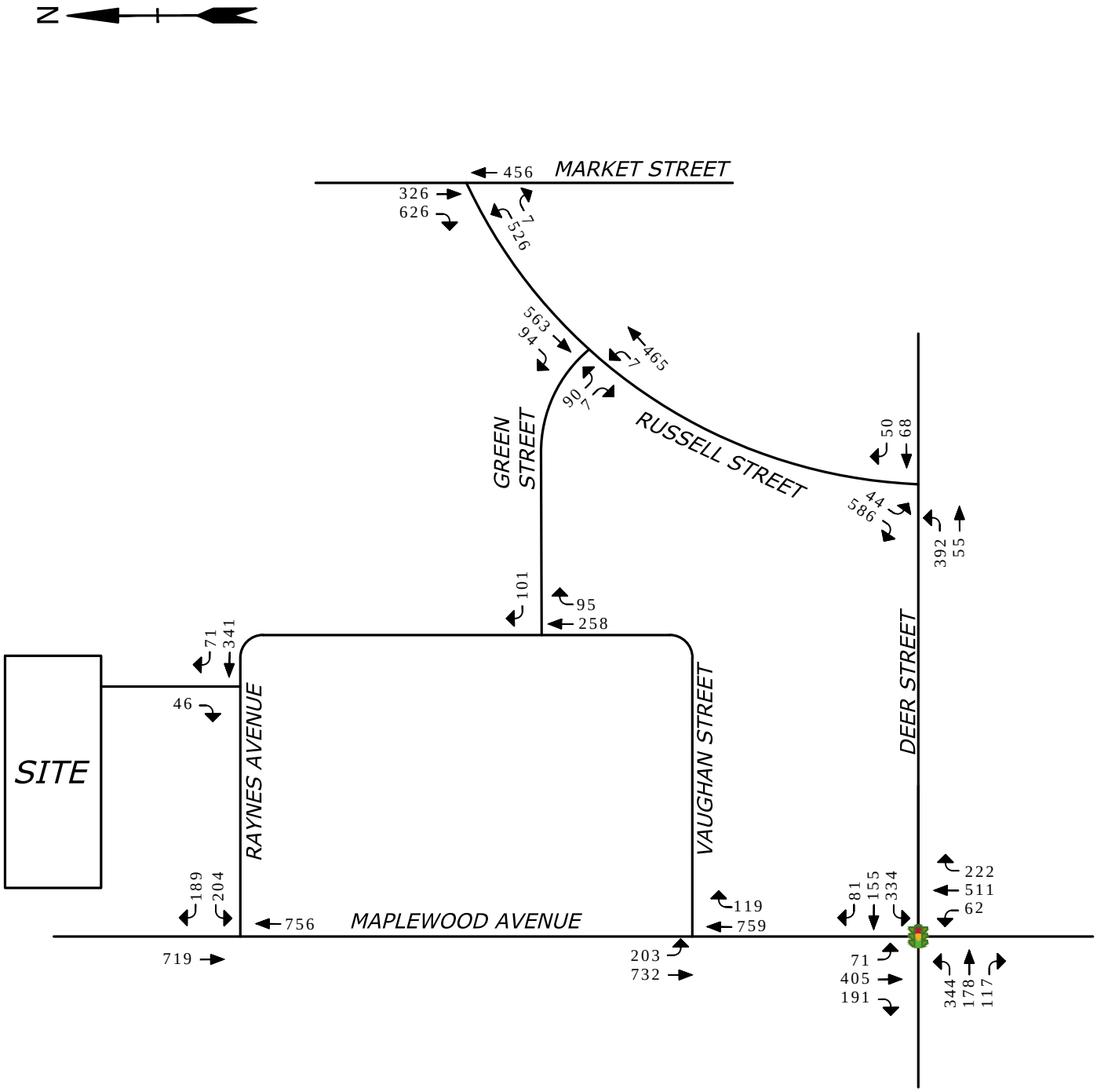
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

SATURDAY MIDDAY PEAK HOUR SITE GENERATED TRIPS

DATE: 8/2/2021
SCALE: NO SCALE
FIGURE 14

Tighe&Bond
www.tighebond.com

Aug 02, 2021-10:15am Plotted By: MStoutz
Tighe & Bond, Inc. J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Figures\Traffic Volume Figures.dwg



LEGEND

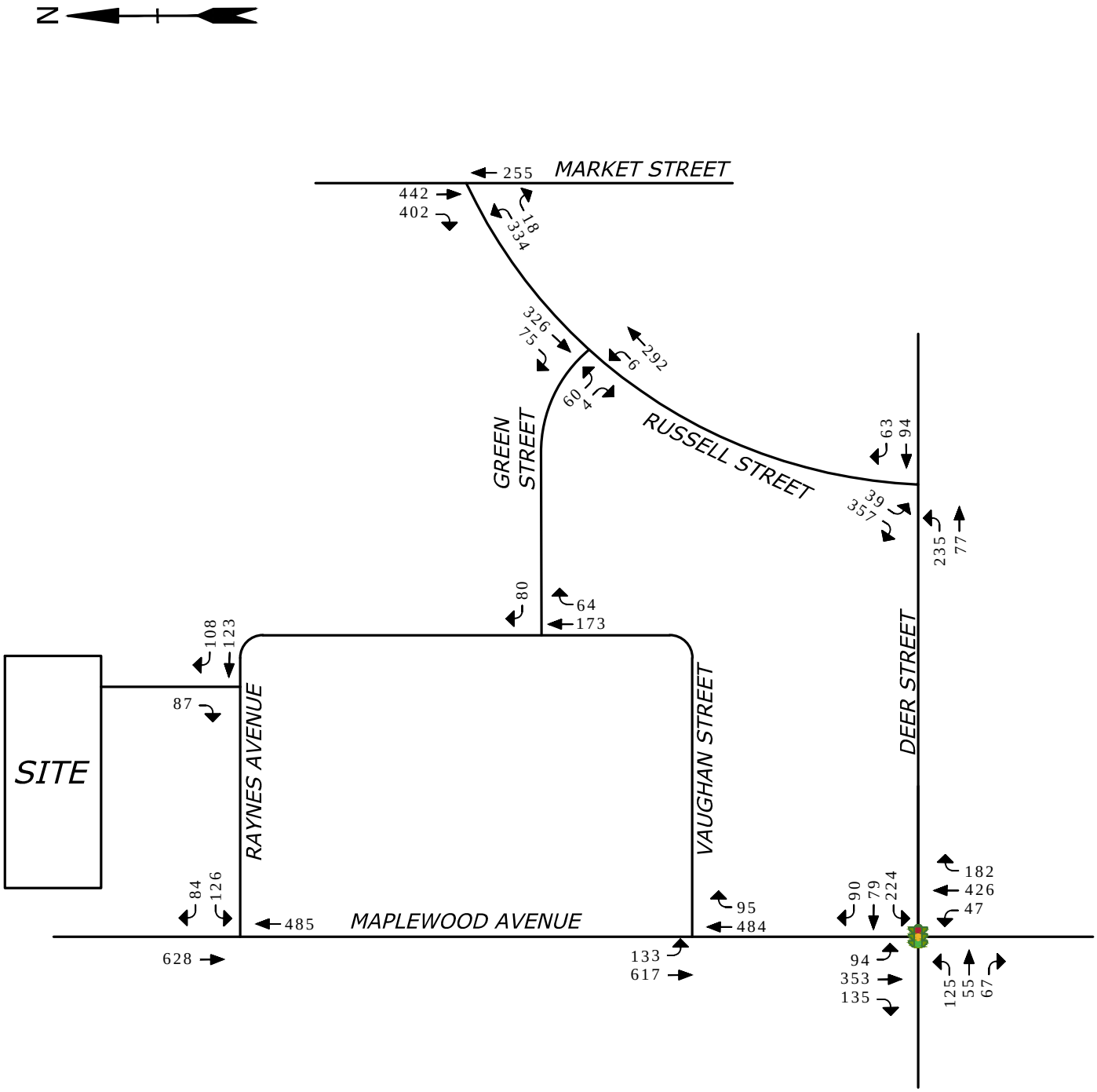
TRAFFIC SIGNAL

PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2022 BUILD WEEKDAY AFTERNOON PEAK HOUR TRAFFIC VOLUMES

DATE: 7/14/2021	Tighe&Bond www.tighebond.com
SCALE: NO SCALE	
FIGURE 15	

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

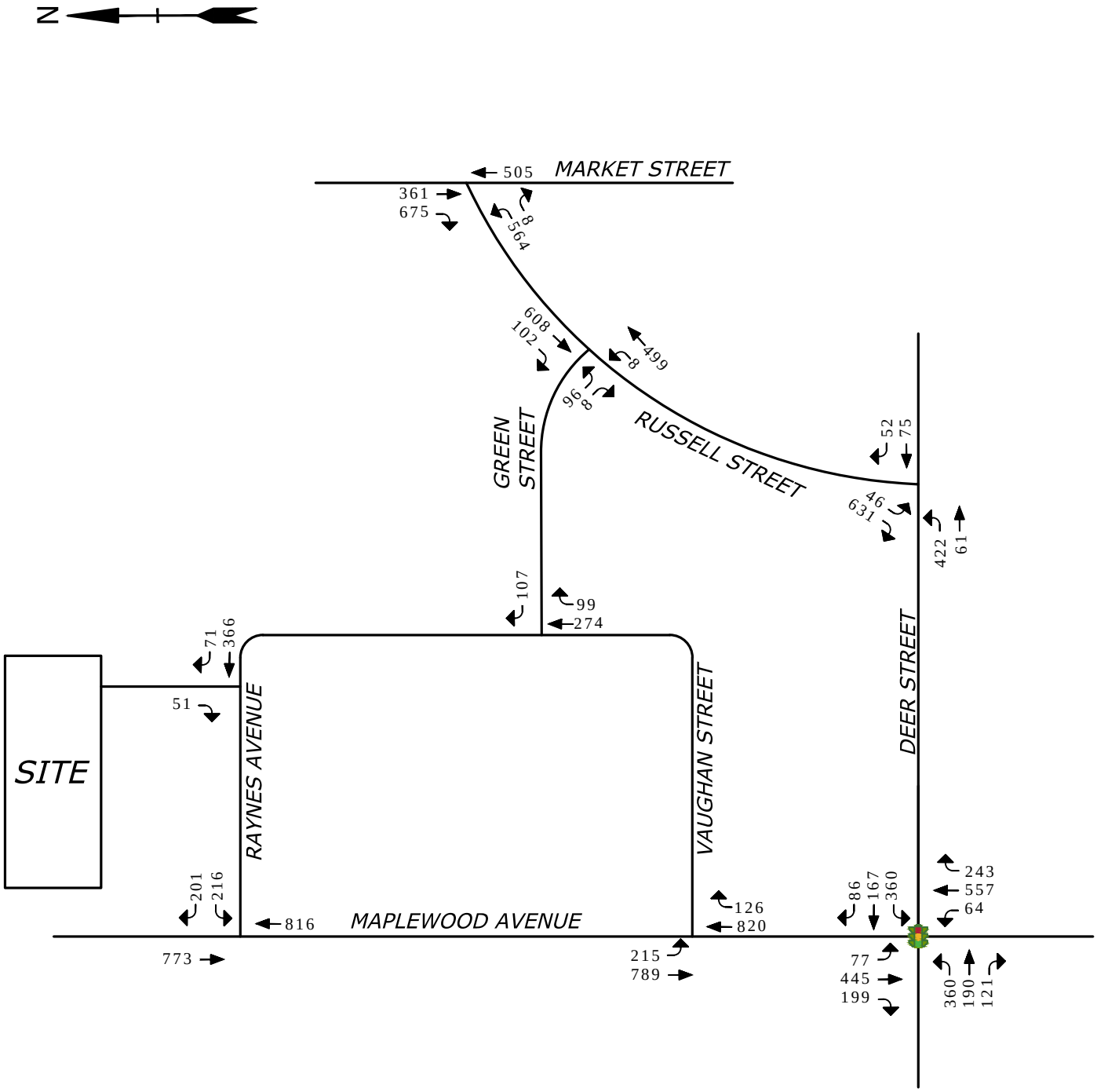
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2022 BUILD SATURDAY MIDDAY PEAK HOUR TRAFFIC VOLUMES

DATE: 8/2/2021
SCALE: NO SCALE
FIGURE 16

Tighe&Bond
www.tighebond.com

Aug 02, 2021-11:36am Plotted By: MStoutz
Tighe & Bond, Inc. J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Figures\Traffic Volume Figures.dwg



LEGEND

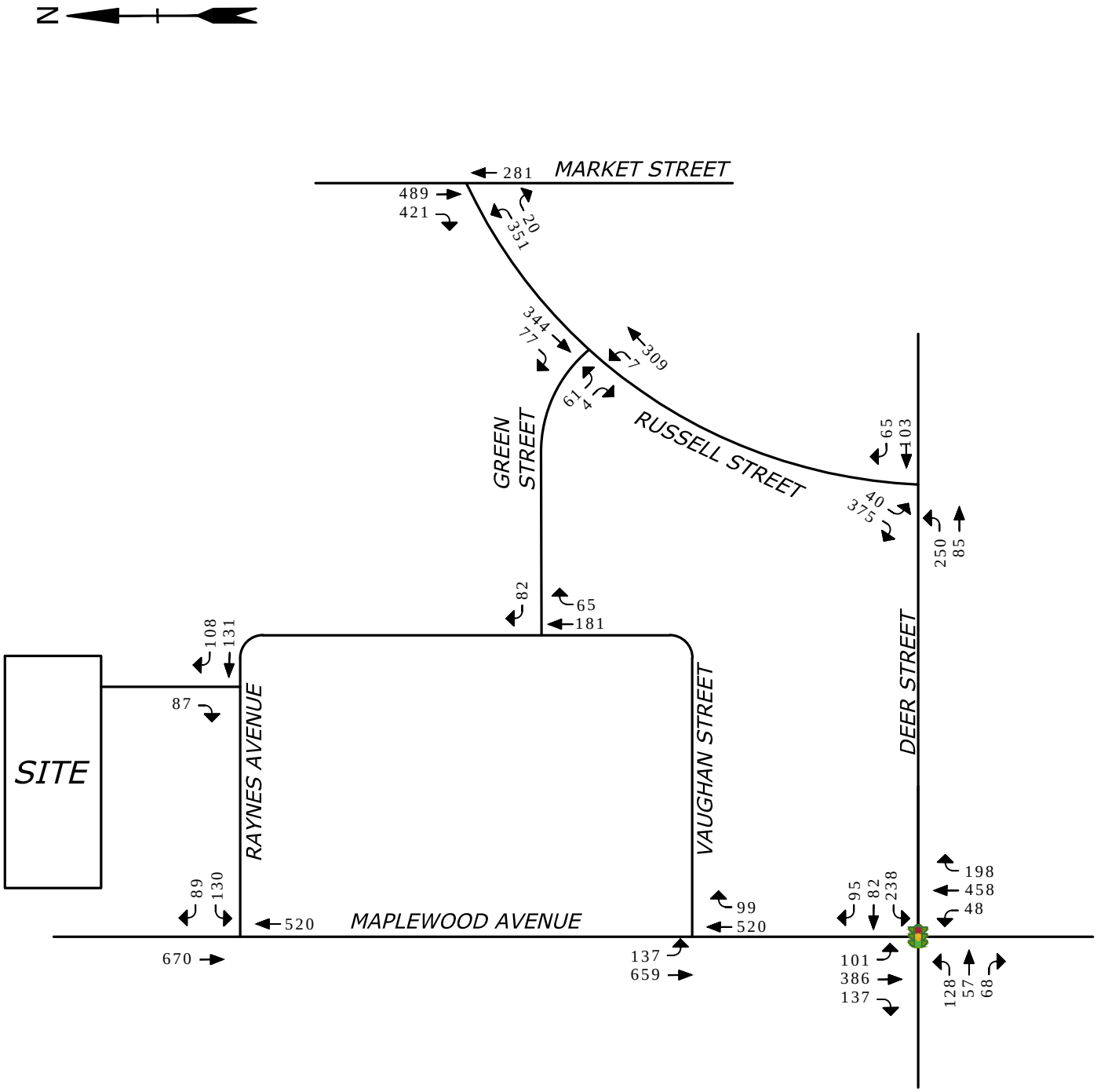
TRAFFIC SIGNAL

PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2032 BUILD WEEKDAY AFTERNOON PEAK HOUR TRAFFIC VOLUMES

DATE: 7/14/2021	Tighe&Bond www.tighebond.com
SCALE: NO SCALE	
FIGURE 17	

Jul 16, 2021-8:00am Plotted By: MStoutz
Tighe & Bond, Inc. C:\Users\MStoutz\appdata\local\temp\AcPublish_31176\Traffic Volume Figures.dwg



LEGEND

TRAFFIC SIGNAL

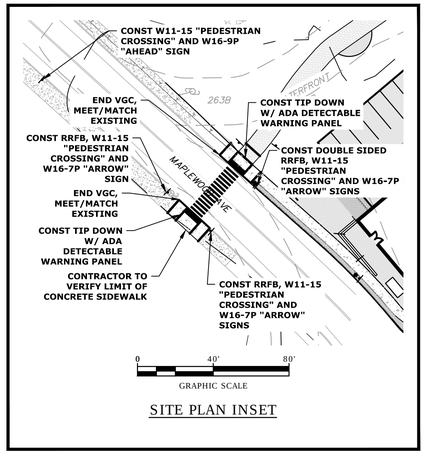
PROPOSED MIXED-USE DEVELOPMENT
RAYNES AVENUE, PORTSMOUTH, NH

2032 BUILD SATURDAY MIDDAY PEAK HOUR TRAFFIC VOLUMES

DATE: 8/2/2021	Tighe&Bond www.tighebond.com
SCALE: NO SCALE	
FIGURE 18	

Aug 02, 2021-8:39am Plotted By: MStoutz
Tighe & Bond, Inc. J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Figures\Traffic Volume Figures.dwg

APPENDIX C
Site Development Plan



SITE PLAN INSET

OPTIONAL RECONSTRUCTED KAYAK LAUNCH RAMP

OPTIONAL RECONSTRUCTED TIMBER PIER

CONST WETLAND BOUNDARY SIGN

CITY TO COORDINATE WITH LANDOWNER TO RELOCATE EXISTING EASEMENT

TAX MAP 123, LOT 15

TAX MAP 123, LOT 15-1

25' VEGETATED BUFFER

NORTH MILL POND GREENWAY TRAIL

CONST WETLAND BOUNDARY SIGN

PROPOSED GREENWAY COMMUNITY SPACE AREA = 27,352 SF

50' WATERFRONT BUFFER

CONST D11-1 "BIKE ROUTE" AND M4-6 "END" SIGNS

CONST D11-1 "BIKE ROUTE" SIGN

CONST FENCE (SEE LANDSCAPE PLAN)

CONST DISTRICT STANDARD, 24' POLE

TRANSITION FROM SGC TO MVGC

PROPOSED BIKE RACKS (TYP OF 5)

CONST 10' WIDE CROSS WALK

BEGIN VGC, MEET/MATCH EXISTING

TRANSITION FROM MVGC TO VGC

MAPLEWOOD AVE

CONST DISTRICT STANDARD, 16' POLE

CONST W11-15 "PEDESTRIAN CROSSING" AND W16-9P "AHEAD" SIGN

CONST TIP DOWN W/ ADA DETECTABLE WARNING PANEL

CONST R5-1 "DO NOT ENTER", R1-1 "STOP" SIGNS AND BAR

CONST 10' WIDE CROSS WALK

TAX MAP 123, LOT 7-1

CONST R7-8 "RESERVED" AND R7-8P "VAN ACCESSIBLE" SIGNS (TYP OF 2)

CONST TIP DOWN

LIMIT OF UPPER FLOOR AREA

CONST FLUSH PAVER CROSSWALK (SEE LANDSCAPE PLAN SHEET L-101)

46 SPACES

10 SPACES

8 VALET SPACES

4 VALET SPACES

4 VALET SPACES

6 SPACES

16 SPACES

8 SPACES

4 SPACES

STAIRS

ELEVATOR

STAIRS

BEGIN VGC

END VGC

CONST SLIDING GATE W/20' OPENING (SEE LANDSCAPE PLAN)

COMMERCIAL SPACE ± 3,750 SF

RESIDENTIAL LOBBY ± 2,000 SF

BUILDING A 5-STORY MIXED USE BUILDING ± 65,650 SF

COMMERCIAL SPACE ± 4,350 SF

CONST "LOADING ZONE, NO PARKING 6AM - 9AM" SIGNS (TYP OF 2)

CONST CONC SIDEWALK W/ 2' BRICK BAND

SWL

RAYNES AVE

CONST ARROW PAVEMENT MARKING (TYP) (SEE DETAIL)

CONST R5-1 "DO NOT ENTER" AND R1-1 "STOP" SIGNS

FINAL PAVING AND STRIPING AREA (SEE SITE NOTE 21)

CONST R6-1R "ONE WAY" AND R3-2 SIGNS

TAX MAP 123, LOT 8

CONST BOLLARD MOUNTED R7-8 "RESERVED" AND R7-8P "VAN ACCESSIBLE" SIGNS (TYP OF 2)

PROPOSED BIKE RACKS (TYP OF 4)

CONST R7-8 "RESERVED" SIGN

CONST BOLLARD MOUNTED R7-8 "RESERVED" SIGN

CONST FENCE (SEE LANDSCAPE PLAN)

CONST TRANSFORMER (COORD W/ EVERSOURCE)

PROPOSED BOLLARDS (TYP OF 7)

50 SPACES

LIMIT OF UPPER FLOOR AREA

END VGC

7 SPACES

CONST TIP DOWN

CONST CONCRETE SIDEWALK

CONST FLUSH PAVERS (SEE LANDSCAPED PLAN SHEET L-101)

BUILDING B 5-STORY HOTEL ± 63,400 SF

HOTEL LOBBY ± 7,400 SF

TRANSITION FROM MVGC TO VGC

CONST DISTRICT STANDARD, 16' POLE

CONST PAVERS (SEE LANDSCAPE PLAN SHEET L-101)

CONST FLUSH VGC

BEGIN VGC, MEET/MATCH EXISTING

CONST TIP DOWN

TRANSITION FROM VGC TO MVGC

TRANSITION FROM MVGC TO VGC

TAX MAP 123, LOT 9

TRANSITION FROM VGC TO SGC

11 SPACES

3 SPACES

TOTAL BUFFER ZONE

ZONE AE

ZONE A

SITE RECORDING NOTES:

1. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. 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.
3. THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.

SEE SHEET G-100 FOR SITE NOTES AND LEGEND

0 20' 40'
GRAPHIC SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEY M. CZECH — No. 09350 — LICENSED PROFESSIONAL ENGINEER — 7-21-21

STATE OF NEW HAMPSHIRE — PATRICK M. CROSSING — No. 16576 — LICENSED PROFESSIONAL ENGINEER — 7-21-2021

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

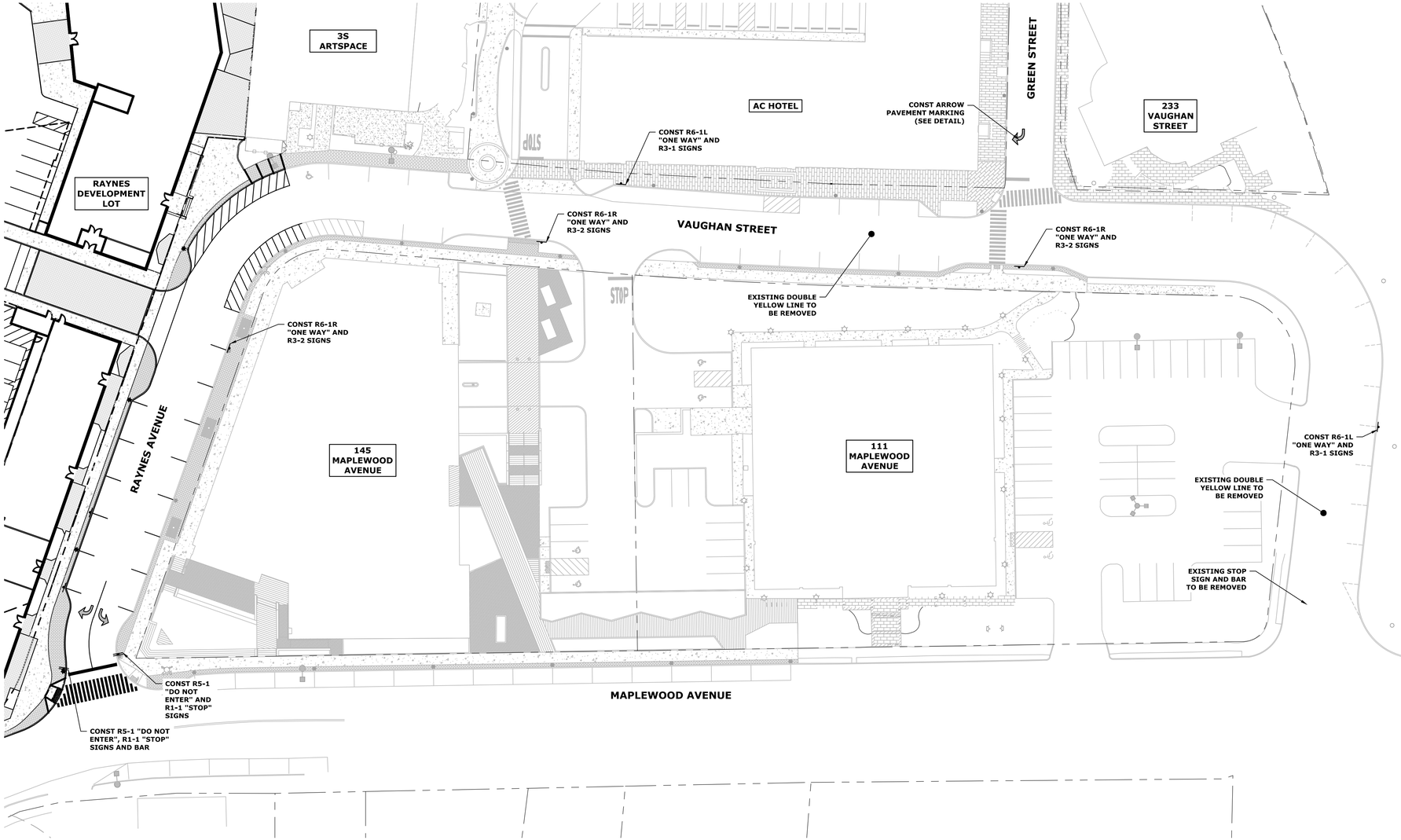
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.1

Last Saved: 7/20/2021
Printed on: Jul 20, 2021-1:46pm By: NAHansen
Tighe & Bond: J:\P\0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings-Figures\AutoCAD\Sheet\P-0595-007-C-DSGN.dwg



SEE SHEET G-100 FOR SITE NOTES AND LEGEND

Tighe&Bond

BRADLEY M. CZECHOWICZ No. 02350 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 7-21-21

PATRICK M. CROSSING No. 16576 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 7-21-2021

0 20' 40'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
H	7/21/2021	TAC Resubmission
G	5/26/2021	CC Resubmission
F	5/19/2021	TAC Resubmission
E	4/28/2021	CC Resubmission
D	4/21/2021	TAC Resubmission
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

NEIGHBORHOOD SIGNAGE PLAN

SCALE: AS SHOWN

C-102.2

Last Saved: 7/20/2021
Plotted: Jul 20, 2021-1:46pm By: NAHansen
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-C-DSGN.dwg

APPENDIX D

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 E

Capacity Analyses

2022 No Build Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	344	178	117	334	155	81	62	491	222	71	391	191
Future Volume (vph)	344	178	117	334	155	81	62	491	222	71	391	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.948				0.850		0.951	
Flt Protected		0.974		0.950			0.950			0.950		
Satd. Flow (prot)	0	1828	0	1770	1884	0	1711	1801	1636	1711	1712	0
Flt Permitted		0.390		0.538			0.349			0.288		
Satd. Flow (perm)	0	732	0	1002	1884	0	628	1801	1636	519	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			23				221		27	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	521	270	177	439	204	107	71	564	255	87	477	233
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	968	0	439	311	0	71	564	255	87	710	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	11.0	16.0	
Total Split (s)	33.0	33.0		33.0	33.0		35.0	35.0	35.0	16.0	51.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		31.8%	31.8%	31.8%	14.5%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	Max	Max		None	None		C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)		27.0		27.0	27.0		59.7	59.7	59.7	71.0	71.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.54	0.54	0.54	0.65	0.65	
v/c Ratio		5.18		1.79	0.65		0.21	0.58	0.26	0.21	0.64	
Control Delay		1902.1		399.9	41.7		16.7	20.8	3.7	8.5	14.5	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		1902.1		399.9	41.7		16.7	20.8	3.7	8.5	14.5	
LOS		F		F	D		B	C	A	A	B	
Approach Delay		1902.1			251.4			15.6			13.8	
Approach LOS		F			F			B			B	
Queue Length 50th (ft)		~1186		~466	183		26	265	11	21	266	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

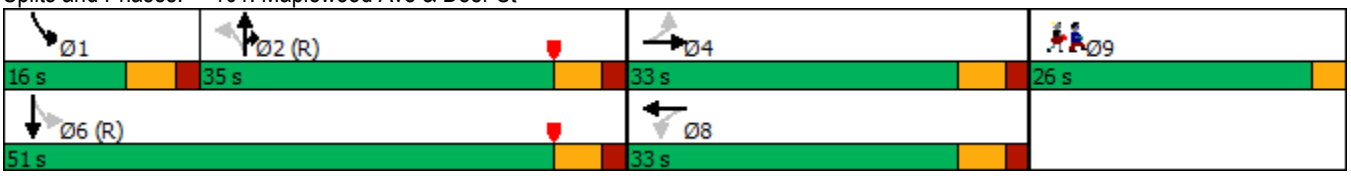
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#982		#530	224		56	375	48	36	321	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)		187		245	479		341	977	989	443	1114	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		5.18		1.79	0.65		0.21	0.58	0.26	0.20	0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 5.18			
Intersection Signal Delay: 603.4		Intersection LOS: F	
Intersection Capacity Utilization 114.6%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Maplewood Ave & Deer St



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	25.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	143	786	26	96	599
Future Vol, veh/h	33	143	786	26	96	599
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	179	983	33	108	673

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1889	1000	0	0	1016	0
Stage 1	1000	-	-	-	-	-
Stage 2	889	-	-	-	-	-
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	77	295	-	-	683	-
Stage 1	356	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	58	295	-	-	683	-
Mov Cap-2 Maneuver	58	-	-	-	-	-
Stage 1	356	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	231.7	0	1.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	167	683	-
HCM Lane V/C Ratio	-	-	1.317	0.158	-
HCM Control Delay (s)	-	-	231.7	11.3	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	13	0.6	-

Intersection	
Int Delay, s/veh	28.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	84	30	785	73	18	626
Future Vol, veh/h	84	30	785	73	18	626
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	40	994	92	21	745

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1827	1040	0	0	1086	0
Stage 1	1040	-	-	-	-	-
Stage 2	787	-	-	-	-	-
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	~ 84	280	-	-	642	-
Stage 1	341	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 79	280	-	-	642	-
Mov Cap-2 Maneuver	~ 79	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	424	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 375.7	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	97	642	-
HCM Lane V/C Ratio	-	-	1.567	0.033	-
HCM Control Delay (s)	-	-	$ 375.7	10.8	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	11.7	0.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	72	86	13	66	106
Future Vol, veh/h	7	72	86	13	66	106
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	77	106	16	108	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	504	114	0	0	122	0
Stage 1	114	-	-	-	-	-
Stage 2	390	-	-	-	-	-
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	528	939	-	-	1465	-
Stage 1	911	-	-	-	-	-
Stage 2	684	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	485	939	-	-	1465	-
Mov Cap-2 Maneuver	485	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	628	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	867	1465	-
HCM Lane V/C Ratio	-	-	0.098	0.074	-
HCM Control Delay (s)	-	-	9.6	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	28.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	392	55	68	50	44	586
Future Vol, veh/h	392	55	68	50	44	586
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	436	61	77	57	49	651

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	134	0	-	0	1039	106
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	933	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1451	-	-	-	255	948
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1451	-	-	-	176	948
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	383	-

Approach	EB	WB	SB
HCM Control Delay, s	7.5	0	49
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1451	-	-	-	726
HCM Lane V/C Ratio	0.3	-	-	-	0.964
HCM Control Delay (s)	8.5	0	-	-	49
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	1.3	-	-	-	14.7

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	7	7	465	563	75
Future Vol, veh/h	75	7	7	465	563	75
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	129	12	8	547	670	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1278	715	759	0	-	0
Stage 1	715	-	-	-	-	-
Stage 2	563	-	-	-	-	-
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	183	431	852	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	181	431	852	-	-	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	479	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	64.7	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	852	-	190	-	-
HCM Lane V/C Ratio	0.01	-	0.744	-	-
HCM Control Delay (s)	9.3	0	64.7	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0	-	4.9	-	-

Intersection	
Int Delay, s/veh	180.9

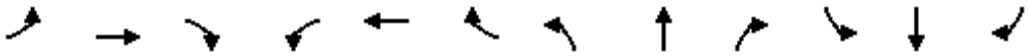
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	510	7	0	456	326	604
Future Vol, veh/h	510	7	0	456	326	604
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	630	9	0	642	388	719

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1030	388	-	0	-	0
Stage 1	388	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 259	660	0	-	-	-
Stage 1	686	-	0	-	-	-
Stage 2	~ 524	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 259	660	-	-	-	-
Mov Cap-2 Maneuver	~ 259	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	~ 524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 676.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	259	660	-	-
HCM Lane V/C Ratio	-	2.431	0.013	-	-
HCM Control Delay (s)	-	$ 685.7	10.5	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	51	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	55	67	224	79	90	47	390	182	94	324	135
Future Volume (vph)	125	55	67	224	79	90	47	390	182	94	324	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.920				0.850		0.956	
Flt Protected		0.975		0.950			0.950			0.950		
Satd. Flow (prot)	0	1807	0	1770	1828	0	1711	1801	1636	1711	1721	0
Flt Permitted		0.626		0.535			0.465			0.261		
Satd. Flow (perm)	0	1160	0	997	1828	0	837	1801	1636	470	1721	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			50				202		23	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
Adj. Flow (vph)	160	71	86	260	92	105	52	433	202	103	356	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	317	0	260	197	0	52	433	202	103	504	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	11.0	16.0	
Total Split (s)	33.0	33.0		33.0	33.0		35.0	35.0	35.0	16.0	51.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		31.8%	31.8%	31.8%	14.5%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	Max	Max		None	None		C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)		27.0		27.0	27.0		40.8	40.8	40.8	55.4	55.4	
Actuated g/C Ratio		0.25		0.25	0.25		0.37	0.37	0.37	0.50	0.50	
v/c Ratio		1.07		1.07	0.41		0.17	0.65	0.28	0.31	0.57	
Control Delay		111.1		117.0	28.5		31.9	38.5	5.5	20.6	24.5	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		111.1		117.0	28.5		31.9	38.5	5.5	20.6	24.5	
LOS		F		F	C		C	D	A	C	C	
Approach Delay		111.1			78.9			28.3			23.9	
Approach LOS		F			E			C			C	
Queue Length 50th (ft)		~240		~203	86		29	295	0	45	277	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

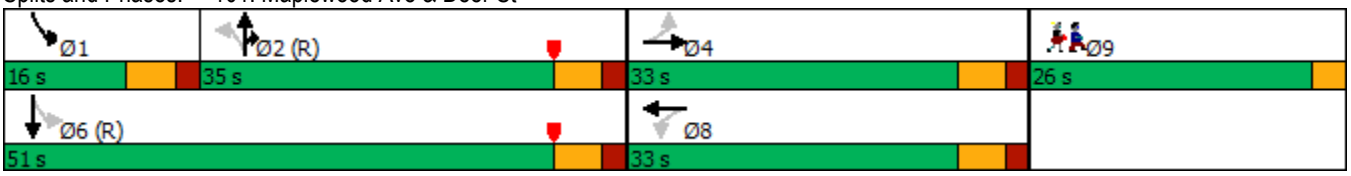
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#331		#341	145		65	#484	56	82	405	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)		296		244	486		310	668	734	349	877	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		1.07		1.07	0.41		0.17	0.65	0.28	0.30	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 50.9		Intersection LOS: D	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Maplewood Ave & Deer St



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	52	489	11	42	552
Future Vol, veh/h	21	52	489	11	42	552
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	81	81	91	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	64	537	12	46	600

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1235	543	0	0	549	0
Stage 1	543	-	-	-	-	-
Stage 2	692	-	-	-	-	-
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	195	540	-	-	1021	-
Stage 1	582	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	182	540	-	-	1021	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	463	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.1	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	345	1021	-
HCM Lane V/C Ratio	-	-	0.261	0.045	-
HCM Control Delay (s)	-	-	19.1	8.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	4	495	48	6	563
Future Vol, veh/h	25	4	495	48	6	563
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	5	563	55	7	640

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1245	591	0	0	618	0
Stage 1	591	-	-	-	-	-
Stage 2	654	-	-	-	-	-
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	192	507	-	-	962	-
Stage 1	553	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	190	507	-	-	962	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	511	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.5	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	208	962	-
HCM Lane V/C Ratio	-	-	0.158	0.007	-
HCM Control Delay (s)	-	-	25.5	8.8	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	37	58	8	27	36
Future Vol, veh/h	7	37	58	8	27	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	55	87	12	40	54

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	227	93	0	0	99	0
Stage 1	93	-	-	-	-	-
Stage 2	134	-	-	-	-	-
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	761	964	-	-	1494	-
Stage 1	931	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	740	964	-	-	1494	-
Mov Cap-2 Maneuver	740	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	867	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	3.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	920	1494	-
HCM Lane V/C Ratio	-	-	0.071	0.027	-
HCM Control Delay (s)	-	-	9.2	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	235	77	94	63	39	357
Future Vol, veh/h	235	77	94	63	39	357
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	85	116	78	44	401

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	194	0	-	0	756	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1379	-	-	-	376	891
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	547	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1379	-	-	-	302	891
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	547	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1379	-	-	-	747
HCM Lane V/C Ratio	0.187	-	-	-	0.596
HCM Control Delay (s)	8.2	0	-	-	16.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.7	-	-	-	4

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	4	6	292	326	39
Future Vol, veh/h	32	4	6	292	326	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	83	83	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	5	7	352	351	42

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	738	372	393	0	-	0
Stage 1	372	-	-	-	-	-
Stage 2	366	-	-	-	-	-
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	385	674	1166	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	382	674	1166	-	-	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	692	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1166	-	401	-	-
HCM Lane V/C Ratio	0.006	-	0.12	-	-
HCM Control Delay (s)	8.1	0	15.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	16.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	306	18	0	255	442	366
Future Vol, veh/h	306	18	0	255	442	366
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	85	85	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	348	20	0	300	486	402

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	786	486	-	0	-	0
Stage 1	486	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	361	581	0	-	-	-
Stage 1	618	-	0	-	-	-
Stage 2	752	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	361	581	-	-	-	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	752	-	-	-	-	-

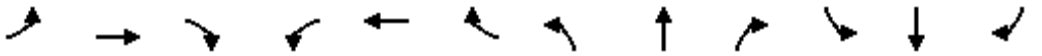
Approach	EB	NB	SB
HCM Control Delay, s	69.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	361	581	-	-
HCM Lane V/C Ratio	-	0.963	0.035	-	-
HCM Control Delay (s)	-	73	11.4	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	10.6	0.1	-	-

APPENDIX E

Capacity Analyses

2022 Build Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	344	178	117	334	155	81	62	511	222	71	405	191
Future Volume (vph)	344	178	117	334	155	81	62	511	222	71	405	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.948				0.850		0.952	
Flt Protected		0.974		0.950			0.950			0.950		
Satd. Flow (prot)	0	1828	0	1770	1884	0	1711	1801	1636	1711	1714	0
Flt Permitted		0.390		0.538			0.336			0.272		
Satd. Flow (perm)	0	732	0	1002	1884	0	605	1801	1636	490	1714	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			23				212		26	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	521	270	177	439	204	107	71	587	255	87	494	233
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	968	0	439	311	0	71	587	255	87	727	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	11.0	16.0	
Total Split (s)	33.0	33.0		33.0	33.0		35.0	35.0	35.0	16.0	51.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		31.8%	31.8%	31.8%	14.5%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	Max	Max		None	None		C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)		27.0		27.0	27.0		59.7	59.7	59.7	71.0	71.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.54	0.54	0.54	0.65	0.65	
v/c Ratio		5.18		1.79	0.65		0.22	0.60	0.26	0.22	0.65	
Control Delay		1902.1		399.9	41.7		16.9	21.4	4.0	8.6	14.9	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		1902.1		399.9	41.7		16.9	21.4	4.0	8.6	14.9	
LOS		F		F	D		B	C	A	A	B	
Approach Delay		1902.1			251.4			16.2			14.2	
Approach LOS		F			F			B			B	
Queue Length 50th (ft)		~1186		~466	183		26	281	14	21	277	

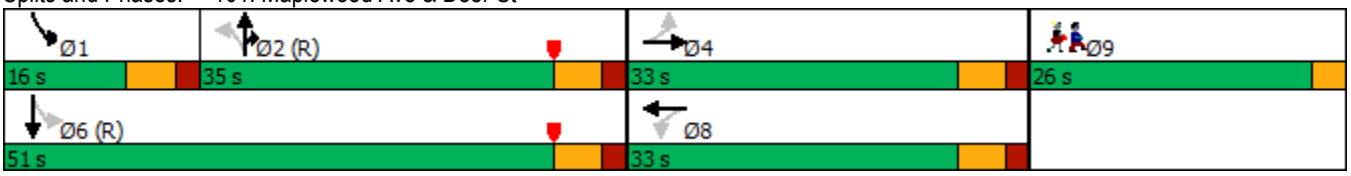
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#982		#530	224		57	396	52	36	334	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)		187		245	479		328	977	985	427	1115	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		5.18		1.79	0.65		0.22	0.60	0.26	0.20	0.65	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 5.18			
Intersection Signal Delay: 596.8		Intersection LOS: F	
Intersection Capacity Utilization 115.3%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Maplewood Ave & Deer St



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	103.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	204	189	756	0	0	719
Future Vol, veh/h	204	189	756	0	0	719
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	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	255	236	945	0	0	808

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1753	945	0	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 94	318	-	0	0	-
Stage 1	378	-	-	0	0	-
Stage 2	438	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	~ 94	318	-	-	-	-
Mov Cap-2 Maneuver	~ 94	-	-	-	-	-
Stage 1	378	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 472.5	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	94	318	-
HCM Lane V/C Ratio	-	2.713	0.743	-
HCM Control Delay (s)	-	$ 870.6	42.9	-
HCM Lane LOS	-	F	E	-
HCM 95th %tile Q(veh)	-	24.1	5.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	759	119	203	732
Future Volume (Veh/h)	0	0	759	119	203	732
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.79	0.79	0.84	0.84
Hourly flow rate (vph)	0	0	961	151	242	871
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			231			
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	2392	1036			1112	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2651	902			999	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			55	
cM capacity (veh/h)	11	261			537	

Direction, Lane #	NB 1	SB 1
Volume Total	1112	1113
Volume Left	0	242
Volume Right	151	0
cSH	1700	537
Volume to Capacity	0.65	0.45
Queue Length 95th (ft)	0	58
Control Delay (s)	0.0	16.1
Lane LOS		C
Approach Delay (s)	0.0	16.1
Approach LOS		

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	101	258	95	0	0
Future Vol, veh/h	0	101	258	95	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	109	319	117	0	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	-	378	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	-	-
Pot Cap-1 Maneuver	0	669	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	669	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	11.4	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	669
HCM Lane V/C Ratio	-	-	0.162
HCM Control Delay (s)	-	-	11.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

Intersection	
Int Delay, s/veh	28.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	392	55	68	50	44	586
Future Vol, veh/h	392	55	68	50	44	586
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	436	61	77	57	49	651

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	134	0	-	0	1039	106
Stage 1	-	-	-	-	106	-
Stage 2	-	-	-	-	933	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1451	-	-	-	255	948
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1451	-	-	-	176	948
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	383	-

Approach	EB	WB	SB
HCM Control Delay, s	7.5	0	49
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1451	-	-	-	726
HCM Lane V/C Ratio	0.3	-	-	-	0.964
HCM Control Delay (s)	8.5	0	-	-	49
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	1.3	-	-	-	14.7

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	91	7	7	465	563	97
Future Vol, veh/h	91	7	7	465	563	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	157	12	8	547	670	115

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1291	728	785	0	-	0
Stage 1	728	-	-	-	-	-
Stage 2	563	-	-	-	-	-
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	180	423	834	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	177	423	834	-	-	-
Mov Cap-2 Maneuver	177	-	-	-	-	-
Stage 1	471	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	96.5	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	834	-	185	-	-
HCM Lane V/C Ratio	0.01	-	0.913	-	-
HCM Control Delay (s)	9.4	0	96.5	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0	-	7	-	-

Intersection	
Int Delay, s/veh	192.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	526	7	0	456	326	626
Future Vol, veh/h	526	7	0	456	326	626
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	649	9	0	642	388	745

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1030	388	-	0	-	0
Stage 1	388	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 259	660	0	-	-	-
Stage 1	686	-	0	-	-	-
Stage 2	~ 524	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 259	660	-	-	-	-
Mov Cap-2 Maneuver	~ 259	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	~ 524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 710.3	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	259	660	-	-
HCM Lane V/C Ratio	-	2.507	0.013	-	-
HCM Control Delay (s)	-	$ 719.6	10.5	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	53.4	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

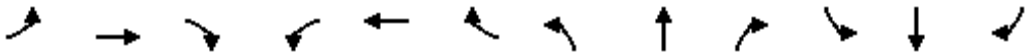
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	341	71	0	51
Future Vol, veh/h	0	0	341	71	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	371	77	0	55

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	410
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	642
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	642
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	11.1
HCM LOS		B

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	642
HCM Lane V/C Ratio	-	-	0.086
HCM Control Delay (s)	-	-	11.1
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	55	67	224	79	90	47	426	182	94	353	135
Future Volume (vph)	125	55	67	224	79	90	47	426	182	94	353	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.920				0.850		0.958	
Flt Protected		0.975		0.950			0.950			0.950		
Satd. Flow (prot)	0	1807	0	1770	1828	0	1711	1801	1636	1711	1725	0
Flt Permitted		0.575		0.518			0.363			0.204		
Satd. Flow (perm)	0	1066	0	965	1828	0	654	1801	1636	367	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			49				209		21	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	189	83	102	295	104	118	54	490	209	115	430	165
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	374	0	295	222	0	54	490	209	115	595	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	11.0	16.0	
Total Split (s)	33.0	33.0		33.0	33.0		35.0	35.0	35.0	16.0	51.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		31.8%	31.8%	31.8%	14.5%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	Max	Max		None	None		C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)		27.0		27.0	27.0		40.7	40.7	40.7	55.4	55.4	
Actuated g/C Ratio		0.25		0.25	0.25		0.37	0.37	0.37	0.50	0.50	
v/c Ratio		1.37		1.25	0.46		0.22	0.74	0.28	0.40	0.68	
Control Delay		220.8		179.1	30.7		34.0	42.2	5.5	22.3	28.1	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		220.8		179.1	30.7		34.0	42.2	5.5	22.3	28.1	
LOS		F		F	C		C	D	A	C	C	
Approach Delay		220.8			115.4			31.4			27.1	
Approach LOS		F			F			C			C	
Queue Length 50th (ft)		~343		~260	103		31	~372	0	51	358	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

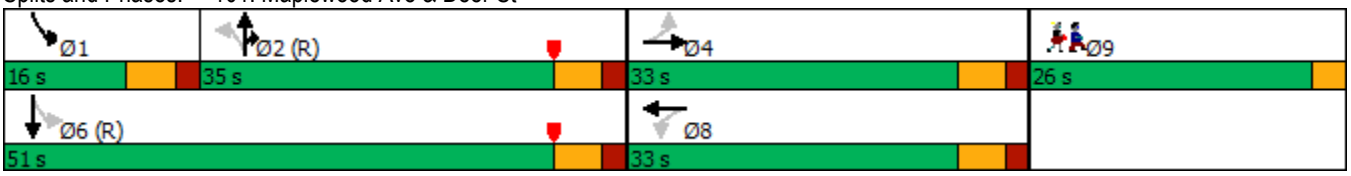
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#332		#337	140		67	#544	50	81	441	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)		273		236	485		241	665	736	307	879	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		1.37		1.25	0.46		0.22	0.74	0.28	0.37	0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.37			
Intersection Signal Delay: 78.6		Intersection LOS: E	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Maplewood Ave & Deer St



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

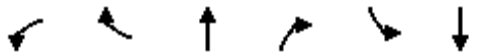
Intersection	
Int Delay, s/veh	8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	126	84	485	0	0	628
Future Vol, veh/h	126	84	485	0	0	628
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	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	91	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	156	104	533	0	0	683

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1216	533	0	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	200	547	-	0	0	-
Stage 1	588	-	-	0	0	-
Stage 2	502	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	200	547	-	-	-	-
Mov Cap-2 Maneuver	200	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	502	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	45.3	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	200	547	-
HCM Lane V/C Ratio	-	0.778	0.19	-
HCM Control Delay (s)	-	66.8	13.1	-
HCM Lane LOS	-	F	B	-
HCM 95th %tile Q(veh)	-	5.3	0.7	-



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	484	95	133	617
Future Volume (Veh/h)	0	0	484	95	133	617
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.90	0.90	0.93	0.93
Hourly flow rate (vph)	0	0	538	106	143	663
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			231			
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	1540	591			644	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1552	321			390	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			84	
cM capacity (veh/h)	81	555			901	

Direction, Lane #	NB 1	SB 1
Volume Total	644	806
Volume Left	0	143
Volume Right	106	0
cSH	1700	901
Volume to Capacity	0.38	0.16
Queue Length 95th (ft)	0	14
Control Delay (s)	0.0	3.8
Lane LOS		A
Approach Delay (s)	0.0	3.8
Approach LOS		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	80	173	64	0	0
Future Vol, veh/h	0	80	173	64	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	78	78	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	119	222	82	0	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	-	263	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	-	-
Pot Cap-1 Maneuver	0	776	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	776	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	10.5	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	776
HCM Lane V/C Ratio	-	-	0.154
HCM Control Delay (s)	-	-	10.5
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.5

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	235	77	94	63	39	357
Future Vol, veh/h	235	77	94	63	39	357
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	85	116	78	44	401

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	194	0	-	0	756	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1379	-	-	-	376	891
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	547	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1379	-	-	-	302	891
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	547	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1379	-	-	-	747
HCM Lane V/C Ratio	0.187	-	-	-	0.596
HCM Control Delay (s)	8.2	0	-	-	16.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.7	-	-	-	4

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	4	6	292	326	75
Future Vol, veh/h	60	4	6	292	326	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	83	83	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	5	7	352	351	81

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	758	392	432	0	-	0
Stage 1	392	-	-	-	-	-
Stage 2	366	-	-	-	-	-
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	375	657	1128	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	372	657	1128	-	-	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	678	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1128	-	382	-	-
HCM Lane V/C Ratio	0.006	-	0.223	-	-
HCM Control Delay (s)	8.2	0	17.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection	
Int Delay, s/veh	22.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	334	18	0	255	442	402
Future Vol, veh/h	334	18	0	255	442	402
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	85	85	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	380	20	0	300	486	442

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	786	486	-	0	-	0
Stage 1	486	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 361	581	0	-	-	-
Stage 1	618	-	0	-	-	-
Stage 2	752	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 361	581	-	-	-	-
Mov Cap-2 Maneuver	~ 361	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	752	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	91.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	361	581	-	-
HCM Lane V/C Ratio	-	1.051	0.035	-	-
HCM Control Delay (s)	-	96.2	11.4	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	13.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	123	108	0	87
Future Vol, veh/h	0	0	123	108	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	134	117	0	95

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	193
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	849
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	849
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

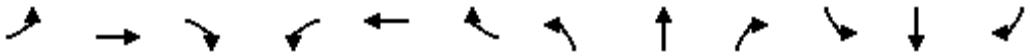
Approach	WB	SB
HCM Control Delay, s	0	9.8
HCM LOS		A

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	849
HCM Lane V/C Ratio	-	-	0.111
HCM Control Delay (s)	-	-	9.8
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.4

APPENDIX E

Capacity Analyses

2032 No Build Conditions

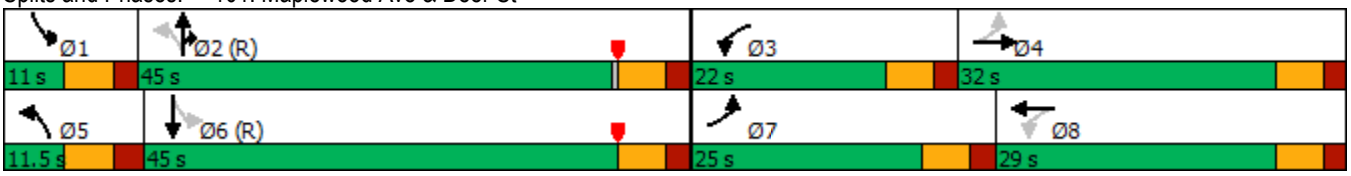


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	360	190	121	360	167	86	64	537	243	77	431	199
Future Volume (vph)	360	190	121	360	167	86	64	537	243	77	431	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.942			0.949				0.850		0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1652	1813	0	1770	1886	0	1711	1801	1636	1711	1716	0
Flt Permitted	0.197			0.174			0.101			0.100		
Satd. Flow (perm)	342	1813	0	324	1886	0	182	1801	1636	180	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			21				252		23	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	545	288	183	474	220	113	74	617	279	94	526	243
Shared Lane Traffic (%)												
Lane Group Flow (vph)	545	471	0	474	333	0	74	617	279	94	769	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		20.0	25.0		11.5	29.0	29.0	11.0	28.0	
Total Split (s)	25.0	32.0		22.0	29.0		11.5	45.0	45.0	11.0	45.0	
Total Split (%)	22.6%	29.0%		19.9%	26.2%		10.4%	40.7%	40.7%	10.0%	40.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.5	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.5	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	45.0	26.0		39.0	23.0		44.0	39.5	39.5	45.3	41.3	
Actuated g/C Ratio	0.41	0.24		0.35	0.21		0.40	0.36	0.36	0.41	0.37	
v/c Ratio	1.50	1.05		1.47	0.81		0.52	0.96	0.37	0.66	1.17	
Control Delay	263.1	96.7		253.6	56.0		31.6	62.5	5.9	42.2	126.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	263.1	96.7		253.6	56.0		31.6	62.5	5.9	42.2	126.1	
LOS	F	F		F	E		C	E	A	D	F	
Approach Delay		185.9			172.1			43.9			116.9	
Approach LOS		F			F			D			F	
Queue Length 50th (ft)	~480	~351		~414	213		29	424	12	37	~672	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#418	301		#476	256		56	#619	62	#72	#785	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	364	447		323	409		141	643	746	142	655	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.50	1.05		1.47	0.81		0.52	0.96	0.37	0.66	1.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110.5			
Actuated Cycle Length: 110.5			
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.50			
Intersection Signal Delay: 128.9		Intersection LOS: F	
Intersection Capacity Utilization 96.7%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 101: Maplewood Ave & Deer St



Intersection	
Int Delay, s/veh	47.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	152	849	28	103	646
Future Vol, veh/h	36	152	849	28	103	646
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	190	1061	35	116	726

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2037	1079	0	0	1096	0
Stage 1	1079	-	-	-	-	-
Stage 2	958	-	-	-	-	-
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	62	265	-	-	637	-
Stage 1	326	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 43	265	-	-	637	-
Mov Cap-2 Maneuver	~ 43	-	-	-	-	-
Stage 1	326	-	-	-	-	-
Stage 2	259	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 431.1	0	1.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	133	637	-
HCM Lane V/C Ratio	-	-	1.767	0.182	-
HCM Control Delay (s)	-	-	$ 431.1	11.9	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	17.7	0.7	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	46.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	90	33	848	78	20	677
Future Vol, veh/h	90	33	848	78	20	677
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	44	1073	99	24	806

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1977	1123	0	0	1172	0
Stage 1	1123	-	-	-	-	-
Stage 2	854	-	-	-	-	-
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	~ 68	250	-	-	596	-
Stage 1	311	-	-	-	-	-
Stage 2	417	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 63	250	-	-	596	-
Mov Cap-2 Maneuver	~ 63	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 610.7	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	79	596	-
HCM Lane V/C Ratio	-	-	2.076	0.04	-
HCM Control Delay (s)	-	-	$ 610.7	11.3	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	14.8	0.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	77	92	15	70	113
Future Vol, veh/h	8	77	92	15	70	113
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	83	114	19	115	185

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	539	124	0	0	133	0
Stage 1	124	-	-	-	-	-
Stage 2	415	-	-	-	-	-
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	503	927	-	-	1452	-
Stage 1	902	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	459	927	-	-	1452	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	846	1452	-
HCM Lane V/C Ratio	-	-	0.108	0.079	-
HCM Control Delay (s)	-	-	9.8	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3	-

Intersection	
Int Delay, s/veh	46.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	422	61	75	52	46	631
Future Vol, veh/h	422	61	75	52	46	631
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	469	68	85	59	51	701

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	144	0	-	0	1121	115
Stage 1	-	-	-	-	115	-
Stage 2	-	-	-	-	1006	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1438	-	-	-	228	937
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	353	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1438	-	-	-	151	937
Mov Cap-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	353	-

Approach	EB	WB	SB
HCM Control Delay, s	7.6	0	83.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1438	-	-	-	692
HCM Lane V/C Ratio	0.326	-	-	-	1.087
HCM Control Delay (s)	8.7	0	-	-	83.9
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	1.4	-	-	-	21

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	8	8	499	608	80
Future Vol, veh/h	80	8	8	499	608	80
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	14	9	587	724	95

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1377	772	819	0	-	0
Stage 1	772	-	-	-	-	-
Stage 2	605	-	-	-	-	-
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	160	400	810	-	-	-
Stage 1	456	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	157	400	810	-	-	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	103.7	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	810	-	166	-	-
HCM Lane V/C Ratio	0.012	-	0.914	-	-
HCM Control Delay (s)	9.5	0	103.7	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0	-	6.7	-	-

Intersection	
Int Delay, s/veh	251

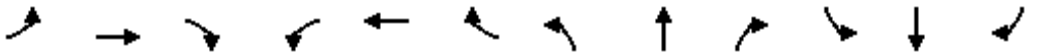
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	548	8	0	505	361	653
Future Vol, veh/h	548	8	0	505	361	653
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	677	10	0	711	430	777

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1141	430	-	0	-	0
Stage 1	430	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 222	625	0	-	-	-
Stage 1	~ 656	-	0	-	-	-
Stage 2	~ 487	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 222	625	-	-	-	-
Mov Cap-2 Maneuver	~ 222	-	-	-	-	-
Stage 1	~ 656	-	-	-	-	-
Stage 2	~ 487	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 952.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	222	625	-	-
HCM Lane V/C Ratio	-	3.047	0.016	-	-
HCM Control Delay (s)	-	$ 966.1	10.9	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	61	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

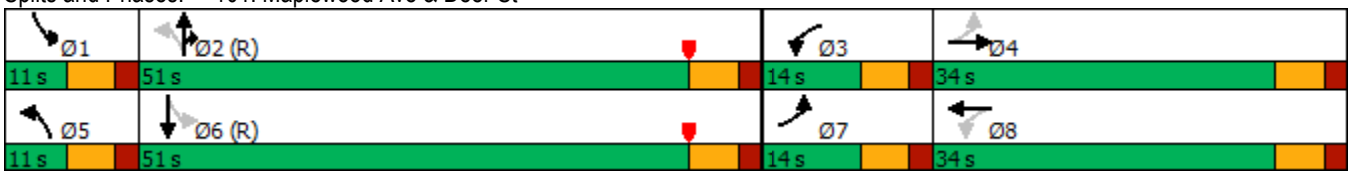


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	57	68	238	82	95	48	422	198	101	357	137
Future Volume (vph)	128	57	68	238	82	95	48	422	198	101	357	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.918			0.920				0.850		0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1652	1767	0	1770	1828	0	1711	1801	1636	1711	1725	0
Flt Permitted	0.527			0.609			0.250			0.302		
Satd. Flow (perm)	916	1767	0	1134	1828	0	450	1801	1636	544	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			51				220		21	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
Adj. Flow (vph)	164	73	87	277	95	110	53	469	220	111	392	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	160	0	277	205	0	53	469	220	111	543	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		10.0	29.0		11.0	29.0	29.0	11.0	28.0	
Total Split (s)	14.0	34.0		14.0	34.0		11.0	51.0	51.0	11.0	51.0	
Total Split (%)	12.7%	30.9%		12.7%	30.9%		10.0%	46.4%	46.4%	10.0%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	36.0	28.0		36.0	28.0		50.0	45.0	45.0	51.2	47.2	
Actuated g/C Ratio	0.33	0.25		0.33	0.25		0.45	0.41	0.41	0.47	0.43	
v/c Ratio	0.46	0.33		0.66	0.41		0.20	0.64	0.28	0.36	0.72	
Control Delay	29.3	24.3		36.7	28.1		15.8	30.8	3.7	18.4	32.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	29.3	24.3		36.7	28.1		15.8	30.8	3.7	18.4	32.4	
LOS	C	C		D	C		B	C	A	B	C	
Approach Delay		26.8			33.0			21.7			30.1	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	78	61		142	89		18	260	0	40	311	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	110	97		204	149		39	374	46	71	451	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	353	488		417	503		261	736	799	306	752	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.46	0.33		0.66	0.41		0.20	0.64	0.28	0.36	0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 27.4		Intersection LOS: C	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 101: Maplewood Ave & Deer St



Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	56	525	12	44	592
Future Vol, veh/h	23	56	525	12	44	592
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	81	81	91	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	69	577	13	48	643

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1323	584	0	0	590	0
Stage 1	584	-	-	-	-	-
Stage 2	739	-	-	-	-	-
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	172	512	-	-	985	-
Stage 1	557	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	159	512	-	-	985	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	436	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.8	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	311	985	-
HCM Lane V/C Ratio	-	-	0.314	0.049	-
HCM Control Delay (s)	-	-	21.8	8.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.2	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	5	532	51	7	604
Future Vol, veh/h	26	5	532	51	7	604
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	90	90	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	6	591	57	8	649

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1285	620	0	0	648	0
Stage 1	620	-	-	-	-	-
Stage 2	665	-	-	-	-	-
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	182	488	-	-	938	-
Stage 1	536	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	180	488	-	-	938	-
Mov Cap-2 Maneuver	180	-	-	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	504	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.8	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	200	938	-
HCM Lane V/C Ratio	-	-	0.176	0.008	-
HCM Control Delay (s)	-	-	26.8	8.9	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	38	62	9	28	38
Future Vol, veh/h	8	38	62	9	28	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	78	78	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	57	79	12	31	42

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	189	85	0	0	91	0
Stage 1	85	-	-	-	-	-
Stage 2	104	-	-	-	-	-
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	800	974	-	-	1504	-
Stage 1	938	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	783	974	-	-	1504	-
Mov Cap-2 Maneuver	783	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	901	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	3.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	934	1504	-
HCM Lane V/C Ratio	-	-	0.074	0.02	-
HCM Control Delay (s)	-	-	9.2	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	250	85	103	65	40	375
Future Vol, veh/h	250	85	103	65	40	375
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	275	93	127	80	45	421

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	207	0	-	0	810	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	643	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1364	-	-	-	349	877
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1364	-	-	-	275	877
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	523	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1364	-	-	-	724
HCM Lane V/C Ratio	0.201	-	-	-	0.644
HCM Control Delay (s)	8.3	0	-	-	18.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	4.7

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	4	7	309	344	41
Future Vol, veh/h	33	4	7	309	344	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	83	83	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	5	8	372	370	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	780	392	414	0	-	0
Stage 1	392	-	-	-	-	-
Stage 2	388	-	-	-	-	-
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	364	657	1145	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	361	657	1145	-	-	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1145	-	379	-	-
HCM Lane V/C Ratio	0.007	-	0.13	-	-
HCM Control Delay (s)	8.2	0	15.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	28.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	323	20	0	281	489	385
Future Vol, veh/h	323	20	0	281	489	385
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	85	85	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	367	23	0	331	537	423

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	868	537	-	0	-	0
Stage 1	537	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 323	544	0	-	-	-
Stage 1	586	-	0	-	-	-
Stage 2	728	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 323	544	-	-	-	-
Mov Cap-2 Maneuver	~ 323	-	-	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	121.5	0	0
HCM LOS	F		

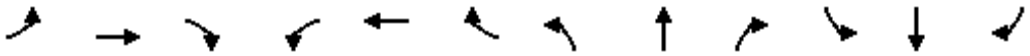
Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	323	544	-	-
HCM Lane V/C Ratio	-	1.136	0.042	-	-
HCM Control Delay (s)	-	128.3	11.9	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	14.8	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

APPENDIX E

Capacity Analyses

2032 Build Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	360	190	121	360	167	86	64	557	243	77	445	199
Future Volume (vph)	360	190	121	360	167	86	64	557	243	77	445	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.942			0.949				0.850		0.954	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1652	1813	0	1770	1886	0	1711	1801	1636	1711	1718	0
Flt Permitted	0.199			0.174			0.103			0.100		
Satd. Flow (perm)	346	1813	0	324	1886	0	185	1801	1636	180	1718	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			21				243		23	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	545	288	183	474	220	113	74	640	279	94	543	243
Shared Lane Traffic (%)												
Lane Group Flow (vph)	545	471	0	474	333	0	74	640	279	94	786	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	29.0	29.0	11.0	28.0	
Total Split (s)	25.0	32.0		22.0	29.0		11.0	45.0	45.0	11.0	45.0	
Total Split (%)	22.7%	29.1%		20.0%	26.4%		10.0%	40.9%	40.9%	10.0%	40.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	45.0	26.0		39.0	23.0		44.0	39.0	39.0	45.2	41.2	
Actuated g/C Ratio	0.41	0.24		0.35	0.21		0.40	0.35	0.35	0.41	0.37	
v/c Ratio	1.49	1.05		1.46	0.81		0.52	1.00	0.38	0.66	1.20	
Control Delay	257.6	95.1		249.7	55.6		30.8	72.7	6.5	41.8	134.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	257.6	95.1		249.7	55.6		30.8	72.7	6.5	41.8	134.7	
LOS	F	F		F	E		C	E	A	D	F	
Approach Delay		182.3			169.6			51.0			124.7	
Approach LOS		F			F			D			F	
Queue Length 50th (ft)	~475	~348		~411	212		29	~450	17	37	~691	

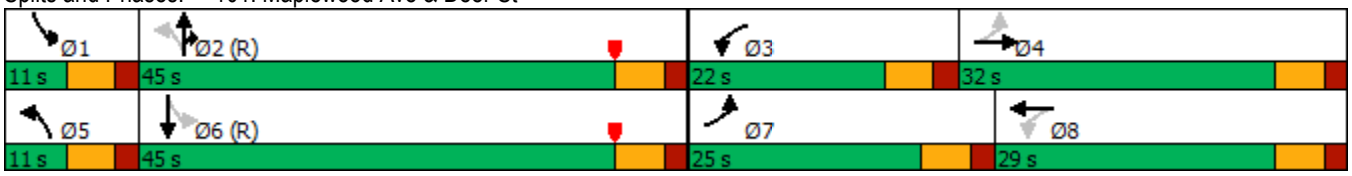
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#415	300		#474	255		55	#655	67	#71	#804	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	367	449		325	410		143	638	736	143	657	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.49	1.05		1.46	0.81		0.52	1.00	0.38	0.66	1.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.49			
Intersection Signal Delay: 130.5		Intersection LOS: F	
Intersection Capacity Utilization 97.0%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Maplewood Ave & Deer St



Intersection	
Int Delay, s/veh	145.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	216	201	816	0	0	773
Future Vol, veh/h	216	201	816	0	0	773
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	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	270	251	1020	0	0	869

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1889	1020	0	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 77	287	-	0	0	-
Stage 1	348	-	-	0	0	-
Stage 2	410	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	~ 77	287	-	-	-	-
Mov Cap-2 Maneuver	~ 77	-	-	-	-	-
Stage 1	348	-	-	-	-	-
Stage 2	410	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 674.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	77	287	-
HCM Lane V/C Ratio	-	3.506	0.875	-
HCM Control Delay (s)	-	$ 1241.7	65.2	-
HCM Lane LOS	-	F	F	-
HCM 95th %tile Q(veh)	-	27.8	7.7	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

202: Maplewood Ave & Vaughan St
2032 Build Weekday PM Peak

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	820	126	215	789
Future Volume (Veh/h)	0	0	820	126	215	789
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.79	0.79	0.84	0.84
Hourly flow rate (vph)	0	0	1038	159	256	939
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			231			
pX, platoon unblocked	0.42	0.42			0.42	
vC, conflicting volume	2568	1118			1197	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	4020	598			786	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			28	
cM capacity (veh/h)	0	213			353	

Direction, Lane #	NB 1	SB 1
Volume Total	1197	1195
Volume Left	0	256
Volume Right	159	0
cSH	1700	353
Volume to Capacity	0.70	0.72
Queue Length 95th (ft)	0	136
Control Delay (s)	0.0	37.8
Lane LOS		E
Approach Delay (s)	0.0	37.8
Approach LOS		

Intersection Summary			
Average Delay	18.9		
Intersection Capacity Utilization	110.9%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	107	274	100	0	0
Future Vol, veh/h	0	107	274	100	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	115	338	123	0	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	-	400	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	-	-
Pot Cap-1 Maneuver	0	650	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	650	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	11.7	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	650
HCM Lane V/C Ratio	-	-	0.177
HCM Control Delay (s)	-	-	11.7
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

Intersection	
Int Delay, s/veh	46.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	422	61	75	52	46	631
Future Vol, veh/h	422	61	75	52	46	631
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	469	68	85	59	51	701

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	144	0	-	0	1121	115
Stage 1	-	-	-	-	115	-
Stage 2	-	-	-	-	1006	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1438	-	-	-	228	937
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	353	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1438	-	-	-	151	937
Mov Cap-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	353	-

Approach	EB	WB	SB
HCM Control Delay, s	7.6	0	83.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1438	-	-	-	692
HCM Lane V/C Ratio	0.326	-	-	-	1.087
HCM Control Delay (s)	8.7	0	-	-	83.9
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	1.4	-	-	-	21

Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	96	8	8	499	608	102
Future Vol, veh/h	96	8	8	499	608	102
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	166	14	9	587	724	121

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1390	785	845	0	-	0
Stage 1	785	-	-	-	-	-
Stage 2	605	-	-	-	-	-
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	~ 157	393	792	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 154	393	792	-	-	-
Mov Cap-2 Maneuver	~ 154	-	-	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	159.2	0.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	792	-	162	-	-
HCM Lane V/C Ratio	0.012	-	1.107	-	-
HCM Control Delay (s)	9.6	0	159.2	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0	-	9.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	264.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	564	8	0	505	361	675
Future Vol, veh/h	564	8	0	505	361	675
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	696	10	0	711	430	804

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1141	430	-	0	-	0
Stage 1	430	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 222	625	0	-	-	-
Stage 1	~ 656	-	0	-	-	-
Stage 2	~ 487	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 222	625	-	-	-	-
Mov Cap-2 Maneuver	~ 222	-	-	-	-	-
Stage 1	~ 656	-	-	-	-	-
Stage 2	~ 487	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 992	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	222	625	-	-
HCM Lane V/C Ratio	-	3.136	0.016	-	-
HCM Control Delay (s)	$	1005.9	10.9	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	63.4	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

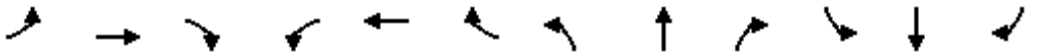
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	366	71	0	51
Future Vol, veh/h	0	0	366	71	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	398	77	0	55

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	437
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	620
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	620
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	11.4
HCM LOS		B

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	620
HCM Lane V/C Ratio	-	-	0.089
HCM Control Delay (s)	-	-	11.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

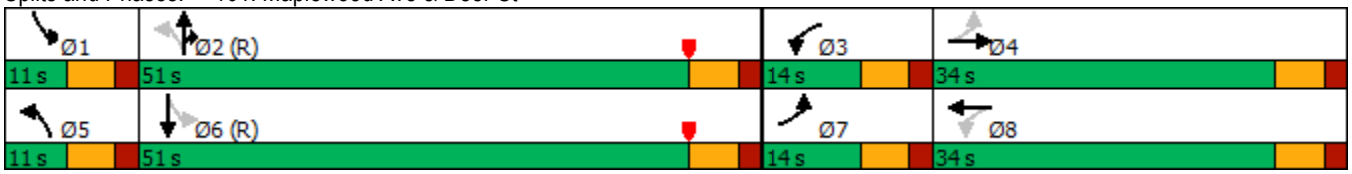


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	57	68	238	82	95	48	458	198	101	386	137
Future Volume (vph)	128	57	68	238	82	95	48	458	198	101	386	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.918			0.920				0.850		0.961	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1652	1767	0	1770	1828	0	1711	1801	1636	1711	1730	0
Flt Permitted	0.527			0.609			0.219			0.263		
Satd. Flow (perm)	916	1767	0	1134	1828	0	394	1801	1636	474	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			51				220		20	
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
Adj. Flow (vph)	164	73	87	277	95	110	53	509	220	111	424	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	160	0	277	205	0	53	509	220	111	575	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	29.0	29.0	11.0	28.0	
Total Split (s)	14.0	34.0		14.0	34.0		11.0	51.0	51.0	11.0	51.0	
Total Split (%)	12.7%	30.9%		12.7%	30.9%		10.0%	46.4%	46.4%	10.0%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	36.0	28.0		36.0	28.0		50.0	45.0	45.0	51.2	47.2	
Actuated g/C Ratio	0.33	0.25		0.33	0.25		0.45	0.41	0.41	0.47	0.43	
v/c Ratio	0.46	0.33		0.66	0.41		0.22	0.69	0.28	0.40	0.76	
Control Delay	29.3	24.3		36.7	28.1		16.2	32.8	3.7	19.5	34.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	29.3	24.3		36.7	28.1		16.2	32.8	3.7	19.5	34.6	
LOS	C	C		D	C		B	C	A	B	C	
Approach Delay		26.8			33.0			23.5			32.2	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	78	61		142	89		18	291	0	40	340	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	110	97		204	149		39	416	46	71	#494	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	353	488		417	503		238	736	799	276	753	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.46	0.33		0.66	0.41		0.22	0.69	0.28	0.40	0.76	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 101: Maplewood Ave & Deer St



Intersection	
Int Delay, s/veh	10.8

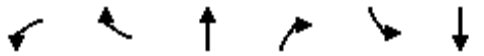
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	130	89	520	0	0	670
Future Vol, veh/h	130	89	520	0	0	670
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	91	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	160	110	571	0	0	728

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1299	571	0	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	178	520	-	0	0	-
Stage 1	565	-	-	0	0	-
Stage 2	478	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	178	520	-	-	-	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	62.8	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	178	520	-
HCM Lane V/C Ratio	-	0.902	0.211	-
HCM Control Delay (s)	-	96.3	13.8	-
HCM Lane LOS	-	F	B	-
HCM 95th %tile Q(veh)	-	6.7	0.8	-

202: Maplewood Ave & Vaughan St
2032 Build Saturday Midday



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	520	99	137	659
Future Volume (Veh/h)	0	0	520	99	137	659
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.90	0.90	0.93	0.93
Hourly flow rate (vph)	0	0	578	110	147	709
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			231			
pX, platoon unblocked	0.70	0.70			0.70	
vC, conflicting volume	1636	633			688	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1693	268			346	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			83	
cM capacity (veh/h)	60	542			853	

Direction, Lane #	NB 1	SB 1
Volume Total	688	856
Volume Left	0	147
Volume Right	110	0
cSH	1700	853
Volume to Capacity	0.40	0.17
Queue Length 95th (ft)	0	15
Control Delay (s)	0.0	4.2
Lane LOS		A
Approach Delay (s)	0.0	4.2
Approach LOS		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	82	181	65	0	0
Future Vol, veh/h	0	82	181	65	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	78	78	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	122	232	83	0	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	-	274	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	-	-
Pot Cap-1 Maneuver	0	765	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	765	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	10.6	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1
Capacity (veh/h)	-	-	765
HCM Lane V/C Ratio	-	-	0.16
HCM Control Delay (s)	-	-	10.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	250	85	103	65	40	375
Future Vol, veh/h	250	85	103	65	40	375
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	275	93	127	80	45	421

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	207	0	-	0	810	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	643	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1364	-	-	-	349	877
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1364	-	-	-	275	877
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	523	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1364	-	-	-	724
HCM Lane V/C Ratio	0.201	-	-	-	0.644
HCM Control Delay (s)	8.3	0	-	-	18.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	4.7

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	4	7	309	344	77
Future Vol, veh/h	61	4	7	309	344	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	83	83	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	5	8	372	370	83

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	800	412	453	0	-	0
Stage 1	412	-	-	-	-	-
Stage 2	388	-	-	-	-	-
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	354	640	1108	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	351	640	1108	-	-	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.1	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1108	-	361	-	-
HCM Lane V/C Ratio	0.008	-	0.24	-	-
HCM Control Delay (s)	8.3	0	18.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Intersection	
Int Delay, s/veh	37.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	351	20	0	281	489	421
Future Vol, veh/h	351	20	0	281	489	421
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	85	85	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	399	23	0	331	537	463

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	868	537	-	0	-	0
Stage 1	537	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 323	544	0	-	-	-
Stage 1	586	-	0	-	-	-
Stage 2	728	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 323	544	-	-	-	-
Mov Cap-2 Maneuver	~ 323	-	-	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	155.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	323	544	-	-
HCM Lane V/C Ratio	-	1.235	0.042	-	-
HCM Control Delay (s)	-	163.8	11.9	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	17.9	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	131	108	0	87
Future Vol, veh/h	0	0	131	108	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	142	117	0	95

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	201
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	840
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	840
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	9.8
HCM LOS		A

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	840
HCM Lane V/C Ratio	-	-	0.113
HCM Control Delay (s)	-	-	9.8
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.4

APPENDIX F
Trip Generation

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Raynes Ave Hotel	**Organization:**	
Project Location:	Portsmouth, NH	**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:	2020/2030	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				20	10	10
Restaurant				34	23	11
Cinema/Entertainment				0		
Residential				26	16	10
Hotel				70	36	34
All Other Land Uses[2]				0		
Total				150	85	65

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	3	1
Restaurant	0	5		0	2	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	1	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	150	85	65
Internal Capture Percentage	25%	22%	29%
External Vehicle-Trips[3]	112	66	46
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	60%	70%
Restaurant	26%	73%
Cinema/Entertainment	N/A	N/A
Residential	31%	30%
Hotel	6%	3%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Raynes Ave Hotel
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	10	10	1.00	10	10
Restaurant	1.00	23	23	1.00	11	11
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	16	16	1.00	10	10
Hotel	1.00	36	36	1.00	34	34

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	3	1
Restaurant	0	5		1	2	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	2	0		0
Hotel	0	5	23	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	1	0
Retail	0		7	0	7	6
Restaurant	0	5		0	3	26
Cinema/Entertainment	0	0	1		1	0
Residential	0	1	3	0		4
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	6	4	10	4	0	0
Restaurant	6	17	23	17	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	11	16	11	0	0
Hotel	2	34	36	34	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	7	3	10	3	0	0
Restaurant	8	3	11	3	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	7	10	7	0	0
Hotel	1	33	34	33	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

APPENDIX G

111 Maplewood Avenue Traffic Evaluation

Proposed Office Building
111 Maplewood Avenue
Portsmouth, NH

TO: Eric Eby, PE
Parking and Transportation Engineer
Department of Public Works
City of Portsmouth, NH

FROM: Vinod Kalikiri, PE, PTOE

DATE: March 18, 2019

Tighe & Bond has prepared this *Traffic Evaluation* to summarize the projected changes in the traffic operations related to the construction of an approximately 74,000 square foot (sf) office building with ancillary commercial space (the Project) to be located at 111 Maplewood Avenue in Portsmouth, New Hampshire (the Site).

The 111 Maplewood Avenue property will be subdivided into two parcels. The proposed development will be located on the northern parcel, which is bounded by Maplewood Avenue on the south, Raynes Avenue on the north, and Vaughan Street on the east. The Site is currently developed with paved parking spaces that are used by the existing building located on the south parcel, and lawn/landscaping.

Vehicular access to the Site will be provided by a driveway located at the general location of the existing curb cut, along the south side of Vaughan Street. As part of the Project, 37 parking spaces will be provided on the north parcel for use by the proposed office and commercial uses. The site plan also shows an additional 13 spaces on the south parcel that can be accessed via the site driveway. The Project will also install curb extensions to better define the on-street parking along the perimeter of the Site. A copy of the site plan is included in the Appendix.

The trip generation analysis indicates that the Project can be expected to generate approximately 180 trips during the weekday evening peak hour (approximately 50 entering trips + 130 exiting trips). Approximately 60 percent of the Site traffic will be oriented to/from the north on Maplewood Avenue; 20 percent via Market Street and the remaining 20 percent to/from the south on Maplewood Avenue.

Detailed weekday evening peak hour traffic operations analysis was prepared for the study locations. The analysis was conducted for four different scenarios:

- 2020 No-Build scenario – includes an annual background traffic growth rate
- 2020 Build scenario – adds the Project-generated traffic volumes to the 2020 No-Build scenario
- 2030 No-Build scenario – includes an annual background traffic growth rate and traffic from nearby proposed development projects.
- 2030 Build scenario – adds the Project-generated traffic volumes to the 2030 No-Build scenario

The remainder of the report summarizes the evaluation which includes a description of the study area, traffic volume counts during the weekday evening commuter peak period, trip generation estimates for the Project, estimated trip distribution patterns for the new Project-related trips, traffic volume projections for each of the analysis scenarios, traffic operations analysis for the study area intersections, and a summary of the study findings.

Study Methodology

This traffic evaluation and its supporting analyses were conducted in accordance with New Hampshire Department of Transportation (NHDOT) and the City of Portsmouth guidelines and are described below. The study area and the peak analysis period included in the study were reviewed with City staff during a scoping meeting prior to initiating the traffic analysis.

An inventory of existing conditions was conducted and includes a description of the roadway and intersection geometries and the collection of existing traffic volumes. Existing vehicular traffic counts were collected at the study area intersections during the weekday evening commuter peak period. The traffic data collection effort forms the basis for the operations analysis conducted as part of this traffic evaluation.

The future conditions analyses evaluate traffic-related impacts associated with additional development and traffic growth, with and without the Project. An opening year evaluation was conducted for the year 2020 (with and without the Project) and a long-term evaluation was conducted for the year 2030 (with and without the Project).

Existing Conditions

This section includes a description of existing study area roadway geometry, intersection geometry, intersection traffic control, and data collection efforts within the study area. **Figure 1** shows the location of the Site in context with the surrounding roadway network and study area.

Roadway Descriptions

Maplewood Avenue is a two-lane roadway (one lane in each direction) that runs east-west between Woodbury Avenue and Congress Street. On-street parallel parking, bike lanes and sidewalks are provided on both sides of Maplewood Avenue in the vicinity of the Project. The roadway has a posted speed limit of 25 miles per hour (mph) near the site.

The other study area roadways (Raynes Avenue, Vaughan Street, Deer Street, Russell Street, and Market Street) within the study area have similar urban characteristics: two-lane roadway, on-street parallel parking, sidewalks, and low speed limits (25 mph or less). Land uses near the Site are a mix of commercial businesses, restaurants, hotels and residential.

Intersection Descriptions

Maplewood Avenue/Raynes Avenue

Raynes Avenue intersects Maplewood Avenue from the east to form a three-way unsignalized intersection. All approaches at this intersection provide a single general-purpose lane. Sidewalks are provided on both sides of Maplewood Avenue. On-street parallel parking is provided on both sides of Maplewood Avenue and Raynes Avenue. Maplewood Avenue

operates with the right of way while the minor street approach of Raynes Avenue operates under stop control. A bike lane is striped along both sides of Maplewood Avenue.

Maplewood Avenue/Vaughan Street

Vaughan Street and a private driveway intersect Maplewood Avenue from the east and the west, respectively, to form a four-way unsignalized intersection. All approaches at this intersection provide a single general-purpose lane. Sidewalks are provided on both sides of Maplewood Avenue, but no crosswalks are provided at the intersection. On-street parallel parking is provided on both sides of Maplewood Avenue west of Vaughan Street and on both sides of Vaughan Street. A bike lane is striped along both sides of Maplewood Avenue north of the intersection and along Maplewood Avenue northbound approach south of the intersection. Maplewood Avenue operates with the right of way while the minor street approaches of Vaughan Street and the private driveway operate as the stop-controlled approaches.

Maplewood Avenue/Deer Street

Deer Street intersects Maplewood Avenue from the east and west to form a four-way signalized intersection. Maplewood Avenue southbound approach consists of left turn only lane and a right/through shared lane. Maplewood Avenue northbound approach consists of an exclusive left turn lane, exclusive through lane and an exclusive right turn lane. Deer Street eastbound approach consists of a single general-purpose lane. Deer Street westbound approach consists of an exclusive left turn lane and a right and through shared lane. The intersection is equipped with an exclusive actuated pedestrian phase. Each leg of the intersection has painted crosswalks.

Vaughan Street/111 Maplewood Avenue North Driveway

111 Maplewood Ave driveway intersects Vaughan Street from the west to form a three-way unsignalized intersection. All approaches at this intersection provide a single general-purpose lane. Sidewalks and on-street parallel parking are provided on both sides of the Vaughan Street.

Vaughan Street/Green Street

Green Street intersects Vaughan Street from the east, forming a three-way unsignalized intersection. Both roadways provide a single lane of travel in each direction. Vehicles exiting from Green Street operate under stop control. The width of Green Street ranges between 17 and 24 feet of pavement with no delineation of travel lanes or shoulders. A brick paver sidewalk exists on the east side of Green Street, south of the railroad tracks. On-street parking is allowed on the south side of Vaughan Street at the intersection.

Deer Street/Russell Street

Russell Street intersects Deer Street from the north to form a three-way unsignalized intersection. The southbound approach on Russell Street provides a single general-purpose lane that operates under a stop control. The westbound and eastbound approaches on Deer Street both provide a single general-purpose lane. The intersection provides sidewalks on all sides of the intersection approaches. A crosswalk is available for pedestrians crossing Deer Street east of Russell Street. On Street parking is available on all approaches.

Russell Street/Green Street

Green Street intersects Russell Street from the west to form a three-way unsignalized intersection. The eastbound approach of Green Street provides a single general-purpose lane that operates under stop control. The northbound and southbound approaches on Russell Street also both provide a single multi-use lane. Sidewalk is provided on both sides of Russell

Street, but no crosswalks are provided at the intersection. On-street metered parking is provided on Russell Street south of Green Street.

Market Street/Russell Street

Russell Street intersects Market Street from the south, forming a three-way unsignalized intersection. Market Street eastbound consists of a through lane and a channelized right turn lane that operates as free flow movements. The westbound approach consists of a single through lane. The intersection geometry is designed to prohibit westbound left turns from Market Street to Russell Street. The Russell Street approach is a single lane that is wide enough for right turning vehicles to bypass waiting left turning vehicles. The Russell Street approach operates under stop control. Pedestrian crosswalks are provided along Russell Street and the westbound Market Street approach with sidewalks provided on all approaches. It is noted that the intersection is fully signalized with mast arms, vehicular and pedestrian signal heads, etc. However, the signal indications are in flashing mode, with yellow indications facing Market Street and red indication facing Russell Street.

Existing Traffic Data

Evaluation of the traffic impacts related to the Project requires the quantification of existing roadway and traffic conditions throughout the study area. Traffic conditions were determined by conducting manual turning movement and vehicle classification counts (TMCs) at the study area intersections during the weekday evening peak period (4:00 PM to 6:00 PM) in January 2019. A review of the data indicates that the weekday evening peak hour occurs between 5:00 PM and 6:00 PM. The traffic count data is provided in the Appendix.

Seasonal Variation

The counts were seasonally adjusted to peak month conditions based on nearby traffic volume count stations located in proximity to Portsmouth. Specifically, based on data available from the Urban Highway (Group 4) continuous count stations for years 2014 to 2016, a seasonal adjustment factor of 19 percent was used in the analysis. Detailed calculations are provided in the Appendix.

Future Conditions

The Project's impacts were evaluated for the years 2020 (opening year) and 2030 (10 years from opening year), in accordance with NHDOT traffic assessment guidelines. No-Build conditions (without Project-generated traffic) and Build conditions (with Project-generated traffic) were evaluated for both analysis years.

No-Build Conditions

The following section describes the estimation of traffic volumes in the study area for the No-Build scenarios. The No-Build scenarios will serve as the baseline for comparison purposes to measure the impacts of the Project.

Planned Roadway and Intersection Projects

Information obtain from the City traffic department staff was used to identify planned roadway development projects in the area that could affect future traffic conditions. The following improvements, described in record studies prepared for other projects in the area, were considered when developing the No-Build conditions analysis.

- *US Route 1 Bypass Bridge Project:* As a result of the US Route 1 By-pass bridge closure, vehicles accessing Downtown Portsmouth via Maplewood Avenue from the by-pass have migrated to alternate routes. To reflect the restored traffic volumes after the bridge construction is completed, estimated traffic volumes associated with the rerouting were obtained from record studies[1] and included in the analysis.
- *Market Street/Russell Street reconstruction:* The City is in the early planning stages for the construction of a roundabout at the intersection of Market Street/Russell Street. At this time, no detailed plans have been developed. Therefore, this improvement is not included in the future conditions presented in this study. It is anticipated that a roundabout configuration would have a beneficial effect on the traffic operations and safety at the intersection.
- *North End Portsmouth Development (also referred to as the "Harbor Corp Project") Off-Site Improvements:* The time table for this project is currently unknown. However, since the development related traffic volumes are included in the No-Build analysis, traffic improvements proposed for this development were also take into consideration, where applicable.
- *Maplewood Avenue Corridor Project:* The Maplewood Avenue corridor improvement project includes full depth pavement construction/reclamation, sidewalk construction, drainage/water/sewer improvements, traffic calming measures, pavement striping, and improvements to bicycle accommodations. The Project extends between Woodbury Avenue to the west and Dennett Street to the east. Construction will be completed in 2019.
- *Maplewood Avenue Road Diet:* The City has conducted preliminary planning for a possible Maplewood Avenue Road Diet Project. The concept of the road diet would consider one through travel lane along Maplewood Avenue with auxiliary turn lanes provided, where necessary, at the intersections with Deer Street, Hanover Street, and Islington Street. This would present an opportunity for landscaped islands and/or improved bicycle accommodations. These improvements were not included in the future-year conditions as the construction timetable undetermined.
- *Maplewood Avenue Railroad Crossing:* NHDOT has been designing improvements for several rail crossings in the State. As part of the project, the DOT is seeking to reconstruct the at-grade crossing along Maplewood Avenue immediately north of Deer Street, as well as the railroad crossing on Green Street immediately west of Russell Street. The improvements are set to include new signage, railroad gates and signals where appropriate. However, this project has been delayed and implementation dates are currently unknown.

Traffic Growth

To develop future base line traffic volume conditions, two components of traffic growth were considered. The first component to determining traffic growth is to estimate an annual average traffic growth rate. Based on a review of recent studies[1] in the vicinity of the Project, a one percent per year background traffic growth rate was assumed in the analysis.

[1] Traffic Impact Assessment for *Proposed Hotel at 299 Vaughan Street (March 2017)* and Traffic Impact and Access Study for *Deer Street Parking Garage & Deer Street Associates Development (December 2016)*

The second component to determining traffic growth is identifying any proposed development projects that are near or within the study area. Based on discussions with the City of Portsmouth staff, it was determined that the following projects are either planned, under construction, or partially occupied. Traffic volumes related to these projects were obtained from record studies[1] and distributed through the study area.

- *Deer Street Garage and Mixed-Use Development:* This project will be located in the northwest corner of the Maplewood Avenue/Deer Street intersection. The traffic study for the project indicates that the full build-out of the project consists of a 600-stall municipal public parking garage with 4,700 sf of integral retail; and four mixed-use buildings. The four mixed-use buildings include a combination of 80 residential apartments, 108 hotel rooms, 41,300 sf of office, 20,000 sf of retail, 9,900 sf of restaurants, a 4,700 sf bar, and a 2,700 sf bank.
- *299 Vaughan Street:* This project is located at the corner of the intersection Vaughan Street and Green Street. It involves the demolition of an auto parts store and construction of a 143-room hotel with approximately 2,900 square feet of leasable commercial/retail space. This project is not yet occupied.
- *40 Bridge Street:* This project consists of constructing a 4,025 sf restaurant and six residential condos. The project has been constructed.
- *75 Congress Street:* This project consists of constructing 10 residential condos. Due to the low traffic-generating nature of this land use and the limited number of units, traffic generated by the development was assumed to be included as part of the 1.0 percent annual background growth rate.
- *Harbor Corp Redevelopment:* This project consists of constructing a 98-room hotel and conference center, 14 condominium units, a 40,000 sf grocery store, and a 540-space parking garage.
- *172 Hanover Street:* The project consists of renovating a 7,000 sf restaurant that has been vacant for several years.
- *30 Maplewood Avenue:* The vacancy assumptions for this development that were included in the Deer Street garage traffic study were used in the current study as well.
- *46-64 Maplewood Avenue:* This project consists of constructing 22 residential apartments and 13,475 sf of retail space. The project is under construction.
- *173-175 Market Street:* This project consists of constructing 3,331 sf of commercial space, 1,759 sf of office space, and six residential condos. The project is currently under construction.

It is assumed that other smaller developments or small vacancies in existing developments are captured by the background traffic growth rate assumptions used in the analysis.

No-Build Traffic Volumes

The 2020 and 2030 No-Build weekday evening peak hour traffic volumes were developed by applying the one percent annual traffic growth rate to the seasonally adjusted 2019 traffic volumes. In addition, volumes from the background projects were added to the traffic networks. The resulting 2020 and 2030 No-Build weekday evening peak hour traffic volumes are shown in **Figure 2** and **Figure 3**, respectively.

Build Conditions

The Project will consist of a new 74,000 sf office building with ancillary commercial space. Limited parking will be available on the Site. Additional parking demand for the Site would be

handled by off-site parking areas, including potentially the Foundry Place parking garage accessed via Deer Street and Bridge Street. The following sections describe the methodology to estimate the total number of Project-generated trips and their distribution within the study area roadway network.

Trip Generation

To develop the trip generation characteristics of the new Project, data published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual* were used. ITE provides data to estimate the total number of vehicular trips associated with a site based on the specific land uses. To estimate the trip generation for the Project, ITE Land Use Code (LUC) 710 – Office and LUC 820 – Retail/Shopping Center were used. The weekday daily and the morning and evening peak hour trip generation estimates for the Project are presented in Table 1.

Table 1: **Weekday Evening Trip Generation**

Time Period	Office[1]	Retail[2]	Total
Weekday PM Peak Hour			
Enter	23	26	49
Exit	106	26	132
Total	***129***	***52***	***181***

1 Based on ITE LUC 710 – Office for 70,000 sf
2 Based on ITE LUC 820 – Shopping Center for 4,000 sf

As shown in Table 1, weekday pm office and retail site generates 49 entering trips and 132 trips.

Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on a review of traffic studies conducted for nearby projects[2] and Journey to Work data published by the United States Census.

For analysis purposes, it was assumed that approximately 25% of the proposed office traffic will travel to the Site. The remaining 75% of the office traffic was assumed to park in off-site parking areas in the area, most notably the Foundry Place garage. During the evening peak hour, since the office usage of the parking will be minimal, it was assumed that all commercial traffic would travel to the Site. In addition to Site generated traffic, traffic volume redistribution resulting from the elimination of the south parcel driveway on Maplewood Avenue was also taken into consideration. The trip distribution patterns are shown in **Figure 4**. The vehicular trips associated with the Project were assigned to the study area and are shown in **Figure 5** for the weekday evening peak hour.

[2] Traffic Impact and Access Study for *Deer Street Parking Garage & Deer Street Associates Development (December 2016)*

Build Traffic Volumes

The 2020 and 2030 Build traffic volume networks were developed by adding the Project-generated trips to the 2020 and 2030 No-Build traffic volume networks. The Build conditions traffic volume networks are shown in **Figure 6** and **Figure 7**, respectively.

Traffic Operations Analysis

Intersection capacity analyses were performed for the study area intersections based on the criteria published in the Highway Capacity Manual. Level of service (LOS) is the term that defines the conditions that may occur on a given roadway or at an intersection when accommodating various traffic volume loads. Levels of service range from A to F with LOS A representing the best operating conditions and LOS F representing congested conditions. The results are summarized in Table 2 and 3. Analysis worksheets are provided in the Appendix.

The analysis for the Maplewood Avenue/Deer Street signalized intersection indicates that when all planned development projects are constructed, fully occupied and are generating traffic at the levels projected in the individual studies, traffic operations at the intersection during the weekday evening peak hour, especially for the left turn movements from the Deer Street approaches and the southbound through movement on Maplewood Avenue can be expected to be congested. A review of the traffic volumes indicates that the proposed office development at 111 Maplewood Avenue would not substantially affect the operations of the intersection but would add to the future volumes at the intersection. When the geometric improvement at the intersection proposed by others are designed, additional refinements may be necessary to operate the intersection at optimal levels.

A review of the unsignalized intersections' analyses indicates that, as expected in busy urban corridors and shown in other studies prepared in the area, side street approaches at the Maplewood Avenue at Raynes Avenue and Maplewood Avenue at Vaughan Street intersections are projected to experience some delay. The intersection of Market Street at Russell Street also shows congested operations in the future without the implementation of major infrastructure improvements, like the proposed roundabout. All other unsignalized intersections in the study area generally show acceptable operations.

Conclusions

The Project is estimated to generate approximately 180 trips during the weekday evening peak hour (approximately 50 entering trips + 130 exiting trips). Approximately 60 percent of the Site traffic will be oriented to/from the north on Maplewood Avenue; 20 percent via Market Street and the remaining 20 percent to/from the south on Maplewood Avenue.

Capacity analysis indicates that when planned background projects in the area are all constructed, substantial traffic volumes will be added to the study area network which in turn could add delays and congestion at certain locations along Maplewood Avenue, especially for the side street movements. Site generated traffic represents a relatively small percentage of the cumulative traffic volume expected to be generated by the planned background projects.

As the planned projects get implemented, and the traffic improvements associated with the projects are design, additional consideration should be given to accommodate side street movements. System-wide traffic improvement measures, such as promotion of reduced automobile usage, enhanced transit services to the area and promotion of remote/under utilized parking areas can also be considered by the City to reduce the volume of vehicular traffic generated within the downtown street network during peak times.

TABLE 2: Signalized Intersection Operations Summary

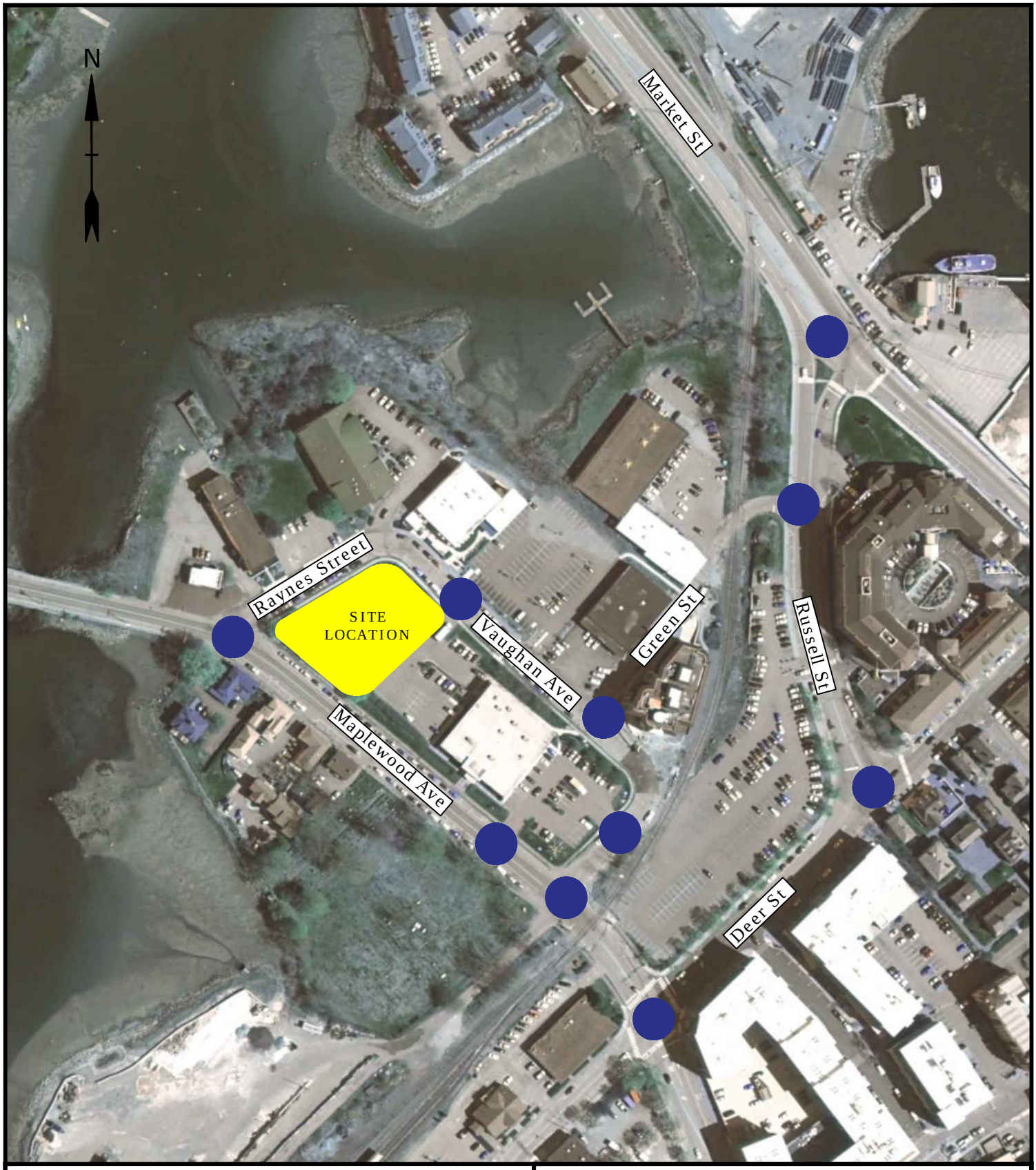
Intersection / Lane Group	2020 No Build					2020 Build					2030 No Build					2030 Build				
	V/C	Del	LOS	50th Q	95th Q	V/C	Del	LOS	50th Q	95th Q	V/C	Del	LOS	50th Q	95th Q	V/C	Del	LOS	50th Q	95th Q
Maplewood Ave / Deer St																				
Deer St EBL	>1.2	>120	F	~181	#165	>1.2	>120	F	~273	#266	>1.2	>120	F	~205	#194	>1.2	>120	F	~261	#253
Deer St EBT/R	0.77	43	D	153	153	0.82	43	D	172	177	0.78	43	D	161	162	0.84	47	D	183	186
Deer St WBL	>1.2	>120	F	~212	#258	>1.2	>120	F	~213	#285	>1.2	>120	F	~247	#298	>1.2	>120	F	~260	#340
Deer St WBT/R	0.70	39	D	139	171	0.65	34	C	134	174	0.73	40	D	151	185	0.69	37	D	148	188
Maplewood Ave NBL	0.32	19	B	16	37	0.37	22	C	18	39	0.33	21	C	16	38	0.37	22	C	18	40
Maplewood Ave NBT	0.76	32	C	270	#429	0.83	37	D	272	#438	0.84	38	D	313	#492	0.88	42	D	318	#501
Maplewood Ave NBR	0.15	19	B	0	45	0.15	19	B	0	45	0.17	19	B	0	46	0.17	20	B	0	46
Maplewood Ave SBL	0.32	17	B	24	48	0.41	19	B	26	48	0.42	19	B	27	51	0.48	21	C	29	51
Maplewood Ave SBT/R	0.96	53	D	~394	#537	1.08	88	F	~430	#566	1.05	78	E	~470	#604	1.13	105	F	~512	#633
Overall Intersection	1.09	*83*	F			1.19	97	F			1.20	100	F			>1.2	>120	F		

LOS	level-of-service
Del	Average intersection delay, measured in seconds
v/c	Volume to capacity ratio
50th Q and 95th Q	Percentile queues measured in feet
#	95th percentile volume exceeds capacity, queue may be longer
~	Volume exceeds capacity. Queues are shown after two signal cycles

TABLE 3: Unsignalized Intersection Operations Summary

Intersection / Lane Group	2020 No Build				2020 Build				2030 No Build				2030 Build			
	V/C	Del	LOS	95th Q	V/C	Del	LOS	95th Q	V/C	Del	LOS	95th Q	V/C	Del	LOS	95th Q
Maplewood Ave / Raynes Ave:																
Maplewood Ave SBL/T	0.1	10	A	0.2	0.1	10	B	0.4	0.1	10	B	0.3	0.1	11	B	0.4
Raynes Ave WBL/R	0.6	45	E	3.1	0.9	90	F	6.8	0.7	71	F	4.7	1.1	>120	F	9.6
Maplewood Ave / Kennebunk Bank Driveway:																
Maplewood Ave SBL/T	0.0	10	A	0	NA	NA	NA	NA	0.0	10	A	0	NA	NA	NA	NA
Kennebunk Bank WBL/R	0.1	24	C	0.3	NA	NA	NA	NA	0.1	27	D	0.4	NA	NA	NA	NA
Maplewood Ave / Vaughan St:																
Maplewood Ave SBL/T	0.0	10	A	0.1	0.0	10	B	0.1	0.0	10	B	0.1	0.0	11	B	0.1
Vaughan St WBL/R	0.4	51	F	1.9	0.7	90	F	4.2	0.6	72	F	2.7	0.9	>120	F	5.5
Vaughan St / Kennebunk Bank Driveway:																
Vaughan St EBL/T	0.0	7	A	0	0.2	10	B	0.5	0.0	7	A	0	0.0	8	A	0
Kennebunk Bank SBL/R	0.0	9	A	0	0.0	8	A	0	0.0	9	A	0	0.1	10	A	0.3
Vaughan St / Green St:																
Vaughan St SBL/T	0.0	7	A	0.1	0.0	8	A	0.1	0.0	7	A	0.1	0.0	7	A	0
Green St WBL/R	0.1	9	A	0.2	0.1	9	A	0.2	0.1	9	A	0.2	0.1	9	A	0.2
Vaughan St / Site Driveway:																
Vaughan St NBL/T	0.0	7	A	0	0.0	8	A	0	0.0	8	A	0	0.0	8	A	0
Site Driveway EBL/R	0.0	10	A	0.1	0.2	10	B	0.5	0.0	10	A	0.1	0.2	11	B	0.6
Deer St / Russell St:																
Deer St EBL/T	0.3	8	A	1.1	0.3	8	A	1.1	0.3	9	A	1.2	0.3	9	A	1.3
Russell St SBL/R	0.8	29	D	9.6	0.9	32	D	10.2	0.9	43	E	13.1	1.0	47	E	14
Green St / Russell St:																
Russell St NBL/T	0.0	9	A	0	0.0	9	A	0	0.0	9	A	0	0.0	9	A	0
Green St EBL/R	0.3	27	D	1.4	0.4	32	D	2.1	0.4	32	D	1.9	0.5	39	E	2.7
Russell St / Market St:																
Russell St EBL	>1.2	>120	F	38.6	>1.2	>120	F	42.4	>1.2	>120	F	47.5	>1.2	>120	F	51.4
Russell St EBR	0.0	11	B	0	0.0	11	B	0	0.0	11	B	0	0.0	11	B	0

LOS	level-of-service
Del	Average intersection delay, measured in seconds
v/c	Volume to capacity ratio
95th Q	Percentile queues measured in vehicles



Legend

Study Area Location

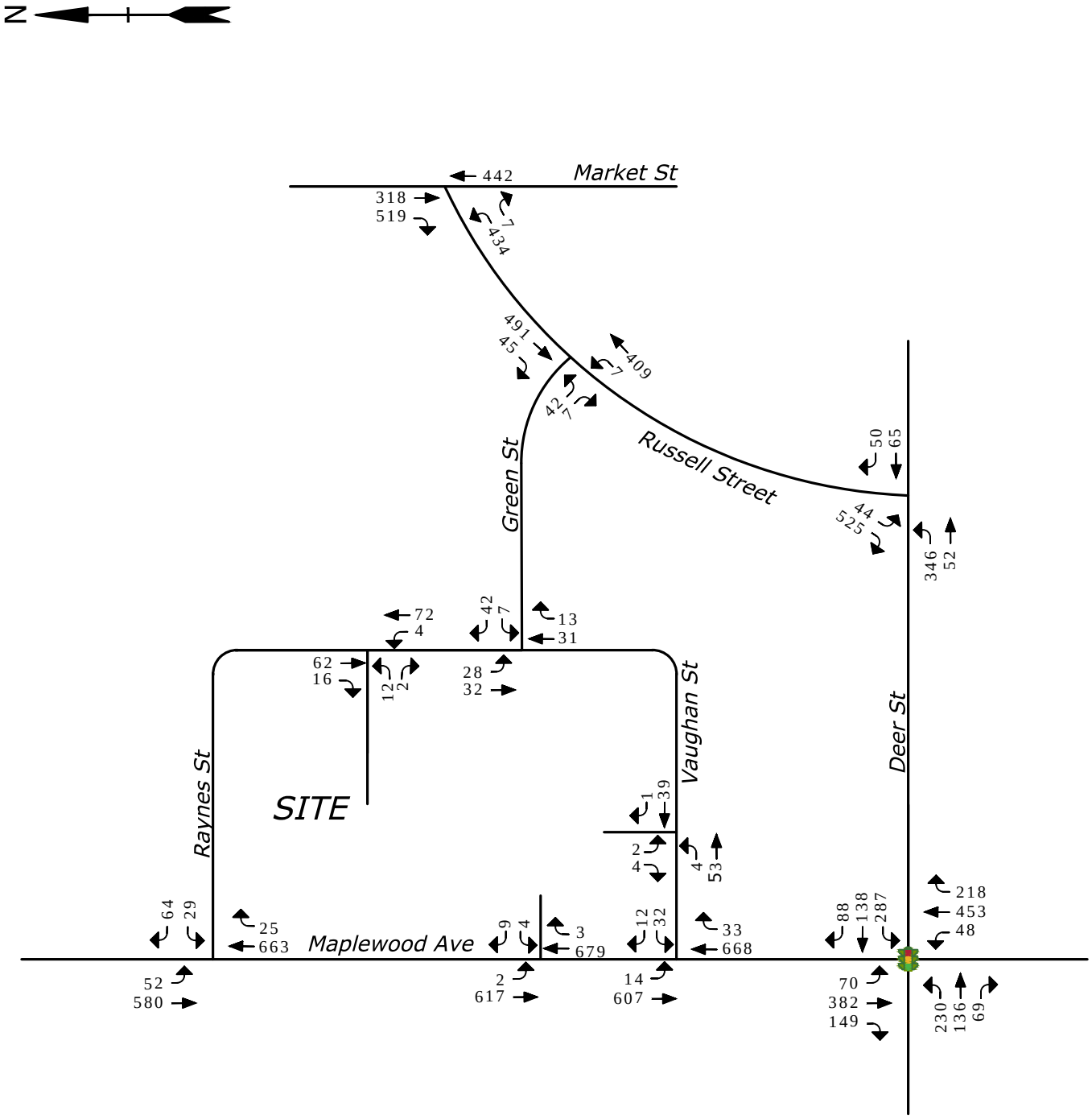
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

Study Area

DATE: 03/18/2019
SCALE: 1" = 200'
FIGURE 1

Tighe&Bond
www.tighebond.com

Mar 18, 2019-10:21am Plotted By: YMayboroda
Tighe & Bond, Inc. J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Figures\AutoCAD\Diversion figure - Future.dwg



LEGEND

TRAFFIC SIGNAL

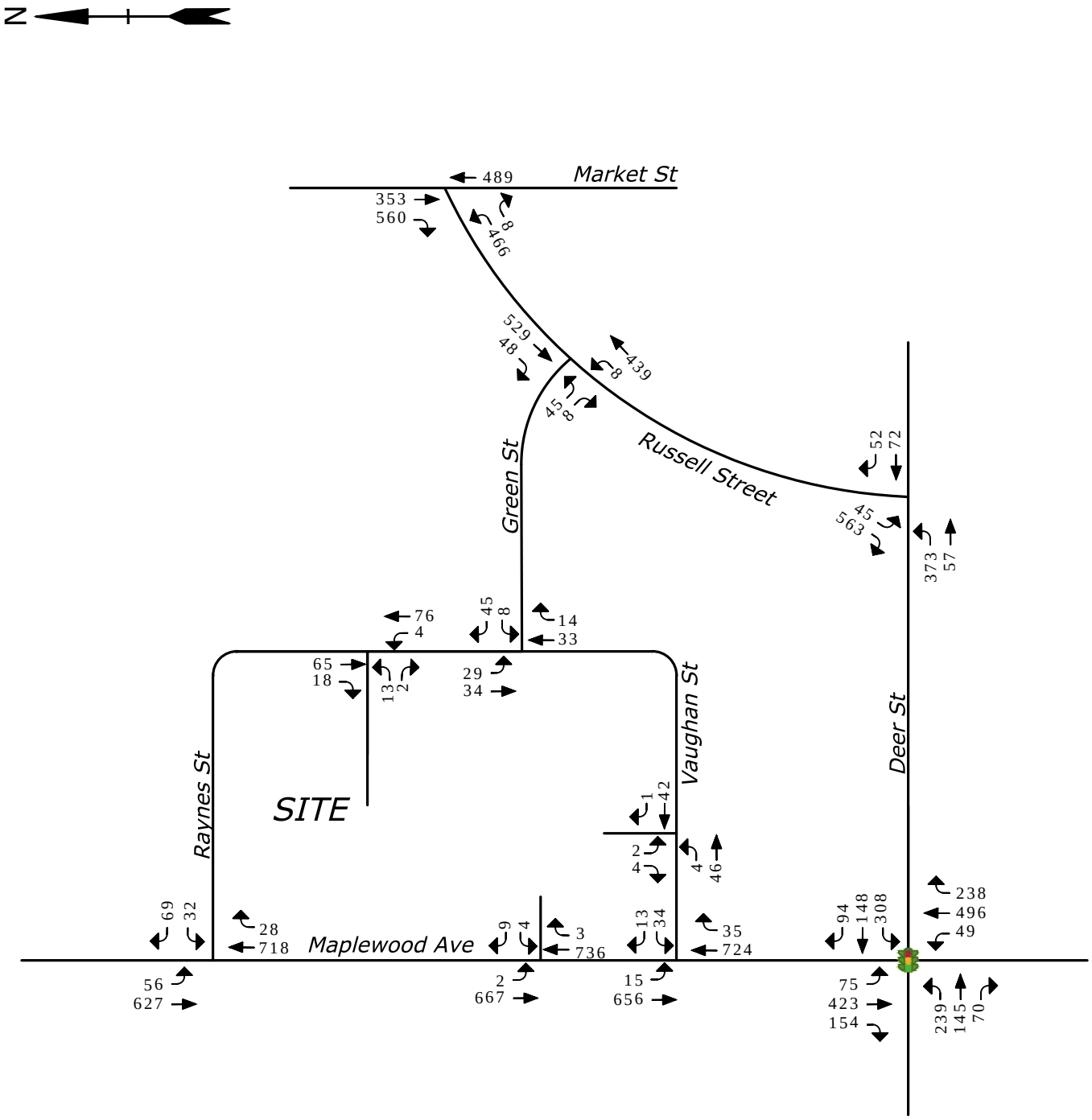
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

2020 No Build Peak Hour Traffic Volumes

DATE: 03/18/2019
SCALE: No Scale
FIGURE 2

Tighe&Bond
www.tighebond.com

Mar 18, 2019-10:21am Plotted By: YMayboroda
Tighe & Bond, Inc. J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Figures\AutoCAD\Diversion figure - Future.dwg



LEGEND

TRAFFIC SIGNAL

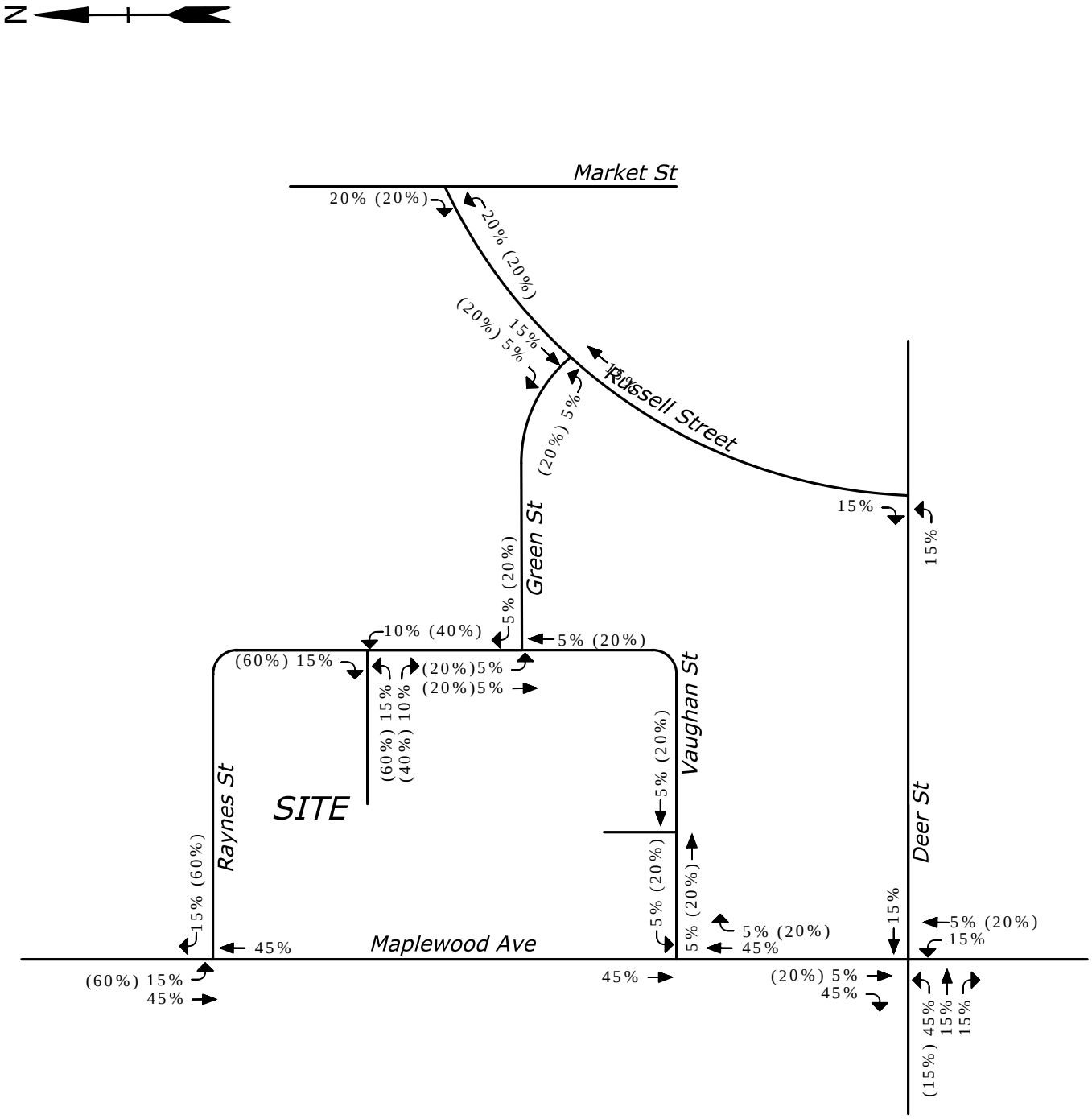
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

2030 No Build Peak Hour Traffic Volumes

DATE: 03/18/2019
SCALE: No Scale
FIGURE 3

Tighe&Bond
www.tighebond.com

Mar 18, 2019-10:21am Plotted By: YMayboroda
Tighe & Bond, Inc. J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Figures\AutoCAD\Diversion figure - Future.dwg



LEGEND

XX Office Trips
(XX) Retail Trips

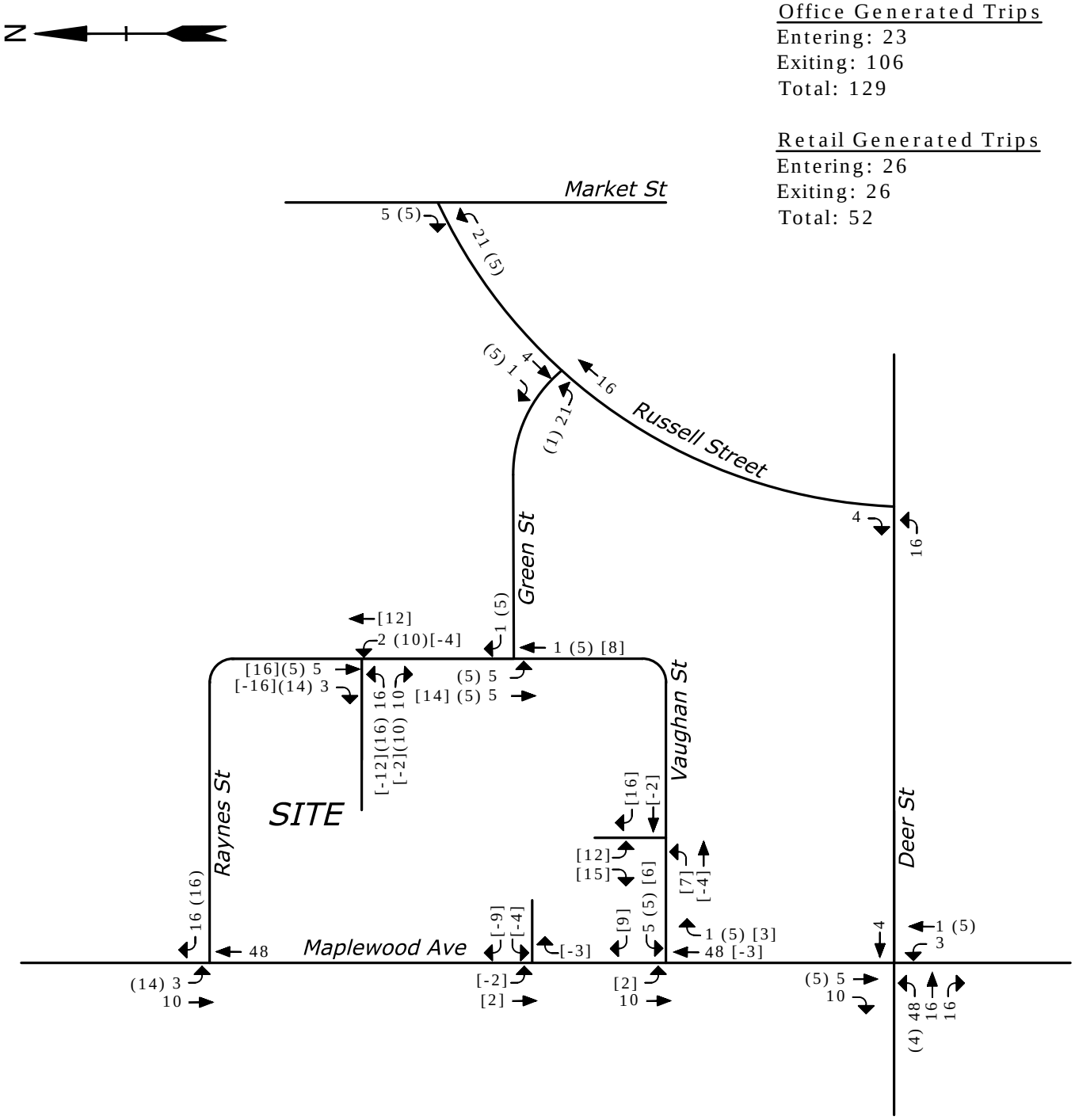
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

Trip Distribution

DATE: 03/18/2019
SCALE: No Scale
FIGURE 4

Tighe&Bond
www.tighebond.com

Mar 18, 2019-10:21am Plotted By: YMayboroda
Tighe & Bond, Inc. J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Figures\AutoCAD\Diversion figure - Future.dwg



Office Generated Trips
Entering: 23
Exiting: 106
Total: 129

Retail Generated Trips
Entering: 26
Exiting: 26
Total: 52

LEGEND

XX	Office Trips
(XX)	Retail Trips
[XX]	Driveway Redistribution

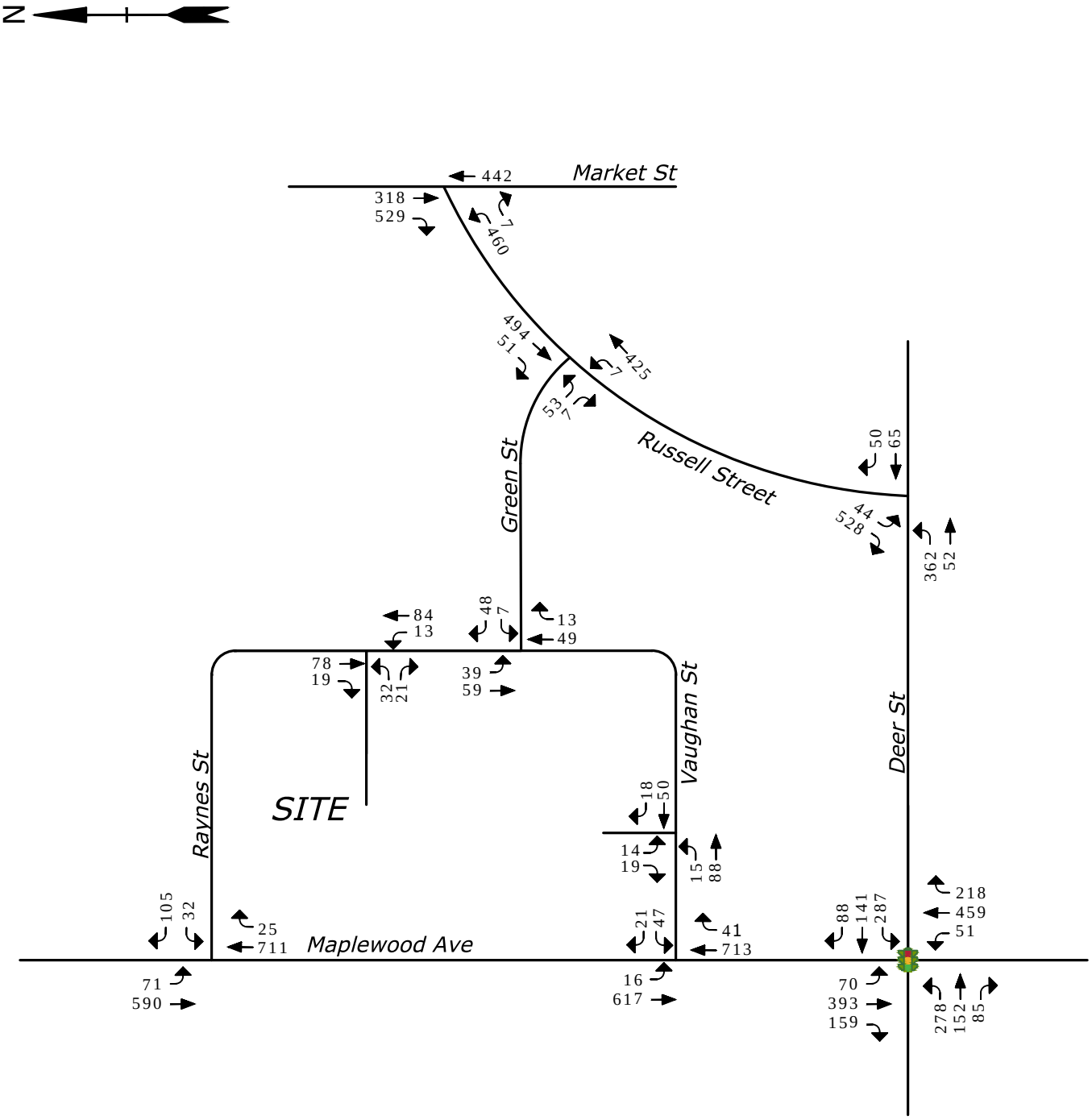
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

Site Generated Trips

DATE: 03/18/2019
SCALE: No Scale
FIGURE 5

Tighe&Bond
www.tighebond.com

Mar 18, 2019-10:21am Plotted By: YMayboroda
Tighe & Bond, Inc. J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Figures\AutoCAD\Diversion figure - Future.dwg



LEGEND

TRAFFIC SIGNAL

Proposed Office Building

111 Maplewood Avenue, Portsmouth NH

2020 Build Peak Hour Traffic Volumes

DATE: 03/18/2019

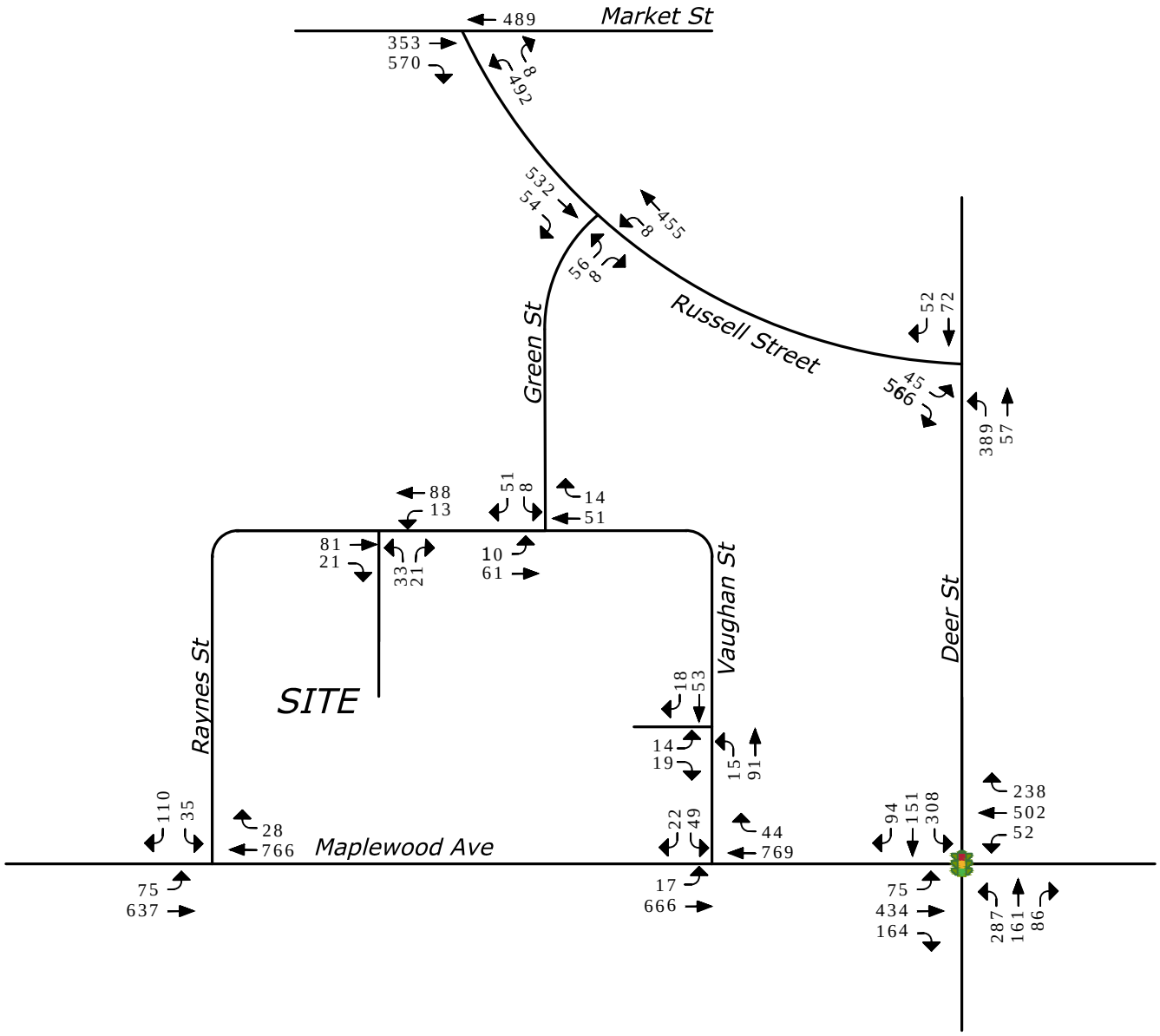
SCALE: No Scale

FIGURE 6

Tighe&Bond

www.tighebond.com

Mar 18, 2019-10:21am Plotted By: YMayboroda
Tighe & Bond, Inc. J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Figures\AutoCAD\Diversion figure - Future.dwg



LEGEND

TRAFFIC SIGNAL

Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

2030 Build Peak Hour Traffic Volumes

DATE: 03/18/2019
SCALE: No Scale
FIGURE 7

Tighe&Bond
www.tighebond.com

Mar 18, 2019-10:21am Plotted By: YMayboroda
Tighe & Bond, Inc. J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Figures\AutoCAD\Diversion figure - Future.dwg

Site Plan

SITE DATA:

LOCATION: TAX MAP 124. LOT 8

OWNER: RJF-MAPLEWOOD, LLC
30 TEMPLE STREET, SUITE 400
NASHUA, NH 03060

ZONING DISTRICT: CHARACTER DISTRICT 5 (CD5)
DOWNTOWN OVERLAY DISTRICT
NORTH END INCENTIVE OVERLAY DISTRICT
HISTORIC DISTRICT

PROPOSED USE: OFFICE

PROPOSED LOT SIZE: ±0.98 ACRES (±42,794 SF)

PARKING REQUIREMENTS

PARKING SPACES REQUIRED:		
OFFICE	±74,000 SF	0 SPACES
DOWNTOWN OVERLAY DISTRICT		-4 SPACES
TOTAL MINIMUM PARKING SPACES REQUIRED =		0 SPACES

TOTAL PARKING SPACES PROVIDED:
TOTAL PARKING SPACES PROVIDED = 37 SPACES

TWO (2) ADA ACCESSIBLE SPACES REQUIRED

	REQUIRED	PROVIDED
PARKING STALL SIZE:	8.5' X 19'	8.5' X 19'
DRIVE AISLE:	***22'	22'

***ZONING ORDINANCE 10.1114.21 ALLOWS MINIMUM 22' AISLE WIDTH FOR 90 DEGREE PARKING IN A PARKING STRUCTURE

BIKE SPACES REQUIRED:		
1 BIKE SPACE / 10 PARKING SPACES	4 SPACES	4 SPACES

DEVELOPMENT STANDARDS

BUILDING PLACEMENT (PRINCIPAL BUILDING):	REQUIRED	PROPOSED
MAXIMUM PRINCIPAL FRONT YARD:	5 FT	±12 FT
MAXIMUM SECONDARY FRONT YARD:	5 FT	±7 FT
SIDE YARD:	NR	
MINIMUM REAR YARD:	5 FT	N/A
MINIMUM FRONT LOT LINE BUILDOUT:	80%	±90.7%

BUILDING AND LOT OCCUPATION:	REQUIRED	PROPOSED
MAXIMUM BUILDING BLOCK LENGTH:	225 FT	194 FT
MAXIMUM FACADE MODULATION LENGTH:	100 FT	<100 FT
MAXIMUM ENTRANCE SPACING:	50 FT	<50 FT
MAXIMUM BUILDING COVERAGE:	95%	±49.1%
MAXIMUM BUILDING FOOTPRINT:	*30,000 SF	21,000 SF
MINIMUM LOT AREA:	NR	
MINIMUM LOT AREA PER DWELLING UNIT:	NR	
MINIMUM OPEN SPACE:	5%	17.6%
MAXIMUM GROUND FLOOR GFA PER USE:	15,000 SF	11,301 SF

*ZONING ORDINANCE 10.5A46.20 ALLOWS 30,000SF BUILDING FOOTPRINT WITH 20% COMMUNITY SPACE.

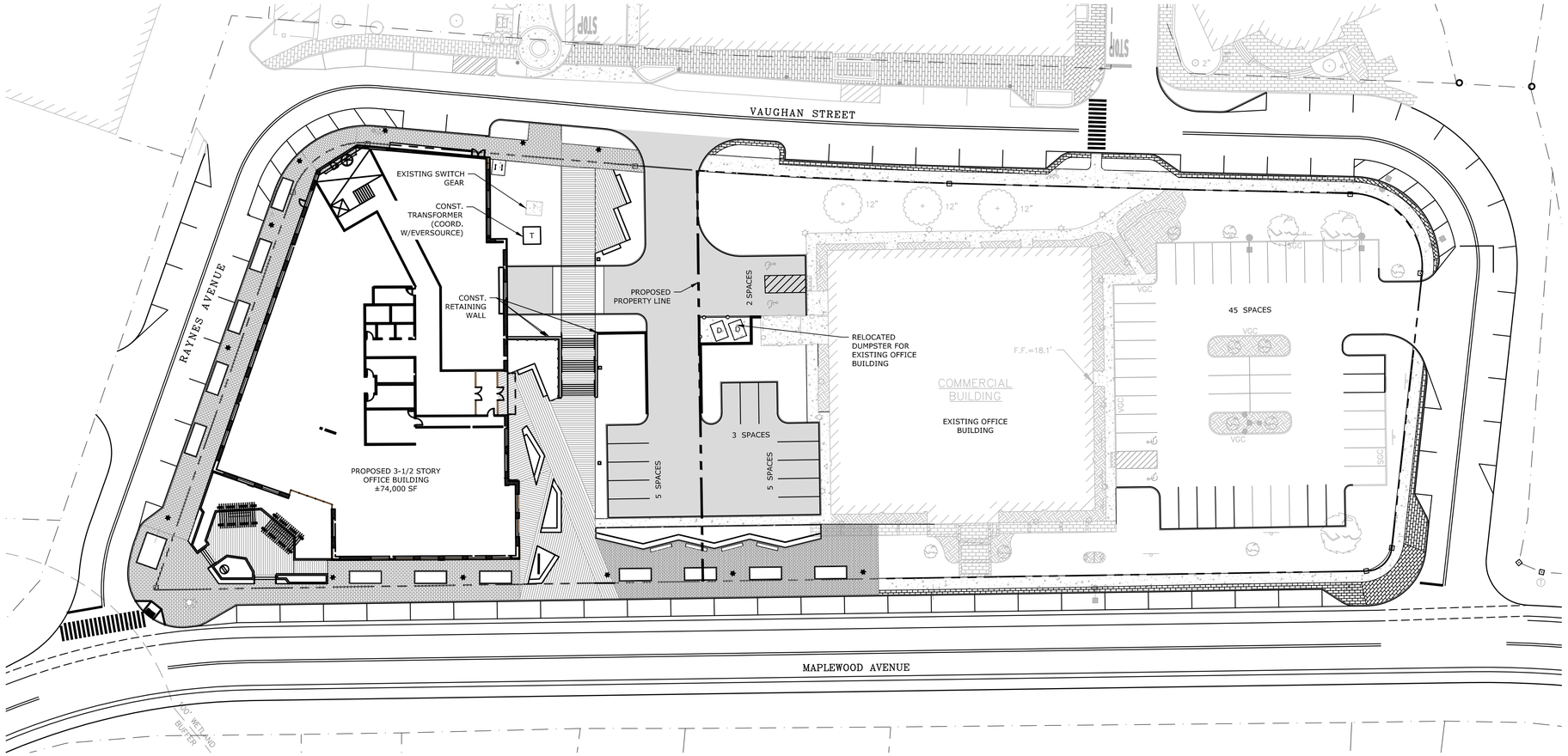
BUILDING FORM (PRINCIPAL BUILDING):	REQUIRED	PROVIDED
BUILDING HEIGHT:	**60 FT	55 FT
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE:	36 IN	
MINIMUM GROUND STORY HEIGHT:	12 FT	
MINIMUM SECOND STORY HEIGHT:	10 FT	
FACADE GLAZING: STOOP FACADE TYPE	20% - 50%	
ALLOWED ROOF TYPES: FLAT, GABLE, HIP, GAMBREL, MANSARD		FLAT

**ZONING ORDINANCE 10.5A46.20 ALLOWS A 1-STORY, UP TO 10' HEIGHT INCREASE WITH 20% COMMUNITY SPACE.

COMMUNITY SPACE:	8,559 SF	11,367 SF
	20%	26.6%

LEGEND

- PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED CURB
- PROPOSED BUILDING
- PROPOSED PAVEMENT SECTION
- PROPOSED CONCRETE SIDEWALK
- PROPOSED BRICK SIDEWALK
- • PROPOSED BOLLARD
- BLDG BUILDING
- TYP TYPICAL
- COORD COORDINATE
- 30'R PROPOSED CURB RADIUS
- VGC PROPOSED VERTICAL GRANITE CURB
- SGC PROPOSED SLOPED GRANITE CURB



SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Proposed Office Building

RW Norfolk Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	3/18/2019	TAC Submission

PROJECT NO:	K-0076-019
DATE:	03/18/2019
FILE:	K-0076-019_C-SITE.dwg
DRAWN BY:	NAH
CHECKED:	PMC
APPROVED:	BLM

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

Last Save Date: March 15, 2019 1:13 PM By: NAHANSEN
Plotted Date: March 15, 2019 1:13 PM Plotted By: Nick Hansen
T&B File Location: J:\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Drawings, Figures\AutoCAD\Xref\K-0076-019_C-SITE.dwg Layout Tab: C-102

Traffic Data

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	76	10	0	86	4	0	4	0	8	2	83	0	0	85	1	0	0	0	1	180
4:15 PM	0	66	7	0	73	6	0	4	0	10	4	105	0	0	109	0	0	0	0	0	192
4:30 PM	0	65	2	0	67	6	0	6	2	14	4	96	0	0	100	0	0	0	0	0	181
4:45 PM	0	90	8	0	98	9	0	1	0	10	2	101	0	0	103	0	0	0	0	0	211
Total	0	297	27	0	324	25	0	15	2	42	12	385	0	0	397	1	0	0	0	1	764
5:00 PM	0	80	10	0	90	15	0	6	0	21	7	137	0	0	144	0	0	0	0	0	255
5:15 PM	0	89	9	0	98	11	0	5	0	16	9	105	0	0	114	0	0	0	0	0	228
5:30 PM	0	107	6	0	113	11	0	10	0	21	4	104	0	0	108	0	0	0	0	0	242
5:45 PM	0	95	7	0	102	6	0	3	0	9	1	96	0	0	97	0	0	0	0	0	208
Total	0	371	32	0	403	43	0	24	0	67	21	442	0	0	463	0	0	0	0	0	933
Grand Total	0	668	59	0	727	68	0	39	2	109	33	827	0	0	860	1	0	0	0	1	1697
Approach %	0.0	91.9	8.1	0.0		62.4	0.0	35.8	1.8		3.8	96.2	0.0	0.0		100.0	0.0	0.0	0.0		
Total %	0.0	39.4	3.5	0.0	42.8	4.0	0.0	2.3	0.1	6.4	1.9	48.7	0.0	0.0	50.7	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total					895					94					708					0	1697
Cars	0	664	59	0	723	68	0	39	2	109	33	820	0	0	853	1	0	0	0	1	1686
% Cars	0.0	99.4	100.0	0.0	99.4	100.0	0.0	100.0	100.0	100.0	100.0	99.2	0.0	0.0	99.2	100.0	0.0	0.0	0.0	100.0	99.4
Exiting Leg Total					888					94					704					0	1686
Heavy Vehicles	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	11
% Heavy Vehicles	0.0	0.6	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.6
Exiting Leg Total					7					0					4					0	11

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	0	90	8	0	98	9	0	1	0	10	2	101	0	0	103	0	0	0	0	0	211
5:00 PM	0	80	10	0	90	15	0	6	0	21	7	137	0	0	144	0	0	0	0	0	255
5:15 PM	0	89	9	0	98	11	0	5	0	16	9	105	0	0	114	0	0	0	0	0	228
5:30 PM	0	107	6	0	113	11	0	10	0	21	4	104	0	0	108	0	0	0	0	0	242
Total Volume	0	366	33	0	399	46	0	22	0	68	22	447	0	0	469	0	0	0	0	0	936
% Approach Total	0.0	91.7	8.3	0.0		67.6	0.0	32.4	0.0		4.7	95.3	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.855	0.825	0.000	0.883	0.767	0.000	0.550	0.000	0.810	0.611	0.816	0.000	0.000	0.814	0.000	0.000	0.000	0.000	0.000	0.918
Cars	0	366	33	0	399	46	0	22	0	68	22	444	0	0	466	0	0	0	0	0	933
Cars %	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	99.3	0.0	0.0	99.4	0.0	0.0	0.0	0.0	0.0	99.7
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.3
Cars Enter Leg	0	366	33	0	399	46	0	22	0	68	22	444	0	0	466	0	0	0	0	0	933
Heavy Enter Leg	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
Total Entering Leg	0	366	33	0	399	46	0	22	0	68	22	447	0	0	469	0	0	0	0	0	936
Cars Exiting Leg					490					55					388					0	933
Heavy Exiting Leg					3					0					0					0	3
Total Exiting Leg					493					55					388					0	936

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars-Combined (Motorcycles, Cars, Light Goods)

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	72	10	0	82	4	0	4	0	8	2	81	0	0	83	1	0	0	0	1	174
4:15 PM	0	66	7	0	73	6	0	4	0	10	4	104	0	0	108	0	0	0	0	0	191
4:30 PM	0	65	2	0	67	6	0	6	2	14	4	96	0	0	100	0	0	0	0	0	181
4:45 PM	0	90	8	0	98	9	0	1	0	10	2	99	0	0	101	0	0	0	0	0	209
Total	0	293	27	0	320	25	0	15	2	42	12	380	0	0	392	1	0	0	0	1	755
5:00 PM	0	80	10	0	90	15	0	6	0	21	7	136	0	0	143	0	0	0	0	0	254
5:15 PM	0	89	9	0	98	11	0	5	0	16	9	105	0	0	114	0	0	0	0	0	228
5:30 PM	0	107	6	0	113	11	0	10	0	21	4	104	0	0	108	0	0	0	0	0	242
5:45 PM	0	95	7	0	102	6	0	3	0	9	1	95	0	0	96	0	0	0	0	0	207
Total	0	371	32	0	403	43	0	24	0	67	21	440	0	0	461	0	0	0	0	0	931
Grand Total	0	664	59	0	723	68	0	39	2	109	33	820	0	0	853	1	0	0	0	1	1686
Approach %	0.0	91.8	8.2	0.0		62.4	0.0	35.8	1.8		3.9	96.1	0.0	0.0		100.0	0.0	0.0	0.0		
Total %	0.0	39.4	3.5	0.0	42.9	4.0	0.0	2.3	0.1	6.5	2.0	48.6	0.0	0.0	50.6	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total					888					94					704					0	1686

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	0	90	8	0	98	9	0	1	0	10	2	99	0	0	101	0	0	0	0	0	209
5:00 PM	0	80	10	0	90	15	0	6	0	21	7	136	0	0	143	0	0	0	0	0	254
5:15 PM	0	89	9	0	98	11	0	5	0	16	9	105	0	0	114	0	0	0	0	0	228
5:30 PM	0	107	6	0	113	11	0	10	0	21	4	104	0	0	108	0	0	0	0	0	242
Total Volume	0	366	33	0	399	46	0	22	0	68	22	444	0	0	466	0	0	0	0	0	933
% Approach Total	0.0	91.7	8.3	0.0		67.6	0.0	32.4	0.0		4.7	95.3	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.855	0.825	0.000	0.883	0.767	0.000	0.550	0.000	0.810	0.611	0.816	0.000	0.000	0.815	0.000	0.000	0.000	0.000	0.000	0.918
Entering Leg	0	366	33	0	399	46	0	22	0	68	22	444	0	0	466	0	0	0	0	0	933
Exiting Leg					490					55					388					0	933
Total					889					123					854					0	1866

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	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	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Grand Total	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	11
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	36.4	0.0	0.0	36.4	0.0	0.0	0.0	0.0	0.0	0.0	63.6	0.0	0.0	63.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					7					0					4					0	11
Buses	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
% Buses	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	36.4
Exiting Leg Total					2					0					2					0	4
Single-Unit Trucks	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
% Single-Unit	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	63.6
Exiting Leg Total					5					0					2					0	7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total Volume	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.375
Buses	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Buses %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	33.3
Single-Unit Trucks	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Single-Unit %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	80.0	0.0	0.0	0.0	0.0	0.0	66.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Single-Unit Trucks	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
Buses					1					0					2					0	3
Single-Unit Trucks					4					0					2					0	6
Articulated Trucks					0					0					0					0	0
Total Exiting Leg					5					0					4					0	9

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	61	7	0	68	2	0	4	0	6	2	69	0	0	71	1	0	0	0	1	146
4:15 PM	0	59	7	0	66	6	0	2	0	8	3	95	0	0	98	0	0	0	0	0	172
4:30 PM	0	51	0	0	51	5	0	6	2	13	4	78	0	0	82	0	0	0	0	0	146
4:45 PM	0	86	7	0	93	8	0	0	0	8	2	91	0	0	93	0	0	0	0	0	194
Total	0	257	21	0	278	21	0	12	2	35	11	333	0	0	344	1	0	0	0	1	658
5:00 PM	0	73	9	0	82	13	0	6	0	19	7	125	0	0	132	0	0	0	0	0	233
5:15 PM	0	83	7	0	90	11	0	5	0	16	8	98	0	0	106	0	0	0	0	0	212
5:30 PM	0	104	6	0	110	9	0	8	0	17	4	91	0	0	95	0	0	0	0	0	222
5:45 PM	0	90	6	0	96	6	0	3	0	9	1	88	0	0	89	0	0	0	0	0	194
Total	0	350	28	0	378	39	0	22	0	61	20	402	0	0	422	0	0	0	0	0	861
Grand Total	0	607	49	0	656	60	0	34	2	96	31	735	0	0	766	1	0	0	0	1	1519
Approach %	0.0	92.5	7.5	0.0		62.5	0.0	35.4	2.1		4.0	96.0	0.0	0.0		100.0	0.0	0.0	0.0		
Total %	0.0	40.0	3.2	0.0	43.2	3.9	0.0	2.2	0.1	6.3	2.0	48.4	0.0	0.0	50.4	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total					795					82					642					0	1519

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	0	86	7	0	93	8	0	0	0	8	2	91	0	0	93	0	0	0	0	0	194
5:00 PM	0	73	9	0	82	13	0	6	0	19	7	125	0	0	132	0	0	0	0	0	233
5:15 PM	0	83	7	0	90	11	0	5	0	16	8	98	0	0	106	0	0	0	0	0	212
5:30 PM	0	104	6	0	110	9	0	8	0	17	4	91	0	0	95	0	0	0	0	0	222
Total Volume	0	346	29	0	375	41	0	19	0	60	21	405	0	0	426	0	0	0	0	0	861
% Approach Total	0.0	92.3	7.7	0.0		68.3	0.0	31.7	0.0		4.9	95.1	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.832	0.806	0.000	0.852	0.788	0.000	0.594	0.000	0.789	0.656	0.810	0.000	0.000	0.807	0.000	0.000	0.000	0.000	0.000	0.924
Entering Leg	0	346	29	0	375	41	0	19	0	60	21	405	0	0	426	0	0	0	0	0	861
Exiting Leg					446					50					365					0	861
Total					821					110					791					0	1722

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Light Goods Vehicle

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	11	3	0	14	2	0	0	0	2	0	12	0	0	12	0	0	0	0	0	28
4:15 PM	0	7	0	0	7	0	0	2	0	2	1	9	0	0	10	0	0	0	0	0	19
4:30 PM	0	14	2	0	16	1	0	0	0	1	0	18	0	0	18	0	0	0	0	0	35
4:45 PM	0	4	1	0	5	1	0	1	0	2	0	8	0	0	8	0	0	0	0	0	15
Total	0	36	6	0	42	4	0	3	0	7	1	47	0	0	48	0	0	0	0	0	97
5:00 PM	0	7	1	0	8	2	0	0	0	2	0	11	0	0	11	0	0	0	0	0	21
5:15 PM	0	6	2	0	8	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	16
5:30 PM	0	3	0	0	3	2	0	2	0	4	0	13	0	0	13	0	0	0	0	0	20
5:45 PM	0	5	1	0	6	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	13
Total	0	21	4	0	25	4	0	2	0	6	1	38	0	0	39	0	0	0	0	0	70
Grand Total	0	57	10	0	67	8	0	5	0	13	2	85	0	0	87	0	0	0	0	0	167
Approach %	0.0	85.1	14.9	0.0		61.5	0.0	38.5	0.0		2.3	97.7	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	34.1	6.0	0.0	40.1	4.8	0.0	3.0	0.0	7.8	1.2	50.9	0.0	0.0	52.1	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					93					12					62					0	167

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	11	3	0	14	2	0	0	0	2	0	12	0	0	12	0	0	0	0	0	28
4:15 PM	0	7	0	0	7	0	0	2	0	2	1	9	0	0	10	0	0	0	0	0	19
4:30 PM	0	14	2	0	16	1	0	0	0	1	0	18	0	0	18	0	0	0	0	0	35
4:45 PM	0	4	1	0	5	1	0	1	0	2	0	8	0	0	8	0	0	0	0	0	15
Total Volume	0	36	6	0	42	4	0	3	0	7	1	47	0	0	48	0	0	0	0	0	97
% Approach Total	0.0	85.7	14.3	0.0		57.1	0.0	42.9	0.0		2.1	97.9	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.643	0.500	0.000	0.656	0.500	0.000	0.375	0.000	0.875	0.250	0.653	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.693
Entering Leg	0	36	6	0	42	4	0	3	0	7	1	47	0	0	48	0	0	0	0	0	97
Exiting Leg					51					7					39					0	97
Total					93					14					87					0	194

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	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	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	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	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					2					0					2					0	4

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	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	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Exiting Leg					1					0					2					0	3
Total					3					0					3					0	6

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Single-Unit Trucks

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
5:00 PM	0	0	0	0	0	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	0	0	0	0	0
5:30 PM	0	0	0	0	0	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	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					5					0					2					0	7

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total Volume	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Exiting Leg					4					0					2					0	6
Total					6					0					6					0	12

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	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	0	0	0	0	0
4:30 PM	0	0	0	0	0	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	0	0	0	0	0
Total	0	0	0	0	0	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	0	0	0	0	0
5:15 PM	0	0	0	0	0	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	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Raynes Avenue from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	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	0	0	0	0	0
4:30 PM	0	0	0	0	0	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	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Maplewood Avenue from North							Raynes Avenue from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							1							0							1							0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North							Raynes Avenue from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Exiting Leg							1							0							1							0	2
Total							1							1							2							0	4

PDI File #: **196718 A**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Raynes Avenue W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Maplewood Avenue from North							Raynes Avenue from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	3	0	3	8
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
Grand Total	0	0	0	0	0	0	0	0	0	0	0	3	4	7	0	0	0	0	0	1	1	0	0	0	0	3	0	3	11
Approach %	0	0	0	0	0	0		0	0	0	0	42.9	57.1		0	0	0	0	0	100		0	0	0	0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	27.3	36.4	63.6	0	0	0	0	0	9.09	9.09	0	0	0	0	27.3	0	27.3	
Exiting Leg Total							0							7							1							3	11

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North							Raynes Avenue from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	3	0	3	8
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	60.0	40.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.250	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.750	1.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	3	0	3	8
Exiting Leg							0							5							0							3	8
Total							0							10							0							6	16

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	79	0	0	79	3	4	0	7	2	81	0	83	169
4:15 PM	73	1	0	74	5	2	0	7	0	101	0	101	182
4:30 PM	71	0	0	71	1	2	0	3	2	100	0	102	176
4:45 PM	92	0	0	92	0	1	0	1	1	97	0	98	191
Total	315	1	0	316	9	9	0	18	5	379	0	384	718
5:00 PM	89	0	0	89	1	0	0	1	1	146	0	147	237
5:15 PM	92	1	0	93	3	2	0	5	1	105	0	106	204
5:30 PM	119	0	0	119	0	2	0	2	0	109	0	109	230
5:45 PM	102	1	0	103	5	0	1	6	1	95	0	96	205
Total	402	2	0	404	9	4	1	14	3	455	0	458	876
Grand Total	717	3	0	720	18	13	1	32	8	834	0	842	1594
Approach %	99.6	0.4	0.0		56.3	40.6	3.1		1.0	99.0	0.0		
Total %	45.0	0.2	0.0	45.2	1.1	0.8	0.1	2.0	0.5	52.3	0.0	52.8	
Exiting Leg Total				852				12				730	1594
Cars	713	3	0	716	18	13	1	32	8	827	0	835	1583
% Cars	99.4	100.0	0.0	99.4	100.0	100.0	100.0	100.0	100.0	99.2	0.0	99.2	99.3
Exiting Leg Total				845				12				726	1583
Heavy Vehicles	4	0	0	4	0	0	0	0	0	7	0	7	11
% Heavy Vehicles	0.6	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.8	0.7
Exiting Leg Total				7				0				4	11

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	89	0	0	89	1	0	0	1	1	146	0	147	237
5:15 PM	92	1	0	93	3	2	0	5	1	105	0	106	204
5:30 PM	119	0	0	119	0	2	0	2	0	109	0	109	230
5:45 PM	102	1	0	103	5	0	1	6	1	95	0	96	205
Total Volume	402	2	0	404	9	4	1	14	3	455	0	458	876
% Approach Total	99.5	0.5	0.0		64.3	28.6	7.1		0.7	99.3	0.0		
PHF	0.845	0.500	0.000	0.849	0.450	0.500	0.250	0.583	0.750	0.779	0.000	0.779	0.924
Cars	402	2	0	404	9	4	1	14	3	453	0	456	874
Cars %	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	0.0	99.6	99.8
Heavy Vehicles	0	0	0	0	0	0	0	0	0	2	0	2	2
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.2
Cars Enter Leg	402	2	0	404	9	4	1	14	3	453	0	456	874
Heavy Enter Leg	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Entering Leg	402	2	0	404	9	4	1	14	3	455	0	458	876
Cars Exiting Leg				462				6				406	874
Heavy Exiting Leg				2				0				0	2
Total Exiting Leg				464				6				406	876

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	77	0	0	77	3	4	0	7	2	79	0	81	165
4:15 PM	71	1	0	72	5	2	0	7	0	100	0	100	179
4:30 PM	71	0	0	71	1	2	0	3	2	100	0	102	176
4:45 PM	92	0	0	92	0	1	0	1	1	95	0	96	189
Total	311	1	0	312	9	9	0	18	5	374	0	379	709
5:00 PM	89	0	0	89	1	0	0	1	1	145	0	146	236
5:15 PM	92	1	0	93	3	2	0	5	1	105	0	106	204
5:30 PM	119	0	0	119	0	2	0	2	0	109	0	109	230
5:45 PM	102	1	0	103	5	0	1	6	1	94	0	95	204
Total	402	2	0	404	9	4	1	14	3	453	0	456	874
Grand Total	713	3	0	716	18	13	1	32	8	827	0	835	1583
Approach %	99.6	0.4	0.0		56.3	40.6	3.1		1.0	99.0	0.0		
Total %	45.0	0.2	0.0	45.2	1.1	0.8	0.1	2.0	0.5	52.2	0.0	52.7	
Exiting Leg Total				845				12				726	1583

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	89	0	0	89	1	0	0	1	1	145	0	146	236
5:15 PM	92	1	0	93	3	2	0	5	1	105	0	106	204
5:30 PM	119	0	0	119	0	2	0	2	0	109	0	109	230
5:45 PM	102	1	0	103	5	0	1	6	1	94	0	95	204
Total Volume	402	2	0	404	9	4	1	14	3	453	0	456	874
% Approach Total	99.5	0.5	0.0		64.3	28.6	7.1		0.7	99.3	0.0		
PHF	0.845	0.500	0.000	0.849	0.450	0.500	0.250	0.583	0.750	0.781	0.000	0.781	0.926
Entering Leg	402	2	0	404	9	4	1	14	3	453	0	456	874
Exiting Leg				462				6				406	874
Total				866				20				862	1748

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	2	0	0	2	0	0	0	0	0	2	0	2	4
4:15 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
4:30 PM	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	2	0	2	2
Total	4	0	0	4	0	0	0	0	0	5	0	5	9
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	2	0	2	2
Grand Total	4	0	0	4	0	0	0	0	0	7	0	7	11
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	36.4	0.0	0.0	36.4	0.0	0.0	0.0	0.0	0.0	63.6	0.0	63.6	
Exiting Leg Total				7				0				4	11
Buses	2	0	0	2	0	0	0	0	0	2	0	2	4
% Buses	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	28.6	36.4
Exiting Leg Total				2				0				2	4
Single-Unit Trucks	2	0	0	2	0	0	0	0	0	5	0	5	7
% Single-Unit	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	71.4	63.6
Exiting Leg Total				5				0				2	7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	2	0	0	2	0	0	0	0	0	2	0	2	4
4:15 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
4:30 PM	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	2	0	2	2
Total Volume	4	0	0	4	0	0	0	0	0	5	0	5	9
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.625	0.563
Buses	2	0	0	2	0	0	0	0	0	1	0	1	3
Buses %	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	20.0	33.3
Single-Unit Trucks	2	0	0	2	0	0	0	0	0	4	0	4	6
Single-Unit %	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	80.0	66.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	2	0	0	2	0	0	0	0	0	1	0	1	3
Single-Unit Trucks	2	0	0	2	0	0	0	0	0	4	0	4	6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	4	0	0	4	0	0	0	0	0	5	0	5	9
Buses				1				0				2	3
Single-Unit Trucks				4				0				2	6
Articulated Trucks				0				0				0	0
Total Exiting Leg				5				0				4	9

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	65	0	0	65	3	3	0	6	2	67	0	69	140
4:15 PM	59	0	0	59	5	1	0	6	0	89	0	89	154
4:30 PM	57	0	0	57	1	2	0	3	2	82	0	84	144
4:45 PM	87	0	0	87	0	1	0	1	0	88	0	88	176
Total	268	0	0	268	9	7	0	16	4	326	0	330	614
5:00 PM	82	0	0	82	0	0	0	0	1	135	0	136	218
5:15 PM	86	1	0	87	3	0	0	3	0	98	0	98	188
5:30 PM	110	0	0	110	0	2	0	2	0	96	0	96	208
5:45 PM	94	1	0	95	5	0	1	6	1	88	0	89	190
Total	372	2	0	374	8	2	1	11	2	417	0	419	804
Grand Total	640	2	0	642	17	9	1	27	6	743	0	749	1418
Approach %	99.7	0.3	0.0		63.0	33.3	3.7		0.8	99.2	0.0		
Total %	45.1	0.1	0.0	45.3	1.2	0.6	0.1	1.9	0.4	52.4	0.0	52.8	
Exiting Leg Total				760				9				649	1418

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	82	0	0	82	0	0	0	0	1	135	0	136	218
5:15 PM	86	1	0	87	3	0	0	3	0	98	0	98	188
5:30 PM	110	0	0	110	0	2	0	2	0	96	0	96	208
5:45 PM	94	1	0	95	5	0	1	6	1	88	0	89	190
Total Volume	372	2	0	374	8	2	1	11	2	417	0	419	804
% Approach Total	99.5	0.5	0.0		72.7	18.2	9.1		0.5	99.5	0.0		
PHF	0.845	0.500	0.000	0.850	0.400	0.250	0.250	0.458	0.500	0.772	0.000	0.770	0.922
Entering Leg	372	2	0	374	8	2	1	11	2	417	0	419	804
Exiting Leg				425				5				374	804
Total				799				16				793	1608

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Light Goods Vehicle**

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	12	0	0	12	0	1	0	1	0	12	0	12	25
4:15 PM	12	1	0	13	0	1	0	1	0	11	0	11	25
4:30 PM	14	0	0	14	0	0	0	0	0	18	0	18	32
4:45 PM	5	0	0	5	0	0	0	0	1	7	0	8	13
Total	43	1	0	44	0	2	0	2	1	48	0	49	95
5:00 PM	7	0	0	7	1	0	0	1	0	10	0	10	18
5:15 PM	6	0	0	6	0	2	0	2	1	7	0	8	16
5:30 PM	9	0	0	9	0	0	0	0	0	13	0	13	22
5:45 PM	8	0	0	8	0	0	0	0	0	6	0	6	14
Total	30	0	0	30	1	2	0	3	1	36	0	37	70
Grand Total	73	1	0	74	1	4	0	5	2	84	0	86	165
Approach %	98.6	1.4	0.0		20.0	80.0	0.0		2.3	97.7	0.0		
Total %	44.2	0.6	0.0	44.8	0.6	2.4	0.0	3.0	1.2	50.9	0.0	52.1	
Exiting Leg Total				85				3				77	165

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	12	0	0	12	0	1	0	1	0	12	0	12	25
4:15 PM	12	1	0	13	0	1	0	1	0	11	0	11	25
4:30 PM	14	0	0	14	0	0	0	0	0	18	0	18	32
4:45 PM	5	0	0	5	0	0	0	0	1	7	0	8	13
Total Volume	43	1	0	44	0	2	0	2	1	48	0	49	95
% Approach Total	97.7	2.3	0.0		0.0	100.0	0.0		2.0	98.0	0.0		
PHF	0.768	0.250	0.000	0.786	0.000	0.500	0.000	0.500	0.250	0.667	0.000	0.681	0.742
Entering Leg	43	1	0	44	0	2	0	2	1	48	0	49	95
Exiting Leg				48				2				45	95
Total				92				4				94	190

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:15 PM	1	0	0	1	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
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	2	0	0	0	0	0	1	0	1	3
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	2	0	0	2	0	0	0	0	0	2	0	2	4
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	
Exiting Leg Total				2				0				2	4

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:15 PM	1	0	0	1	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
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	2	0	0	2	0	0	0	0	0	1	0	1	3
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.375
Entering Leg	2	0	0	2	0	0	0	0	0	1	0	1	3
Exiting Leg				1				0				2	3
Total				3				0				3	6

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:15 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:30 PM	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	2	0	2	2
Total	2	0	0	2	0	0	0	0	0	4	0	4	6
5:00 PM	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
5:30 PM	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	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	2	0	0	2	0	0	0	0	0	5	0	5	7
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	71.4	0.0	71.4	
Exiting Leg Total				5				0				2	7

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:15 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:30 PM	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	2	0	2	2
Total Volume	2	0	0	2	0	0	0	0	0	4	0	4	6
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.750
Entering Leg	2	0	0	2	0	0	0	0	0	4	0	4	6
Exiting Leg				4				0				2	6
Total				6				0				6	12

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Articulated Trucks**

	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North				Kennebunk Savings Bank Driveway from East				Maplewood Avenue from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Maplewood Avenue from North						Kennebunk Savings Bank Driveway from East						Maplewood Avenue from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
5:15 PM	0	0	0	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	0	0	0
5:45 PM	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	1	3
Total	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	1	3
Grand Total	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	1	3
Approach %	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0		0.0	100.0	0.0	0.0	0.0		
Total %	33.3	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	33.3	33.3	0.0	33.3	0.0	0.0	0.0	33.3	
Exiting Leg Total						1						1						1	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North						Kennebunk Savings Bank Driveway from East						Maplewood Avenue from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
5:00 PM	0	0	0	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	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	1	3
Total Volume	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	1	3
% Approach Total	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0		0.0	100.0	0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.250
Entering Leg	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	1	3
Exiting Leg						1						1						1	3
Total						2						2						2	6

PDI File #: **196718 B**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Kennebunk Savings Bank Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Pedestrians**

	Maplewood Avenue from North						Kennebunk Savings Bank Driveway from East						Maplewood Avenue from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	3
4:15 PM	0	0	0	1	0	1	0	0	0	1	1	2	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
Total	0	0	0	1	0	1	0	0	0	4	9	13	0	0	0	0	0	0	14
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
5:30 PM	0	0	0	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	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
Grand Total	0	0	0	1	0	1	0	0	0	4	13	17	0	0	0	0	0	0	18
Approach %	0	0	0	100	0		0	0	0	23.529	76.471		0	0	0	0	0		
Total %	0	0	0	5.5556	0	5.5556	0	0	0	22.222	72.222	94.444	0	0	0	0	0	0	
Exiting Leg Total						1						17						0	18

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North						Kennebunk Savings Bank Driveway from East						Maplewood Avenue from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	3
4:15 PM	0	0	0	1	0	1	0	0	0	1	1	2	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4
Total Volume	0	0	0	1	0	1	0	0	0	4	9	13	0	0	0	0	0	0	14
% Approach Total	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	30.8	69.2		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.333	0.563	0.813	0.000	0.000	0.000	0.000	0.000	0.000	0.875
Entering Leg	0	0	0	1	0	1	0	0	0	4	9	13	0	0	0	0	0	0	14
Exiting Leg						1						13						0	14
Total						2						26						0	28

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	79	3	0	82	0	0	7	0	7	4	84	0	0	88	0	0	0	0	0	177
4:15 PM	0	76	1	0	77	1	0	3	0	4	7	100	0	0	107	0	0	0	0	0	188
4:30 PM	0	72	1	0	73	3	0	4	0	7	7	99	0	0	106	0	0	0	0	0	186
4:45 PM	0	94	1	0	95	2	0	1	0	3	3	97	0	0	100	0	0	0	0	0	198
Total	0	321	6	0	327	6	0	15	0	21	21	380	0	0	401	0	0	0	0	0	749
5:00 PM	0	85	4	0	89	3	0	5	0	8	3	143	0	1	147	0	0	0	0	0	244
5:15 PM	0	90	3	1	94	2	0	7	0	9	3	104	0	0	107	0	0	0	0	0	210
5:30 PM	0	119	2	0	121	4	0	3	0	7	4	104	0	0	108	0	0	0	0	0	236
5:45 PM	0	99	3	0	102	1	0	2	0	3	8	95	0	0	103	0	0	0	0	0	208
Total	0	393	12	1	406	10	0	17	0	27	18	446	0	1	465	0	0	0	0	0	898
Grand Total	0	714	18	1	733	16	0	32	0	48	39	826	0	1	866	0	0	0	0	0	1647
Approach %	0.0	97.4	2.5	0.1		33.3	0.0	66.7	0.0		4.5	95.4	0.0	0.1		0.0	0.0	0.0	0.0		
Total %	0.0	43.4	1.1	0.1	44.5	1.0	0.0	1.9	0.0	2.9	2.4	50.2	0.0	0.1	52.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					843					57					747					0	1647
Cars	0	710	18	1	729	16	0	32	0	48	39	819	0	1	859	0	0	0	0	0	1636
% Cars	0.0	99.4	100.0	100.0	99.5	100.0	0.0	100.0	0.0	100.0	100.0	99.2	0.0	100.0	99.2	0.0	0.0	0.0	0.0	0.0	99.3
Exiting Leg Total					836					57					743					0	1636
Heavy Vehicles	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	11
% Heavy Vehicles	0.0	0.6	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.7
Exiting Leg Total					7					0					4					0	11

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	0	85	4	0	89	3	0	5	0	8	3	143	0	1	147	0	0	0	0	0	244
5:15 PM	0	90	3	1	94	2	0	7	0	9	3	104	0	0	107	0	0	0	0	0	210
5:30 PM	0	119	2	0	121	4	0	3	0	7	4	104	0	0	108	0	0	0	0	0	236
5:45 PM	0	99	3	0	102	1	0	2	0	3	8	95	0	0	103	0	0	0	0	0	208
Total Volume	0	393	12	1	406	10	0	17	0	27	18	446	0	1	465	0	0	0	0	0	898
% Approach Total	0.0	96.8	3.0	0.2		37.0	0.0	63.0	0.0		3.9	95.9	0.0	0.2		0.0	0.0	0.0	0.0		
PHF	0.000	0.826	0.750	0.250	0.839	0.625	0.000	0.607	0.000	0.750	0.563	0.780	0.000	0.250	0.791	0.000	0.000	0.000	0.000	0.000	0.920
Cars	0	393	12	1	406	10	0	17	0	27	18	444	0	1	463	0	0	0	0	0	896
Cars %	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0	100.0	99.6	0.0	100.0	99.6	0.0	0.0	0.0	0.0	0.0	99.8
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2
Cars Enter Leg	0	393	12	1	406	10	0	17	0	27	18	444	0	1	463	0	0	0	0	0	896
Heavy Enter Leg	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Total Entering Leg	0	393	12	1	406	10	0	17	0	27	18	446	0	1	465	0	0	0	0	0	898
Cars Exiting Leg					455					30					411					0	896
Heavy Exiting Leg					2					0					0					0	2
Total Exiting Leg					457					30					411					0	898

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars-Combined (Motorcycles, Cars, Light Goods)

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	77	3	0	80	0	0	7	0	7	4	82	0	0	86	0	0	0	0	0	173
4:15 PM	0	74	1	0	75	1	0	3	0	4	7	99	0	0	106	0	0	0	0	0	185
4:30 PM	0	72	1	0	73	3	0	4	0	7	7	99	0	0	106	0	0	0	0	0	186
4:45 PM	0	94	1	0	95	2	0	1	0	3	3	95	0	0	98	0	0	0	0	0	196
Total	0	317	6	0	323	6	0	15	0	21	21	375	0	0	396	0	0	0	0	0	740
5:00 PM	0	85	4	0	89	3	0	5	0	8	3	142	0	1	146	0	0	0	0	0	243
5:15 PM	0	90	3	1	94	2	0	7	0	9	3	104	0	0	107	0	0	0	0	0	210
5:30 PM	0	119	2	0	121	4	0	3	0	7	4	104	0	0	108	0	0	0	0	0	236
5:45 PM	0	99	3	0	102	1	0	2	0	3	8	94	0	0	102	0	0	0	0	0	207
Total	0	393	12	1	406	10	0	17	0	27	18	444	0	1	463	0	0	0	0	0	896
Grand Total	0	710	18	1	729	16	0	32	0	48	39	819	0	1	859	0	0	0	0	0	1636
Approach %	0.0	97.4	2.5	0.1		33.3	0.0	66.7	0.0		4.5	95.3	0.0	0.1		0.0	0.0	0.0	0.0		
Total %	0.0	43.4	1.1	0.1	44.6	1.0	0.0	2.0	0.0	2.9	2.4	50.1	0.0	0.1	52.5	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					836					57					743					0	1636

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	0	85	4	0	89	3	0	5	0	8	3	142	0	1	146	0	0	0	0	0	243
5:15 PM	0	90	3	1	94	2	0	7	0	9	3	104	0	0	107	0	0	0	0	0	210
5:30 PM	0	119	2	0	121	4	0	3	0	7	4	104	0	0	108	0	0	0	0	0	236
5:45 PM	0	99	3	0	102	1	0	2	0	3	8	94	0	0	102	0	0	0	0	0	207
Total Volume	0	393	12	1	406	10	0	17	0	27	18	444	0	1	463	0	0	0	0	0	896
% Approach Total	0.0	96.8	3.0	0.2		37.0	0.0	63.0	0.0		3.9	95.9	0.0	0.2		0.0	0.0	0.0	0.0		
PHF	0.000	0.826	0.750	0.250	0.839	0.625	0.000	0.607	0.000	0.750	0.563	0.782	0.000	0.250	0.793	0.000	0.000	0.000	0.000	0.000	0.922
Entering Leg	0	393	12	1	406	10	0	17	0	27	18	444	0	1	463	0	0	0	0	0	896
Exiting Leg					455					30					411					0	896
Total					861					57					874					0	1792

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
4:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	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	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Grand Total	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	11
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	36.4	0.0	0.0	36.4	0.0	0.0	0.0	0.0	0.0	0.0	63.6	0.0	0.0	63.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					7					0					4					0	11
Buses	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
% Buses	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	36.4
Exiting Leg Total					2					0					2					0	4
Single-Unit Trucks	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
% Single-Unit	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	63.6
Exiting Leg Total					5					0					2					0	7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
4:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total Volume	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.563
Buses	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Buses %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	33.3
Single-Unit Trucks	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Single-Unit %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	80.0	0.0	0.0	0.0	0.0	0.0	66.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Single-Unit Trucks	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
Buses					1					0					2					0	3
Single-Unit Trucks					4					0					2					0	6
Articulated Trucks					0					0					0					0	0
Total Exiting Leg					5					0					4					0	9

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	64	3	0	67	0	0	7	0	7	3	70	0	0	73	0	0	0	0	0	147
4:15 PM	0	61	1	0	62	1	0	3	0	4	7	88	0	0	95	0	0	0	0	0	161
4:30 PM	0	59	0	0	59	3	0	4	0	7	6	83	0	0	89	0	0	0	0	0	155
4:45 PM	0	89	1	0	90	2	0	0	0	2	3	87	0	0	90	0	0	0	0	0	182
Total	0	273	5	0	278	6	0	14	0	20	19	328	0	0	347	0	0	0	0	0	645
5:00 PM	0	78	4	0	82	2	0	4	0	6	3	133	0	1	137	0	0	0	0	0	225
5:15 PM	0	83	3	1	87	2	0	6	0	8	3	97	0	0	100	0	0	0	0	0	195
5:30 PM	0	110	2	0	112	3	0	3	0	6	4	92	0	0	96	0	0	0	0	0	214
5:45 PM	0	92	2	0	94	1	0	2	0	3	8	89	0	0	97	0	0	0	0	0	194
Total	0	363	11	1	375	8	0	15	0	23	18	411	0	1	430	0	0	0	0	0	828
Grand Total	0	636	16	1	653	14	0	29	0	43	37	739	0	1	777	0	0	0	0	0	1473
Approach %	0.0	97.4	2.5	0.2		32.6	0.0	67.4	0.0		4.8	95.1	0.0	0.1		0.0	0.0	0.0	0.0		
Total %	0.0	43.2	1.1	0.1	44.3	1.0	0.0	2.0	0.0	2.9	2.5	50.2	0.0	0.1	52.7	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					754					53					666					0	1473

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	0	78	4	0	82	2	0	4	0	6	3	133	0	1	137	0	0	0	0	0	225
5:15 PM	0	83	3	1	87	2	0	6	0	8	3	97	0	0	100	0	0	0	0	0	195
5:30 PM	0	110	2	0	112	3	0	3	0	6	4	92	0	0	96	0	0	0	0	0	214
5:45 PM	0	92	2	0	94	1	0	2	0	3	8	89	0	0	97	0	0	0	0	0	194
Total Volume	0	363	11	1	375	8	0	15	0	23	18	411	0	1	430	0	0	0	0	0	828
% Approach Total	0.0	96.8	2.9	0.3		34.8	0.0	65.2	0.0		4.2	95.6	0.0	0.2		0.0	0.0	0.0	0.0		
PHF	0.000	0.825	0.688	0.250	0.837	0.667	0.000	0.625	0.000	0.719	0.563	0.773	0.000	0.250	0.785	0.000	0.000	0.000	0.000	0.000	0.920
Entering Leg	0	363	11	1	375	8	0	15	0	23	18	411	0	1	430	0	0	0	0	0	828
Exiting Leg					420					29					379					0	828
Total					795					52					809					0	1656

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Light Goods Vehicle

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	13	0	0	13	0	0	0	0	0	1	12	0	0	13	0	0	0	0	0	26
4:15 PM	0	13	0	0	13	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	24
4:30 PM	0	13	1	0	14	0	0	0	0	0	1	16	0	0	17	0	0	0	0	0	31
4:45 PM	0	5	0	0	5	0	0	1	0	1	0	8	0	0	8	0	0	0	0	0	14
Total	0	44	1	0	45	0	0	1	0	1	2	47	0	0	49	0	0	0	0	0	95
5:00 PM	0	7	0	0	7	1	0	1	0	2	0	9	0	0	9	0	0	0	0	0	18
5:15 PM	0	7	0	0	7	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	15
5:30 PM	0	9	0	0	9	1	0	0	0	1	0	12	0	0	12	0	0	0	0	0	22
5:45 PM	0	7	1	0	8	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	13
Total	0	30	1	0	31	2	0	2	0	4	0	33	0	0	33	0	0	0	0	0	68
Grand Total	0	74	2	0	76	2	0	3	0	5	2	80	0	0	82	0	0	0	0	0	163
Approach %	0.0	97.4	2.6	0.0		40.0	0.0	60.0	0.0		2.4	97.6	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	45.4	1.2	0.0	46.6	1.2	0.0	1.8	0.0	3.1	1.2	49.1	0.0	0.0	50.3	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					82					4					77					0	163

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	13	0	0	13	0	0	0	0	0	1	12	0	0	13	0	0	0	0	0	26
4:15 PM	0	13	0	0	13	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	24
4:30 PM	0	13	1	0	14	0	0	0	0	0	1	16	0	0	17	0	0	0	0	0	31
4:45 PM	0	5	0	0	5	0	0	1	0	1	0	8	0	0	8	0	0	0	0	0	14
Total Volume	0	44	1	0	45	0	0	1	0	1	2	47	0	0	49	0	0	0	0	0	95
% Approach Total	0.0	97.8	2.2	0.0		0.0	0.0	100.0	0.0		4.1	95.9	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.846	0.250	0.000	0.804	0.000	0.000	0.250	0.000	0.250	0.500	0.734	0.000	0.000	0.721	0.000	0.000	0.000	0.000	0.000	0.766
Entering Leg	0	44	1	0	45	0	0	1	0	1	2	47	0	0	49	0	0	0	0	0	95
Exiting Leg					47					3					45					0	95
Total					92					4					94					0	190

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	1	0	0	1	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	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	0	0	0	0	0
Total	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	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	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					2					0					2					0	4

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	1	0	0	1	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	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	0	0	0	0	0
Total Volume	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.375
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Exiting Leg					1					0					2					0	3
Total					3					0					3					0	6

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Single-Unit Trucks

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
5:00 PM	0	0	0	0	0	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	0	0	0	0	0
5:30 PM	0	0	0	0	0	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	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	71.4	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					5					0					2					0	7

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	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	2	0	0	0	0	0	2
Total Volume	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Exiting Leg					4					0					2					0	6
Total					6					0					6					0	12

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	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	0	0	0	0	0
4:30 PM	0	0	0	0	0	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	0	0	0	0	0
Total	0	0	0	0	0	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	0	0	0	0	0
5:15 PM	0	0	0	0	0	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	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Vaughan Street from East					Maplewood Avenue from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	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	0	0	0	0	0
4:30 PM	0	0	0	0	0	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	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Maplewood Avenue from North							Vaughan Street from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	3
Total	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	4
Grand Total	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	4
Approach %	0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		66.7	33.3	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	25.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	25.0	0.0	0.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							1							2							1							0	4

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North							Vaughan Street from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	3
Total Volume	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	4
% Approach Total	0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		66.7	33.3	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333
Entering Leg	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	4
Exiting Leg							1							2							1							0	4
Total							2							2							4							0	8

PDI File #: **196718 C**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Vaughan Street W: Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Maplewood Avenue from North							Vaughan Street from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
4:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	5	5	0	0	0	0	1	0	1	0	0	0	0	3	0	3	10
Total	0	0	0	0	0	2	2	0	0	0	0	4	10	14	0	0	0	0	1	0	1	0	0	0	0	6	1	7	24
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
Total	0	0	0	0	0	0	0	0	0	0	0	1	6	7	0	0	0	0	0	0	0	0	0	0	0	1	2	3	10
Grand Total	0	0	0	0	0	2	2	0	0	0	0	5	16	21	0	0	0	0	1	0	1	0	0	0	0	7	3	10	34
Approach %	0	0	0	0	0	100		0	0	0	0	23.8	76.2		0	0	0	0	100	0		0	0	0	0	70	30		
Total %	0	0	0	0	0	5.88	5.88	0	0	0	0	14.7	47.1	61.8	0	0	0	0	2.94	0	2.94	0	0	0	0	20.6	8.82	29.4	
Exiting Leg Total							2							21							1							10	34

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North							Vaughan Street from East							Maplewood Avenue from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
4:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	5	5	0	0	0	0	1	0	1	0	0	0	0	3	0	3	10
Total Volume	0	0	0	0	0	2	2	0	0	0	0	4	10	14	0	0	0	0	1	0	1	0	0	0	0	6	1	7	24
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	28.6	71.4		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	85.7	14.3		
PHF	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.333	0.500	0.700	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.250	0.583	0.600
Entering Leg	0	0	0	0	0	2	2	0	0	0	0	4	10	14	0	0	0	0	1	0	1	0	0	0	0	6	1	7	24
Exiting Leg							2							14							1							7	24
Total							4							28							2							14	48

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	13	57	11	0	81	10	9	29	0	48	43	66	1	0	110	1	18	12	0	31	270
4:15 PM	14	57	12	0	83	11	13	25	0	49	39	78	3	0	120	2	14	17	0	33	285
4:30 PM	13	57	7	0	77	8	18	24	0	50	50	81	4	0	135	3	7	17	0	27	289
4:45 PM	11	70	12	0	93	8	12	43	0	63	31	76	3	0	110	3	14	16	0	33	299
Total	51	241	42	0	334	37	52	121	0	210	163	301	11	0	475	9	53	62	0	124	1143
5:00 PM	10	71	7	0	88	13	27	37	0	77	45	99	2	0	146	1	21	36	0	58	369
5:15 PM	11	77	8	0	96	15	14	34	0	63	39	79	1	0	119	1	21	12	0	34	312
5:30 PM	10	95	19	0	124	13	22	63	0	98	37	82	2	0	121	0	23	13	0	36	379
5:45 PM	9	81	10	0	100	8	18	35	0	61	41	83	0	0	124	4	8	12	0	24	309
Total	40	324	44	0	408	49	81	169	0	299	162	343	5	0	510	6	73	73	0	152	1369
Grand Total	91	565	86	0	742	86	133	290	0	509	325	644	16	0	985	15	126	135	0	276	2512
Approach %	12.3	76.1	11.6	0.0		16.9	26.1	57.0	0.0		33.0	65.4	1.6	0.0		5.4	45.7	48.9	0.0		
Total %	3.6	22.5	3.4	0.0	29.5	3.4	5.3	11.5	0.0	20.3	12.9	25.6	0.6	0.0	39.2	0.6	5.0	5.4	0.0	11.0	
Exiting Leg Total					865					537					870					240	2512
Cars	90	562	86	0	738	86	133	284	0	503	318	638	14	0	970	15	125	134	0	274	2485
% Cars	98.9	99.5	100.0	0.0	99.5	100.0	100.0	97.9	0.0	98.8	97.8	99.1	87.5	0.0	98.5	100.0	99.2	99.3	0.0	99.3	98.9
Exiting Leg Total					858					529					861					237	2485
Heavy Vehicles	1	3	0	0	4	0	0	6	0	6	7	6	2	0	15	0	1	1	0	2	27
% Heavy Vehicles	1.1	0.5	0.0	0.0	0.5	0.0	0.0	2.1	0.0	1.2	2.2	0.9	12.5	0.0	1.5	0.0	0.8	0.7	0.0	0.7	1.1
Exiting Leg Total					7					8					9					3	27

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	10	71	7	0	88	13	27	37	0	77	45	99	2	0	146	1	21	36	0	58	369
5:15 PM	11	77	8	0	96	15	14	34	0	63	39	79	1	0	119	1	21	12	0	34	312
5:30 PM	10	95	19	0	124	13	22	63	0	98	37	82	2	0	121	0	23	13	0	36	379
5:45 PM	9	81	10	0	100	8	18	35	0	61	41	83	0	0	124	4	8	12	0	24	309
Total Volume	40	324	44	0	408	49	81	169	0	299	162	343	5	0	510	6	73	73	0	152	1369
% Approach Total	9.8	79.4	10.8	0.0		16.4	27.1	56.5	0.0		31.8	67.3	1.0	0.0		3.9	48.0	48.0	0.0		
PHF	0.909	0.853	0.579	0.000	0.823	0.817	0.750	0.671	0.000	0.763	0.900	0.866	0.625	0.000	0.873	0.375	0.793	0.507	0.000	0.655	0.903
Cars	40	324	44	0	408	49	81	166	0	296	158	341	5	0	504	6	73	73	0	152	1360
Cars %	100.0	100.0	100.0	0.0	100.0	100.0	100.0	98.2	0.0	99.0	97.5	99.4	100.0	0.0	98.8	100.0	100.0	100.0	0.0	100.0	99.3
Heavy Vehicles	0	0	0	0	0	0	0	3	0	3	4	2	0	0	6	0	0	0	0	0	9
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	1.0	2.5	0.6	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.7
Cars Enter Leg	40	324	44	0	408	49	81	166	0	296	158	341	5	0	504	6	73	73	0	152	1360
Heavy Enter Leg	0	0	0	0	0	0	0	3	0	3	4	2	0	0	6	0	0	0	0	0	9
Total Entering Leg	40	324	44	0	408	49	81	169	0	299	162	343	5	0	510	6	73	73	0	152	1369
Cars Exiting Leg					463					275					496					126	1360
Heavy Exiting Leg					2					4					3					0	9
Total Exiting Leg					465					279					499					126	1369

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars-Combined (Motorcycles, Cars, Light Goods)

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	12	56	11	0	79	10	9	28	0	47	42	64	1	0	107	1	18	12	0	31	264
4:15 PM	14	55	12	0	81	11	13	25	0	49	38	78	2	0	118	2	14	16	0	32	280
4:30 PM	13	57	7	0	77	8	18	23	0	49	50	81	4	0	135	3	7	17	0	27	288
4:45 PM	11	70	12	0	93	8	12	42	0	62	30	74	2	0	106	3	13	16	0	32	293
Total	50	238	42	0	330	37	52	118	0	207	160	297	9	0	466	9	52	61	0	122	1125
5:00 PM	10	71	7	0	88	13	27	36	0	76	44	98	2	0	144	1	21	36	0	58	366
5:15 PM	11	77	8	0	96	15	14	34	0	63	38	79	1	0	118	1	21	12	0	34	311
5:30 PM	10	95	19	0	124	13	22	61	0	96	37	82	2	0	121	0	23	13	0	36	377
5:45 PM	9	81	10	0	100	8	18	35	0	61	39	82	0	0	121	4	8	12	0	24	306
Total	40	324	44	0	408	49	81	166	0	296	158	341	5	0	504	6	73	73	0	152	1360
Grand Total	90	562	86	0	738	86	133	284	0	503	318	638	14	0	970	15	125	134	0	274	2485
Approach %	12.2	76.2	11.7	0.0		17.1	26.4	56.5	0.0		32.8	65.8	1.4	0.0		5.5	45.6	48.9	0.0		
Total %	3.6	22.6	3.5	0.0	29.7	3.5	5.4	11.4	0.0	20.2	12.8	25.7	0.6	0.0	39.0	0.6	5.0	5.4	0.0	11.0	
Exiting Leg Total					858					529					861					237	2485

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	10	71	7	0	88	13	27	36	0	76	44	98	2	0	144	1	21	36	0	58	366
5:15 PM	11	77	8	0	96	15	14	34	0	63	38	79	1	0	118	1	21	12	0	34	311
5:30 PM	10	95	19	0	124	13	22	61	0	96	37	82	2	0	121	0	23	13	0	36	377
5:45 PM	9	81	10	0	100	8	18	35	0	61	39	82	0	0	121	4	8	12	0	24	306
Total Volume	40	324	44	0	408	49	81	166	0	296	158	341	5	0	504	6	73	73	0	152	1360
% Approach Total	9.8	79.4	10.8	0.0		16.6	27.4	56.1	0.0		31.3	67.7	1.0	0.0		3.9	48.0	48.0	0.0		
PHF	0.909	0.853	0.579	0.000	0.823	0.817	0.750	0.680	0.000	0.771	0.898	0.870	0.625	0.000	0.875	0.375	0.793	0.507	0.000	0.655	0.902
Entering Leg	40	324	44	0	408	49	81	166	0	296	158	341	5	0	504	6	73	73	0	152	1360
Exiting Leg					463					275					496					126	1360
Total					871					571					1000					278	2720

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	1	0	0	2	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	6
4:15 PM	0	2	0	0	2	0	0	0	0	0	1	0	1	0	2	0	0	1	0	1	5
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	1	0	1	1	2	1	0	4	0	1	0	0	1	6
Total	1	3	0	0	4	0	0	3	0	3	3	4	2	0	9	0	1	1	0	2	18
5:00 PM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	3
Total	0	0	0	0	0	0	0	3	0	3	4	2	0	0	6	0	0	0	0	0	9
Grand Total	1	3	0	0	4	0	0	6	0	6	7	6	2	0	15	0	1	1	0	2	27
Approach %	25.0	75.0	0.0	0.0		0.0	0.0	100.0	0.0		46.7	40.0	13.3	0.0		0.0	50.0	50.0	0.0		
Total %	3.7	11.1	0.0	0.0	14.8	0.0	0.0	22.2	0.0	22.2	25.9	22.2	7.4	0.0	55.6	0.0	3.7	3.7	0.0	7.4	
Exiting Leg Total					7					8					9					3	27
Buses	0	2	0	0	2	0	0	6	0	6	7	2	0	0	9	0	0	0	0	0	17
% Buses	0.0	66.7	0.0	0.0	50.0	0.0	0.0	100.0	0.0	100.0	100.0	33.3	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	63.0
Exiting Leg Total					2					7					8					0	17
Single-Unit Trucks	1	1	0	0	2	0	0	0	0	0	0	4	2	0	6	0	1	1	0	2	10
% Single-Unit	100.0	33.3	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	100.0	0.0	40.0	0.0	100.0	100.0	0.0	100.0	37.0
Exiting Leg Total					5					1					1					3	10
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	1	0	0	2	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	6
4:15 PM	0	2	0	0	2	0	0	0	0	0	1	0	1	0	2	0	0	1	0	1	5
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	1	0	1	1	2	1	0	4	0	1	0	0	1	6
Total Volume	1	3	0	0	4	0	0	3	0	3	3	4	2	0	9	0	1	1	0	2	18
% Approach Total	25.0	75.0	0.0	0.0		0.0	0.0	100.0	0.0		33.3	44.4	22.2	0.0		0.0	50.0	50.0	0.0		
PHF	0.250	0.375	0.000	0.000	0.500	0.000	0.000	0.750	0.000	0.750	0.750	0.500	0.500	0.000	0.563	0.000	0.250	0.250	0.000	0.500	0.750
Buses	0	2	0	0	2	0	0	3	0	3	3	1	0	0	4	0	0	0	0	0	9
Buses %	0.0	66.7	0.0	0.0	50.0	0.0	0.0	100.0	0.0	100.0	100.0	25.0	0.0	0.0	44.4	0.0	0.0	0.0	0.0	0.0	50.0
Single-Unit Trucks	1	1	0	0	2	0	0	0	0	0	0	3	2	0	5	0	1	1	0	2	9
Single-Unit %	100.0	33.3	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	100.0	0.0	55.6	0.0	100.0	100.0	0.0	100.0	50.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	2	0	0	2	0	0	3	0	3	3	1	0	0	4	0	0	0	0	0	9
Single-Unit Trucks	1	1	0	0	2	0	0	0	0	0	0	3	2	0	5	0	1	1	0	2	9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	1	3	0	0	4	0	0	3	0	3	3	4	2	0	9	0	1	1	0	2	18
Buses					1					3					5					0	9
Single-Unit Trucks					4					1					1					3	9
Articulated Trucks					0					0					0					0	0
Total Exiting Leg					5					4					6					3	18

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	11	52	8	0	71	7	7	25	0	39	39	54	1	0	94	1	15	12	0	28	232
4:15 PM	11	47	9	0	67	10	11	22	0	43	33	67	2	0	102	2	11	16	0	29	241
4:30 PM	12	44	7	0	63	6	17	23	0	46	45	68	4	0	117	2	7	15	0	24	250
4:45 PM	11	66	10	0	87	6	11	36	0	53	26	69	2	0	97	3	11	15	0	29	266
Total	45	209	34	0	288	29	46	106	0	181	143	258	9	0	410	8	44	58	0	110	989
5:00 PM	9	64	7	0	80	12	24	30	0	66	40	92	2	0	134	1	19	35	0	55	335
5:15 PM	10	70	7	0	87	15	11	31	0	57	34	75	1	0	110	1	19	9	0	29	283
5:30 PM	9	89	18	0	116	12	19	57	0	88	36	75	2	0	113	0	20	9	0	29	346
5:45 PM	8	75	10	0	93	7	17	30	0	54	38	77	0	0	115	3	6	12	0	21	283
Total	36	298	42	0	376	46	71	148	0	265	148	319	5	0	472	5	64	65	0	134	1247
Grand Total	81	507	76	0	664	75	117	254	0	446	291	577	14	0	882	13	108	123	0	244	2236
Approach %	12.2	76.4	11.4	0.0		16.8	26.2	57.0	0.0		33.0	65.4	1.6	0.0		5.3	44.3	50.4	0.0		
Total %	3.6	22.7	3.4	0.0	29.7	3.4	5.2	11.4	0.0	19.9	13.0	25.8	0.6	0.0	39.4	0.6	4.8	5.5	0.0	10.9	
Exiting Leg Total					775					475					774					212	2236

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	9	64	7	0	80	12	24	30	0	66	40	92	2	0	134	1	19	35	0	55	335
5:15 PM	10	70	7	0	87	15	11	31	0	57	34	75	1	0	110	1	19	9	0	29	283
5:30 PM	9	89	18	0	116	12	19	57	0	88	36	75	2	0	113	0	20	9	0	29	346
5:45 PM	8	75	10	0	93	7	17	30	0	54	38	77	0	0	115	3	6	12	0	21	283
Total Volume	36	298	42	0	376	46	71	148	0	265	148	319	5	0	472	5	64	65	0	134	1247
% Approach Total	9.6	79.3	11.2	0.0		17.4	26.8	55.8	0.0		31.4	67.6	1.1	0.0		3.7	47.8	48.5	0.0		
PHF	0.900	0.837	0.583	0.000	0.810	0.767	0.740	0.649	0.000	0.753	0.925	0.867	0.625	0.000	0.881	0.417	0.800	0.464	0.000	0.609	0.901
Entering Leg	36	298	42	0	376	46	71	148	0	265	148	319	5	0	472	5	64	65	0	134	1247
Exiting Leg					430					254					451					112	1247
Total					806					519					923					246	2494

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Light Goods Vehicle

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	4	3	0	8	3	2	3	0	8	3	10	0	0	13	0	3	0	0	3	32
4:15 PM	3	8	3	0	14	1	2	3	0	6	5	11	0	0	16	0	3	0	0	3	39
4:30 PM	1	13	0	0	14	2	1	0	0	3	5	13	0	0	18	1	0	2	0	3	38
4:45 PM	0	4	2	0	6	2	1	6	0	9	4	5	0	0	9	0	2	1	0	3	27
Total	5	29	8	0	42	8	6	12	0	26	17	39	0	0	56	1	8	3	0	12	136
5:00 PM	1	7	0	0	8	1	3	6	0	10	4	6	0	0	10	0	2	1	0	3	31
5:15 PM	1	7	1	0	9	0	3	3	0	6	4	4	0	0	8	0	2	3	0	5	28
5:30 PM	1	6	1	0	8	1	3	4	0	8	1	7	0	0	8	0	3	4	0	7	31
5:45 PM	1	6	0	0	7	1	1	5	0	7	1	5	0	0	6	1	2	0	0	3	23
Total	4	26	2	0	32	3	10	18	0	31	10	22	0	0	32	1	9	8	0	18	113
Grand Total	9	55	10	0	74	11	16	30	0	57	27	61	0	0	88	2	17	11	0	30	249
Approach %	12.2	74.3	13.5	0.0		19.3	28.1	52.6	0.0		30.7	69.3	0.0	0.0		6.7	56.7	36.7	0.0		
Total %	3.6	22.1	4.0	0.0	29.7	4.4	6.4	12.0	0.0	22.9	10.8	24.5	0.0	0.0	35.3	0.8	6.8	4.4	0.0	12.0	
Exiting Leg Total					83					54					87					25	249

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	4	3	0	8	3	2	3	0	8	3	10	0	0	13	0	3	0	0	3	32
4:15 PM	3	8	3	0	14	1	2	3	0	6	5	11	0	0	16	0	3	0	0	3	39
4:30 PM	1	13	0	0	14	2	1	0	0	3	5	13	0	0	18	1	0	2	0	3	38
4:45 PM	0	4	2	0	6	2	1	6	0	9	4	5	0	0	9	0	2	1	0	3	27
Total Volume	5	29	8	0	42	8	6	12	0	26	17	39	0	0	56	1	8	3	0	12	136
% Approach Total	11.9	69.0	19.0	0.0		30.8	23.1	46.2	0.0		30.4	69.6	0.0	0.0		8.3	66.7	25.0	0.0		
PHF	0.417	0.558	0.667	0.000	0.750	0.667	0.750	0.500	0.000	0.722	0.850	0.750	0.000	0.000	0.778	0.250	0.667	0.375	0.000	1.000	0.872
Entering Leg	5	29	8	0	42	8	6	12	0	26	17	39	0	0	56	1	8	3	0	12	136
Exiting Leg					50					33					42					11	136
Total					92					59					98					23	272

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	4
4:15 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
Total	0	2	0	0	2	0	0	3	0	3	3	1	0	0	4	0	0	0	0	0	9
5:00 PM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	3	0	3	4	1	0	0	5	0	0	0	0	0	8
Grand Total	0	2	0	0	2	0	0	6	0	6	7	2	0	0	9	0	0	0	0	0	17
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		77.8	22.2	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	11.8	0.0	0.0	11.8	0.0	0.0	35.3	0.0	35.3	41.2	11.8	0.0	0.0	52.9	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					2					7					8					0	17

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	4
4:15 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
Total Volume	0	2	0	0	2	0	0	3	0	3	3	1	0	0	4	0	0	0	0	0	9
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		75.0	25.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.750	0.000	0.750	0.750	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.563
Entering Leg	0	2	0	0	2	0	0	3	0	3	3	1	0	0	4	0	0	0	0	0	9
Exiting Leg					1					3					5					0	9
Total					3					6					9					0	18

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Single-Unit Trucks

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3
4:30 PM	0	0	0	0	0	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	1	0	3	0	1	0	0	1	4
Total	1	1	0	0	2	0	0	0	0	0	0	3	2	0	5	0	1	1	0	2	9
5:00 PM	0	0	0	0	0	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	0	0	0	0	0
5:30 PM	0	0	0	0	0	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	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	1	1	0	0	2	0	0	0	0	0	0	4	2	0	6	0	1	1	0	2	10
Approach %	50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	66.7	33.3	0.0		0.0	50.0	50.0	0.0		
Total %	10.0	10.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	20.0	0.0	60.0	0.0	10.0	10.0	0.0	20.0	
Exiting Leg Total					5					1					1					3	10

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3
4:30 PM	0	0	0	0	0	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	1	0	3	0	1	0	0	1	4
Total Volume	1	1	0	0	2	0	0	0	0	0	0	3	2	0	5	0	1	1	0	2	9
% Approach Total	50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	60.0	40.0	0.0		0.0	50.0	50.0	0.0		
PHF	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.500	0.000	0.417	0.000	0.250	0.250	0.000	0.500	0.563
Entering Leg	1	1	0	0	2	0	0	0	0	0	0	3	2	0	5	0	1	1	0	2	9
Exiting Leg					4					1					1					3	9
Total					6					1					6					5	18

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	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	0	0	0	0	0
4:30 PM	0	0	0	0	0	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	0	0	0	0	0
Total	0	0	0	0	0	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	0	0	0	0	0
5:15 PM	0	0	0	0	0	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	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North					Deer Street from East					Maplewood Avenue from South					Deer Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	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	0	0	0	0	0
4:30 PM	0	0	0	0	0	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	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Maplewood Avenue from North							Deer Street from East							Maplewood Avenue from South							Deer Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1	3
Total	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	1	0	0	0	1	4
Grand Total	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	1	0	0	0	1	4
Approach %	100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
Total %	25.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	25.0	0.0	0.0	0.0	25.0	
Exiting Leg Total							3							0							0							1	4

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Maplewood Avenue from North							Deer Street from East							Maplewood Avenue from South							Deer Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1
5:45 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1	3
Total Volume	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	1	0	0	0	1	4
% Approach Total	100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.333
Entering Leg	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	1	0	0	0	1	4
Exiting Leg							3							0							0							1	4
Total							4							0							2							2	8

PDI File #: **196718 D**
Location: **N: Maplewood Avenue S: Maplewood Avenue**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Maplewood Avenue from North							Deer Street from East							Maplewood Avenue from South							Deer Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	1	1	2	0	0	0	0	1	1	2	6
4:15 PM	0	0	0	0	0	2	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
4:45 PM	0	0	0	0	1	0	1	0	0	0	0	0	5	5	0	0	0	0	1	2	3	0	0	0	0	2	0	2	11
Total	0	0	0	0	1	4	5	0	0	0	0	1	12	13	0	0	0	0	2	3	5	0	0	0	0	3	1	4	27
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	3
5:30 PM	0	0	0	0	1	0	1	0	0	0	0	1	1	2	0	0	0	0	2	1	3	0	0	0	0	0	0	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	2	2	4
Total	0	0	0	0	1	0	1	0	0	0	0	1	3	4	0	0	0	0	3	3	6	0	0	0	0	1	2	3	14
Grand Total	0	0	0	0	2	4	6	0	0	0	0	2	15	17	0	0	0	0	5	6	11	0	0	0	0	4	3	7	41
Approach %	0	0	0	0	33.3	66.7		0	0	0	0	11.8	88.2		0	0	0	0	45.5	54.5		0	0	0	0	57.1	42.9		
Total %	0	0	0	0	4.88	9.76	14.6	0	0	0	0	4.88	36.6	41.5	0	0	0	0	12.2	14.6	26.8	0	0	0	0	9.76	7.32	17.1	
Exiting Leg Total							6							17							11							7	41

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Maplewood Avenue from North							Deer Street from East							Maplewood Avenue from South							Deer Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	1	1	2	0	0	0	0	1	1	2	6
4:15 PM	0	0	0	0	0	2	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
4:45 PM	0	0	0	0	1	0	1	0	0	0	0	0	5	5	0	0	0	0	1	2	3	0	0	0	0	2	0	2	11
Total Volume	0	0	0	0	1	4	5	0	0	0	0	1	12	13	0	0	0	0	2	3	5	0	0	0	0	3	1	4	27
% Approach Total	0.0	0.0	0.0	0.0	20.0	80.0		0.0	0.0	0.0	0.0	7.7	92.3		0.0	0.0	0.0	0.0	40.0	60.0		0.0	0.0	0.0	0.0	75.0	25.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.500	0.625	0.000	0.000	0.000	0.000	0.250	0.600	0.650	0.000	0.000	0.000	0.000	0.500	0.375	0.417	0.000	0.000	0.000	0.000	0.375	0.250	0.500	0.614
Entering Leg	0	0	0	0	1	4	5	0	0	0	0	1	12	13	0	0	0	0	2	3	5	0	0	0	0	3	1	4	27
Exiting Leg							5							13							5							4	27
Total							10							26							10							8	54

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	2	2	0	4	0	4	0	4	7	0	0	7	15
4:15 PM	1	0	0	1	1	2	0	3	6	2	0	8	12
4:30 PM	0	0	0	0	1	7	0	8	8	0	0	8	16
4:45 PM	2	0	0	2	0	2	1	3	4	0	0	4	9
Total	5	2	0	7	2	15	1	18	25	2	0	27	52
5:00 PM	1	0	0	1	1	7	0	8	7	0	0	7	16
5:15 PM	0	0	0	0	0	9	0	9	5	1	0	6	15
5:30 PM	2	1	0	3	0	5	0	5	5	1	0	6	14
5:45 PM	1	1	0	2	0	2	0	2	9	2	0	11	15
Total	4	2	0	6	1	23	0	24	26	4	0	30	60
Grand Total	9	4	0	13	3	38	1	42	51	6	0	57	112
Approach %	69.2	30.8	0.0		7.1	90.5	2.4		89.5	10.5	0.0		
Total %	8.0	3.6	0.0	11.6	2.7	33.9	0.9	37.5	45.5	5.4	0.0	50.9	
Exiting Leg Total				9				56				47	112
Cars	9	4	0	13	3	38	1	42	51	6	0	57	112
% Cars	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0
Exiting Leg Total				9				56				47	112
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	1	0	0	1	1	7	0	8	7	0	0	7	16
5:15 PM	0	0	0	0	0	9	0	9	5	1	0	6	15
5:30 PM	2	1	0	3	0	5	0	5	5	1	0	6	14
5:45 PM	1	1	0	2	0	2	0	2	9	2	0	11	15
Total Volume	4	2	0	6	1	23	0	24	26	4	0	30	60
% Approach Total	66.7	33.3	0.0		4.2	95.8	0.0		86.7	13.3	0.0		
PHF	0.500	0.500	0.000	0.500	0.250	0.639	0.000	0.667	0.722	0.500	0.000	0.682	0.938
Cars	4	2	0	6	1	23	0	24	26	4	0	30	60
Cars %	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	100.0
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cars Enter Leg	4	2	0	6	1	23	0	24	26	4	0	30	60
Heavy Enter Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	4	2	0	6	1	23	0	24	26	4	0	30	60
Cars Exiting Leg				5				28				27	60
Heavy Exiting Leg				0				0				0	0
Total Exiting Leg				5				28				27	60

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	2	2	0	4	0	4	0	4	7	0	0	7	15
4:15 PM	1	0	0	1	1	2	0	3	6	2	0	8	12
4:30 PM	0	0	0	0	1	7	0	8	8	0	0	8	16
4:45 PM	2	0	0	2	0	2	1	3	4	0	0	4	9
Total	5	2	0	7	2	15	1	18	25	2	0	27	52
5:00 PM	1	0	0	1	1	7	0	8	7	0	0	7	16
5:15 PM	0	0	0	0	0	9	0	9	5	1	0	6	15
5:30 PM	2	1	0	3	0	5	0	5	5	1	0	6	14
5:45 PM	1	1	0	2	0	2	0	2	9	2	0	11	15
Total	4	2	0	6	1	23	0	24	26	4	0	30	60
Grand Total	9	4	0	13	3	38	1	42	51	6	0	57	112
Approach %	69.2	30.8	0.0		7.1	90.5	2.4		89.5	10.5	0.0		
Total %	8.0	3.6	0.0	11.6	2.7	33.9	0.9	37.5	45.5	5.4	0.0	50.9	
Exiting Leg Total				9				56				47	112

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	1	0	0	1	1	7	0	8	7	0	0	7	16
5:15 PM	0	0	0	0	0	9	0	9	5	1	0	6	15
5:30 PM	2	1	0	3	0	5	0	5	5	1	0	6	14
5:45 PM	1	1	0	2	0	2	0	2	9	2	0	11	15
Total Volume	4	2	0	6	1	23	0	24	26	4	0	30	60
% Approach Total	66.7	33.3	0.0		4.2	95.8	0.0		86.7	13.3	0.0		
PHF	0.500	0.500	0.000	0.500	0.250	0.639	0.000	0.667	0.722	0.500	0.000	0.682	0.938
Entering Leg	4	2	0	6	1	23	0	24	26	4	0	30	60
Exiting Leg				5				28				27	60
Total				11				52				57	120

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses				0				0				0	0
Single-Unit Trucks				0				0				0	0
Articulated Trucks				0				0				0	0
Total Exiting Leg				0				0				0	0

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	2	2	0	4	0	4	0	4	6	0	0	6	14
4:15 PM	1	0	0	1	1	2	0	3	6	2	0	8	12
4:30 PM	0	0	0	0	1	7	0	8	6	0	0	6	14
4:45 PM	1	0	0	1	0	2	0	2	4	0	0	4	7
Total	4	2	0	6	2	15	0	17	22	2	0	24	47
5:00 PM	1	0	0	1	0	5	0	5	7	0	0	7	13
5:15 PM	0	0	0	0	0	8	0	8	5	1	0	6	14
5:30 PM	2	1	0	3	0	4	0	4	5	1	0	6	13
5:45 PM	1	1	0	2	0	2	0	2	9	2	0	11	15
Total	4	2	0	6	0	19	0	19	26	4	0	30	55
Grand Total	8	4	0	12	2	34	0	36	48	6	0	54	102
Approach %	66.7	33.3	0.0		5.6	94.4	0.0		88.9	11.1	0.0		
Total %	7.8	3.9	0.0	11.8	2.0	33.3	0.0	35.3	47.1	5.9	0.0	52.9	
Exiting Leg Total				8				52				42	102

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	1	0	0	1	0	5	0	5	7	0	0	7	13
5:15 PM	0	0	0	0	0	8	0	8	5	1	0	6	14
5:30 PM	2	1	0	3	0	4	0	4	5	1	0	6	13
5:45 PM	1	1	0	2	0	2	0	2	9	2	0	11	15
Total Volume	4	2	0	6	0	19	0	19	26	4	0	30	55
% Approach Total	66.7	33.3	0.0		0.0	100.0	0.0		86.7	13.3	0.0		
PHF	0.500	0.500	0.000	0.500	0.000	0.594	0.000	0.594	0.722	0.500	0.000	0.682	0.917
Entering Leg	4	2	0	6	0	19	0	19	26	4	0	30	55
Exiting Leg				4				28				23	55
Total				10				47				53	110

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Light Goods Vehicle**

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 PM	1	0	0	1	0	0	1	1	0	0	0	0	2
Total	1	0	0	1	0	0	1	1	3	0	0	3	5
5:00 PM	0	0	0	0	1	2	0	3	0	0	0	0	3
5:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	4	0	5	0	0	0	0	5
Grand Total	1	0	0	1	1	4	1	6	3	0	0	3	10
Approach %	100.0	0.0	0.0		16.7	66.7	16.7		100.0	0.0	0.0		
Total %	10.0	0.0	0.0	10.0	10.0	40.0	10.0	60.0	30.0	0.0	0.0	30.0	
Exiting Leg Total				1				4				5	10

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 PM	1	0	0	1	0	0	1	1	0	0	0	0	2
5:00 PM	0	0	0	0	1	2	0	3	0	0	0	0	3
5:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	1	0	0	1	1	3	1	5	2	0	0	2	8
% Approach Total	100.0	0.0	0.0		20.0	60.0	20.0		100.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.250	0.375	0.250	0.417	0.250	0.000	0.000	0.250	0.667
Entering Leg	1	0	0	1	1	3	1	5	2	0	0	2	8
Exiting Leg				1				3				4	8
Total				2				8				6	16

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Kennebunk Savings Bank Driveway				Vaughan Street				Vaughan Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Kennebunk Savings Bank Driveway						Vaughan Street						Vaughan Street						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
5:15 PM	0	0	0	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	1	0	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	
Exiting Leg Total						0						2						0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Kennebunk Savings Bank Driveway						Vaughan Street						Vaughan Street						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	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	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
Exiting Leg						0						2						0	2
Total						0						2						2	4

PDI File #: **196718 E**
Location: **N: Kennebunk Savings Bank Driveway**
Location: **E: Vaughan Street W: Vaughan Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Kennebunk Savings Bank Driveway						Vaughan Street						Vaughan Street						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	1	0	0	0	1	0	1	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	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	1	2	3	0	0	0	1	0	1	0	0	0	0	0	0	4
Approach %	0	0	0	33.333	66.667		0	0	0	100	0		0	0	0	0	0		
Total %	0	0	0	25	50	75	0	0	0	25	0	25	0	0	0	0	0	0	
Exiting Leg Total						3						1						0	4

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Kennebunk Savings Bank Driveway						Vaughan Street						Vaughan Street						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	2
Exiting Leg						1						1						0	2
Total						2						2						0	4

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	2	5	0	7	2	2	0	4	5	5	0	10	21
4:15 PM	2	0	0	2	5	1	0	6	3	4	0	7	15
4:30 PM	6	2	0	8	3	2	0	5	2	7	1	10	23
4:45 PM	2	2	0	4	4	0	0	4	3	3	0	6	14
Total	12	9	0	21	14	5	0	19	13	19	1	33	73
5:00 PM	7	4	0	11	5	1	0	6	3	4	0	7	24
5:15 PM	4	4	0	8	2	4	0	6	1	3	0	4	18
5:30 PM	4	0	1	5	6	1	0	7	4	3	0	7	19
5:45 PM	2	1	0	3	7	0	0	7	3	5	0	8	18
Total	17	9	1	27	20	6	0	26	11	15	0	26	79
Grand Total	29	18	1	48	34	11	0	45	24	34	1	59	152
Approach %	60.4	37.5	2.1		75.6	24.4	0.0		40.7	57.6	1.7		
Total %	19.1	11.8	0.7	31.6	22.4	7.2	0.0	29.6	15.8	22.4	0.7	38.8	
Exiting Leg Total				69				42				41	152
Cars	29	18	1	48	34	11	0	45	24	34	1	59	152
% Cars	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0
Exiting Leg Total				69				42				41	152
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:30 PM	6	2	0	8	3	2	0	5	2	7	1	10	23
4:45 PM	2	2	0	4	4	0	0	4	3	3	0	6	14
5:00 PM	7	4	0	11	5	1	0	6	3	4	0	7	24
5:15 PM	4	4	0	8	2	4	0	6	1	3	0	4	18
Total Volume	19	12	0	31	14	7	0	21	9	17	1	27	79
% Approach Total	61.3	38.7	0.0		66.7	33.3	0.0		33.3	63.0	3.7		
PHF	0.679	0.750	0.000	0.705	0.700	0.438	0.000	0.875	0.750	0.607	0.250	0.675	0.823
Cars	19	12	0	31	14	7	0	21	9	17	1	27	79
Cars %	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cars Enter Leg	19	12	0	31	14	7	0	21	9	17	1	27	79
Heavy Enter Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	19	12	0	31	14	7	0	21	9	17	1	27	79
Cars Exiting Leg				31				21				27	79
Heavy Exiting Leg				0				0				0	0
Total Exiting Leg				31				21				27	79

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	2	5	0	7	2	2	0	4	5	5	0	10	21
4:15 PM	2	0	0	2	5	1	0	6	3	4	0	7	15
4:30 PM	6	2	0	8	3	2	0	5	2	7	1	10	23
4:45 PM	2	2	0	4	4	0	0	4	3	3	0	6	14
Total	12	9	0	21	14	5	0	19	13	19	1	33	73
5:00 PM	7	4	0	11	5	1	0	6	3	4	0	7	24
5:15 PM	4	4	0	8	2	4	0	6	1	3	0	4	18
5:30 PM	4	0	1	5	6	1	0	7	4	3	0	7	19
5:45 PM	2	1	0	3	7	0	0	7	3	5	0	8	18
Total	17	9	1	27	20	6	0	26	11	15	0	26	79
Grand Total	29	18	1	48	34	11	0	45	24	34	1	59	152
Approach %	60.4	37.5	2.1		75.6	24.4	0.0		40.7	57.6	1.7		
Total %	19.1	11.8	0.7	31.6	22.4	7.2	0.0	29.6	15.8	22.4	0.7	38.8	
Exiting Leg Total				69				42				41	152

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:30 PM	6	2	0	8	3	2	0	5	2	7	1	10	23
4:45 PM	2	2	0	4	4	0	0	4	3	3	0	6	14
5:00 PM	7	4	0	11	5	1	0	6	3	4	0	7	24
5:15 PM	4	4	0	8	2	4	0	6	1	3	0	4	18
Total Volume	19	12	0	31	14	7	0	21	9	17	1	27	79
% Approach Total	61.3	38.7	0.0		66.7	33.3	0.0		33.3	63.0	3.7		
PHF	0.679	0.750	0.000	0.705	0.700	0.438	0.000	0.875	0.750	0.607	0.250	0.675	0.823
Entering Leg	19	12	0	31	14	7	0	21	9	17	1	27	79
Exiting Leg				31				21				27	79
Total				62				42				54	158

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses				0				0				0	0
Single-Unit Trucks				0				0				0	0
Articulated Trucks				0				0				0	0
Total Exiting Leg				0				0				0	0

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	2	1	0	3	2	2	0	4	5	4	0	9	16
4:15 PM	2	0	0	2	5	1	0	6	3	4	0	7	15
4:30 PM	6	1	0	7	2	2	0	4	1	6	1	8	19
4:45 PM	1	1	0	2	3	0	0	3	2	3	0	5	10
Total	11	3	0	14	12	5	0	17	11	17	1	29	60
5:00 PM	5	2	0	7	5	0	0	5	3	4	0	7	19
5:15 PM	4	3	0	7	1	3	0	4	1	3	0	4	15
5:30 PM	4	0	1	5	5	0	0	5	4	2	0	6	16
5:45 PM	2	0	0	2	6	0	0	6	2	5	0	7	15
Total	15	5	1	21	17	3	0	20	10	14	0	24	65
Grand Total	26	8	1	35	29	8	0	37	21	31	1	53	125
Approach %	74.3	22.9	2.9		78.4	21.6	0.0		39.6	58.5	1.9		
Total %	20.8	6.4	0.8	28.0	23.2	6.4	0.0	29.6	16.8	24.8	0.8	42.4	
Exiting Leg Total				61				29				35	125

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	5	2	0	7	5	0	0	5	3	4	0	7	19
5:15 PM	4	3	0	7	1	3	0	4	1	3	0	4	15
5:30 PM	4	0	1	5	5	0	0	5	4	2	0	6	16
5:45 PM	2	0	0	2	6	0	0	6	2	5	0	7	15
Total Volume	15	5	1	21	17	3	0	20	10	14	0	24	65
% Approach Total	71.4	23.8	4.8		85.0	15.0	0.0		41.7	58.3	0.0		
PHF	0.750	0.417	0.250	0.750	0.708	0.250	0.000	0.833	0.625	0.700	0.000	0.857	0.855
Entering Leg	15	5	1	21	17	3	0	20	10	14	0	24	65
Exiting Leg				32				15				18	65
Total				53				35				42	130

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Light Goods Vehicle**

	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	0	4	0	4	0	0	0	0	0	1	0	1	5
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	1	1	0	0	1	1	1	0	2	4
4:45 PM	1	1	0	2	1	0	0	1	1	0	0	1	4
Total	1	6	0	7	2	0	0	2	2	2	0	4	13
5:00 PM	2	2	0	4	0	1	0	1	0	0	0	0	5
5:15 PM	0	1	0	1	1	1	0	2	0	0	0	0	3
5:30 PM	0	0	0	0	1	1	0	2	0	1	0	1	3
5:45 PM	0	1	0	1	1	0	0	1	1	0	0	1	3
Total	2	4	0	6	3	3	0	6	1	1	0	2	14
Grand Total	3	10	0	13	5	3	0	8	3	3	0	6	27
Approach %	23.1	76.9	0.0		62.5	37.5	0.0		50.0	50.0	0.0		
Total %	11.1	37.0	0.0	48.1	18.5	11.1	0.0	29.6	11.1	11.1	0.0	22.2	
Exiting Leg Total				8				13				6	27

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:30 PM	0	1	0	1	1	0	0	1	1	1	0	2	4
4:45 PM	1	1	0	2	1	0	0	1	1	0	0	1	4
5:00 PM	2	2	0	4	0	1	0	1	0	0	0	0	5
5:15 PM	0	1	0	1	1	1	0	2	0	0	0	0	3
Total Volume	3	5	0	8	3	2	0	5	2	1	0	3	16
% Approach Total	37.5	62.5	0.0		60.0	40.0	0.0		66.7	33.3	0.0		
PHF	0.375	0.625	0.000	0.500	0.750	0.500	0.000	0.625	0.500	0.250	0.000	0.375	0.800
Entering Leg	3	5	0	8	3	2	0	5	2	1	0	3	16
Exiting Leg				4				7				5	16
Total				12				12				8	32

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	Vaughan Street				Green Street				Vaughan Street				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street				Green Street				Vaughan Street				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Green Street from East				Vaughan Street from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Vaughan Street from North						Green Street from East						Vaughan Street from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
5:15 PM	0	0	0	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	1	0	0	0	1	1
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	3
Grand Total	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	3
Approach %	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
Total %	0.0	33.3	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	0.0	66.7	
Exiting Leg Total						2						1						0	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Vaughan Street from North						Green Street from East						Vaughan Street from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
5:00 PM	0	0	0	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	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2
Total Volume	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	3
% Approach Total	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.375
Entering Leg	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	3
Exiting Leg						2						1						0	3
Total						3						1						2	6

PDI File #: **196718 F**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **E: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Vaughan Street from North						Green Street from East						Vaughan Street from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	3	3	0	0	0	0	4	4	0	0	0	0	0	0	7
4:45 PM	0	0	0	0	1	1	0	0	0	0	2	2	0	0	0	0	0	0	3
Total	0	0	0	1	4	5	0	0	0	1	6	7	0	0	0	0	0	0	12
5:00 PM	0	0	0	0	2	2	0	0	0	1	2	3	0	0	0	5	0	5	10
5:15 PM	0	0	0	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	2	2	0	0	0	0	1	1	3
5:45 PM	0	0	0	0	1	1	0	0	0	0	3	3	0	0	0	0	0	0	4
Total	0	0	0	0	3	3	0	0	0	1	7	8	0	0	0	5	1	6	17
Grand Total	0	0	0	1	7	8	0	0	0	2	13	15	0	0	0	5	1	6	29
Approach %	0	0	0	12.5	87.5		0	0	0	13.333	86.667		0	0	0	83.333	16.667		
Total %	0	0	0	3.4483	24.138	27.586	0	0	0	6.8966	44.828	51.724	0	0	0	17.241	3.4483	20.69	
Exiting Leg Total						8						15						6	29

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Vaughan Street from North						Green Street from East						Vaughan Street from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:15 PM	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	3	3	0	0	0	0	4	4	0	0	0	0	0	0	7
4:45 PM	0	0	0	0	1	1	0	0	0	0	2	2	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	2	2	0	0	0	1	2	3	0	0	0	5	0	5	10
Total Volume	0	0	0	1	6	7	0	0	0	2	8	10	0	0	0	5	0	5	22
% Approach Total	0.0	0.0	0.0	14.3	85.7		0.0	0.0	0.0	20.0	80.0		0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.250	0.500	0.583	0.000	0.000	0.000	0.500	0.500	0.625	0.000	0.000	0.000	0.250	0.000	0.250	0.550
Entering Leg	0	0	0	1	6	7	0	0	0	2	8	10	0	0	0	5	0	5	22
Exiting Leg						7						10						5	22
Total						14						20						10	44

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	1	7	0	8	6	1	0	7	0	0	0	0	15
4:15 PM	0	2	0	2	9	0	0	9	0	1	0	1	12
4:30 PM	0	5	0	5	9	0	1	10	1	0	0	1	16
4:45 PM	2	4	1	7	5	0	0	5	0	2	0	2	14
Total	3	18	1	22	29	1	1	31	1	3	0	4	57
5:00 PM	6	6	0	12	8	1	2	11	1	7	0	8	31
5:15 PM	4	10	0	14	5	0	0	5	0	2	0	2	21
5:30 PM	2	5	0	7	8	1	0	9	0	2	0	2	18
5:45 PM	4	2	0	6	10	2	0	12	1	1	0	2	20
Total	16	23	0	39	31	4	2	37	2	12	0	14	90
Grand Total	19	41	1	61	60	5	3	68	3	15	0	18	147
Approach %	31.1	67.2	1.6		88.2	7.4	4.4		16.7	83.3	0.0		
Total %	12.9	27.9	0.7	41.5	40.8	3.4	2.0	46.3	2.0	10.2	0.0	12.2	
Exiting Leg Total				76				47				24	147
Cars	19	41	1	61	60	5	3	68	3	15	0	18	147
% Cars	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0
Exiting Leg Total				76				47				24	147
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	6	6	0	12	8	1	2	11	1	7	0	8	31
5:15 PM	4	10	0	14	5	0	0	5	0	2	0	2	21
5:30 PM	2	5	0	7	8	1	0	9	0	2	0	2	18
5:45 PM	4	2	0	6	10	2	0	12	1	1	0	2	20
Total Volume	16	23	0	39	31	4	2	37	2	12	0	14	90
% Approach Total	41.0	59.0	0.0		83.8	10.8	5.4		14.3	85.7	0.0		
PHF	0.667	0.575	0.000	0.696	0.775	0.500	0.250	0.771	0.500	0.429	0.000	0.438	0.726
Cars	16	23	0	39	31	4	2	37	2	12	0	14	90
Cars %	100.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cars Enter Leg	16	23	0	39	31	4	2	37	2	12	0	14	90
Heavy Enter Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	16	23	0	39	31	4	2	37	2	12	0	14	90
Cars Exiting Leg				43				27				20	90
Heavy Exiting Leg				0				0				0	0
Total Exiting Leg				43				27				20	90

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	1	7	0	8	6	1	0	7	0	0	0	0	15
4:15 PM	0	2	0	2	9	0	0	9	0	1	0	1	12
4:30 PM	0	5	0	5	9	0	1	10	1	0	0	1	16
4:45 PM	2	4	1	7	5	0	0	5	0	2	0	2	14
Total	3	18	1	22	29	1	1	31	1	3	0	4	57
5:00 PM	6	6	0	12	8	1	2	11	1	7	0	8	31
5:15 PM	4	10	0	14	5	0	0	5	0	2	0	2	21
5:30 PM	2	5	0	7	8	1	0	9	0	2	0	2	18
5:45 PM	4	2	0	6	10	2	0	12	1	1	0	2	20
Total	16	23	0	39	31	4	2	37	2	12	0	14	90
Grand Total	19	41	1	61	60	5	3	68	3	15	0	18	147
Approach %	31.1	67.2	1.6		88.2	7.4	4.4		16.7	83.3	0.0		
Total %	12.9	27.9	0.7	41.5	40.8	3.4	2.0	46.3	2.0	10.2	0.0	12.2	
Exiting Leg Total				76				47				24	147

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	6	6	0	12	8	1	2	11	1	7	0	8	31
5:15 PM	4	10	0	14	5	0	0	5	0	2	0	2	21
5:30 PM	2	5	0	7	8	1	0	9	0	2	0	2	18
5:45 PM	4	2	0	6	10	2	0	12	1	1	0	2	20
Total Volume	16	23	0	39	31	4	2	37	2	12	0	14	90
% Approach Total	41.0	59.0	0.0		83.8	10.8	5.4		14.3	85.7	0.0		
PHF	0.667	0.575	0.000	0.696	0.775	0.500	0.250	0.771	0.500	0.429	0.000	0.438	0.726
Entering Leg	16	23	0	39	31	4	2	37	2	12	0	14	90
Exiting Leg				43				27				20	90
Total				82				64				34	180

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses				0				0				0	0
Single-Unit Trucks				0				0				0	0
Articulated Trucks				0				0				0	0
Total Exiting Leg				0				0				0	0

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	1	3	0	4	5	1	0	6	0	0	0	0	10
4:15 PM	0	2	0	2	9	0	0	9	0	1	0	1	12
4:30 PM	0	4	0	4	7	0	1	8	1	0	0	1	13
4:45 PM	2	2	1	5	4	0	0	4	0	2	0	2	11
Total	3	11	1	15	25	1	1	27	1	3	0	4	46
5:00 PM	6	3	0	9	8	1	2	11	1	7	0	8	28
5:15 PM	4	9	0	13	4	0	0	4	0	2	0	2	19
5:30 PM	2	5	0	7	7	0	0	7	0	1	0	1	15
5:45 PM	3	1	0	4	9	2	0	11	1	1	0	2	17
Total	15	18	0	33	28	3	2	33	2	11	0	13	79
Grand Total	18	29	1	48	53	4	3	60	3	14	0	17	125
Approach %	37.5	60.4	2.1		88.3	6.7	5.0		17.6	82.4	0.0		
Total %	14.4	23.2	0.8	38.4	42.4	3.2	2.4	48.0	2.4	11.2	0.0	13.6	
Exiting Leg Total				68				35				22	125

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	6	3	0	9	8	1	2	11	1	7	0	8	28
5:15 PM	4	9	0	13	4	0	0	4	0	2	0	2	19
5:30 PM	2	5	0	7	7	0	0	7	0	1	0	1	15
5:45 PM	3	1	0	4	9	2	0	11	1	1	0	2	17
Total Volume	15	18	0	33	28	3	2	33	2	11	0	13	79
% Approach Total	45.5	54.5	0.0		84.8	9.1	6.1		15.4	84.6	0.0		
PHF	0.625	0.500	0.000	0.635	0.778	0.375	0.250	0.750	0.500	0.393	0.000	0.406	0.705
Entering Leg	15	18	0	33	28	3	2	33	2	11	0	13	79
Exiting Leg				39				22				18	79
Total				72				55				31	158

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Light Goods Vehicle**

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	4	0	4	1	0	0	1	0	0	0	0	5
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
4:45 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
Total	0	7	0	7	4	0	0	4	0	0	0	0	11
5:00 PM	0	3	0	3	0	0	0	0	0	0	0	0	3
5:15 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
5:30 PM	0	0	0	0	1	1	0	2	0	1	0	1	3
5:45 PM	1	1	0	2	1	0	0	1	0	0	0	0	3
Total	1	5	0	6	3	1	0	4	0	1	0	1	11
Grand Total	1	12	0	13	7	1	0	8	0	1	0	1	22
Approach %	7.7	92.3	0.0		87.5	12.5	0.0		0.0	100.0	0.0		
Total %	4.5	54.5	0.0	59.1	31.8	4.5	0.0	36.4	0.0	4.5	0.0	4.5	
Exiting Leg Total				8				12				2	22

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	4	0	4	1	0	0	1	0	0	0	0	5
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
4:45 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
Total Volume	0	7	0	7	4	0	0	4	0	0	0	0	11
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.438	0.000	0.438	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.550
Entering Leg	0	7	0	7	4	0	0	4	0	0	0	0	11
Exiting Leg				4				7				0	11
Total				11				11				0	22

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Vaughan Street from North				Vaughan Street from South				Office Driveway from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Vaughan Street from North						Vaughan Street from South						Office Driveway from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
5:15 PM	0	0	0	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	1	0	0	0	0	1	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2
Grand Total	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2
Approach %	0.0	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	50.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						1						1						0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Vaughan Street from North						Vaughan Street from South						Office Driveway from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	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	0	0	0
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2
% Approach Total	0.0	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2
Exiting Leg						1						1						0	2
Total						2						2						0	4

PDI File #: **196718 G**
Location: **N: Vaughan Street S: Vaughan Street**
Location: **W: Office Driveway**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Vaughan Street from North						Vaughan Street from South						Office Driveway from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	1	1	2	5
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	1	1	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
Total	0	0	0	2	1	3	0	0	0	0	2	2	0	0	0	5	6	11	16
5:00 PM	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	4	1	5	10
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	3	1	4	6
5:45 PM	0	0	0	9	2	11	0	0	0	0	0	0	0	0	0	5	0	5	16
Total	0	0	0	16	2	18	0	0	0	0	0	0	0	0	0	12	2	14	32
Grand Total	0	0	0	18	3	21	0	0	0	0	2	2	0	0	0	17	8	25	48
Approach %	0	0	0	85.714	14.286		0	0	0	0	100		0	0	0	68	32		
Total %	0	0	0	37.5	6.25	43.75	0	0	0	0	4.1667	4.1667	0	0	0	35.417	16.667	52.083	
Exiting Leg Total						21						2						25	48

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Vaughan Street from North						Vaughan Street from South						Office Driveway from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	4	1	5	10
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	3	1	4	6
5:45 PM	0	0	0	9	2	11	0	0	0	0	0	0	0	0	0	5	0	5	16
Total Volume	0	0	0	16	2	18	0	0	0	0	0	0	0	0	0	12	2	14	32
% Approach Total	0.0	0.0	0.0	88.9	11.1		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	85.7	14.3		
PHF	0.000	0.000	0.000	0.444	0.250	0.409	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600	0.500	0.700	0.500
Entering Leg	0	0	0	16	2	18	0	0	0	0	0	0	0	0	0	12	2	14	32
Exiting Leg						18						0						14	32
Total						36						0						28	64

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	48	2	0	50	4	8	0	12	5	55	0	60	122
4:15 PM	40	3	0	43	4	16	1	21	8	50	0	58	122
4:30 PM	51	7	0	58	5	9	0	14	9	50	0	59	131
4:45 PM	52	3	0	55	6	18	0	24	15	36	0	51	130
Total	191	15	0	206	19	51	1	71	37	191	0	228	505
5:00 PM	76	6	0	82	7	9	0	16	8	63	0	71	169
5:15 PM	65	0	1	66	3	16	0	19	10	51	0	61	146
5:30 PM	86	2	0	88	3	16	0	19	15	54	0	69	176
5:45 PM	79	2	0	81	2	11	0	13	9	46	1	56	150
Total	306	10	1	317	15	52	0	67	42	214	1	257	641
Grand Total	497	25	1	523	34	103	1	138	79	405	1	485	1146
Approach %	95.0	4.8	0.2		24.6	74.6	0.7		16.3	83.5	0.2		
Total %	43.4	2.2	0.1	45.6	3.0	9.0	0.1	12.0	6.9	35.3	0.1	42.3	
Exiting Leg Total				440				105				601	1146
Cars	488	25	1	514	34	103	1	138	79	398	1	478	1130
% Cars	98.2	100.0	100.0	98.3	100.0	100.0	100.0	100.0	100.0	98.3	100.0	98.6	98.6
Exiting Leg Total				433				105				592	1130
Heavy Vehicles	9	0	0	9	0	0	0	0	0	7	0	7	16
% Heavy Vehicles	1.8	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	1.7	0.0	1.4	1.4
Exiting Leg Total				7				0				9	16

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	76	6	0	82	7	9	0	16	8	63	0	71	169
5:15 PM	65	0	1	66	3	16	0	19	10	51	0	61	146
5:30 PM	86	2	0	88	3	16	0	19	15	54	0	69	176
5:45 PM	79	2	0	81	2	11	0	13	9	46	1	56	150
Total Volume	306	10	1	317	15	52	0	67	42	214	1	257	641
% Approach Total	96.5	3.2	0.3		22.4	77.6	0.0		16.3	83.3	0.4		
PHF	0.890	0.417	0.250	0.901	0.536	0.813	0.000	0.882	0.700	0.849	0.250	0.905	0.911
Cars	301	10	1	312	15	52	0	67	42	210	1	253	632
Cars %	98.4	100.0	100.0	98.4	100.0	100.0	0.0	100.0	100.0	98.1	100.0	98.4	98.6
Heavy Vehicles	5	0	0	5	0	0	0	0	0	4	0	4	9
Heavy Vehicles %	1.6	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	1.9	0.0	1.6	1.4
Cars Enter Leg	301	10	1	312	15	52	0	67	42	210	1	253	632
Heavy Enter Leg	5	0	0	5	0	0	0	0	0	4	0	4	9
Total Entering Leg	306	10	1	317	15	52	0	67	42	214	1	257	641
Cars Exiting Leg				226				52				354	632
Heavy Exiting Leg				4				0				5	9
Total Exiting Leg				230				52				359	641

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	47	2	0	49	4	8	0	12	5	54	0	59	120
4:15 PM	38	3	0	41	4	16	1	21	8	49	0	57	119
4:30 PM	51	7	0	58	5	9	0	14	9	50	0	59	131
4:45 PM	51	3	0	54	6	18	0	24	15	35	0	50	128
Total	187	15	0	202	19	51	1	71	37	188	0	225	498
5:00 PM	75	6	0	81	7	9	0	16	8	62	0	70	167
5:15 PM	65	0	1	66	3	16	0	19	10	50	0	60	145
5:30 PM	83	2	0	85	3	16	0	19	15	54	0	69	173
5:45 PM	78	2	0	80	2	11	0	13	9	44	1	54	147
Total	301	10	1	312	15	52	0	67	42	210	1	253	632
Grand Total	488	25	1	514	34	103	1	138	79	398	1	478	1130
Approach %	94.9	4.9	0.2		24.6	74.6	0.7		16.5	83.3	0.2		
Total %	43.2	2.2	0.1	45.5	3.0	9.1	0.1	12.2	7.0	35.2	0.1	42.3	
Exiting Leg Total				433				105				592	1130

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	75	6	0	81	7	9	0	16	8	62	0	70	167
5:15 PM	65	0	1	66	3	16	0	19	10	50	0	60	145
5:30 PM	83	2	0	85	3	16	0	19	15	54	0	69	173
5:45 PM	78	2	0	80	2	11	0	13	9	44	1	54	147
Total Volume	301	10	1	312	15	52	0	67	42	210	1	253	632
% Approach Total	96.5	3.2	0.3		22.4	77.6	0.0		16.6	83.0	0.4		
PHF	0.907	0.417	0.250	0.918	0.536	0.813	0.000	0.882	0.700	0.847	0.250	0.904	0.913
Entering Leg	301	10	1	312	15	52	0	67	42	210	1	253	632
Exiting Leg				226				52				354	632
Total				538				119				607	1264

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:15 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	4	0	0	4	0	0	0	0	0	3	0	3	7
5:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
Total	5	0	0	5	0	0	0	0	0	4	0	4	9
Grand Total	9	0	0	9	0	0	0	0	0	7	0	7	16
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	56.3	0.0	0.0	56.3	0.0	0.0	0.0	0.0	0.0	43.8	0.0	43.8	
Exiting Leg Total				7				0				9	16
Buses	9	0	0	9	0	0	0	0	0	7	0	7	16
% Buses	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0
Exiting Leg Total				7				0				9	16
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
Total Volume	5	0	0	5	0	0	0	0	0	4	0	4	9
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.417	0.000	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.750
Buses	5	0	0	5	0	0	0	0	0	4	0	4	9
Buses %	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	5	0	0	5	0	0	0	0	0	4	0	4	9
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	5	0	0	5	0	0	0	0	0	4	0	4	9
Buses				4				0				5	9
Single-Unit Trucks				0				0				0	0
Articulated Trucks				0				0				0	0
Total Exiting Leg				4				0				5	9

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	42	1	0	43	3	6	0	9	4	47	0	51	103
4:15 PM	31	3	0	34	4	16	1	21	7	41	0	48	103
4:30 PM	48	6	0	54	4	6	0	10	9	46	0	55	119
4:45 PM	45	2	0	47	6	16	0	22	12	31	0	43	112
Total	166	12	0	178	17	44	1	62	32	165	0	197	437
5:00 PM	67	6	0	73	7	8	0	15	7	58	0	65	153
5:15 PM	57	0	1	58	3	16	0	19	10	45	0	55	132
5:30 PM	75	2	0	77	3	15	0	18	15	48	0	63	158
5:45 PM	72	2	0	74	2	10	0	12	9	41	1	51	137
Total	271	10	1	282	15	49	0	64	41	192	1	234	580
Grand Total	437	22	1	460	32	93	1	126	73	357	1	431	1017
Approach %	95.0	4.8	0.2		25.4	73.8	0.8		16.9	82.8	0.2		
Total %	43.0	2.2	0.1	45.2	3.1	9.1	0.1	12.4	7.2	35.1	0.1	42.4	
Exiting Leg Total				390				96				531	1017

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	67	6	0	73	7	8	0	15	7	58	0	65	153
5:15 PM	57	0	1	58	3	16	0	19	10	45	0	55	132
5:30 PM	75	2	0	77	3	15	0	18	15	48	0	63	158
5:45 PM	72	2	0	74	2	10	0	12	9	41	1	51	137
Total Volume	271	10	1	282	15	49	0	64	41	192	1	234	580
% Approach Total	96.1	3.5	0.4		23.4	76.6	0.0		17.5	82.1	0.4		
PHF	0.903	0.417	0.250	0.916	0.536	0.766	0.000	0.842	0.683	0.828	0.250	0.900	0.918
Entering Leg	271	10	1	282	15	49	0	64	41	192	1	234	580
Exiting Leg				208				51				321	580
Total				490				115				555	1160

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Light Goods Vehicle**

	Russell Street				Deer Street				Deer Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	5	1	0	6	1	2	0	3	1	7	0	8	17
4:15 PM	7	0	0	7	0	0	0	0	1	8	0	9	16
4:30 PM	3	1	0	4	1	3	0	4	0	4	0	4	12
4:45 PM	6	1	0	7	0	2	0	2	3	4	0	7	16
Total	21	3	0	24	2	7	0	9	5	23	0	28	61
5:00 PM	8	0	0	8	0	1	0	1	1	4	0	5	14
5:15 PM	8	0	0	8	0	0	0	0	0	5	0	5	13
5:30 PM	8	0	0	8	0	1	0	1	0	6	0	6	15
5:45 PM	6	0	0	6	0	1	0	1	0	3	0	3	10
Total	30	0	0	30	0	3	0	3	1	18	0	19	52
Grand Total	51	3	0	54	2	10	0	12	6	41	0	47	113
Approach %	94.4	5.6	0.0		16.7	83.3	0.0		12.8	87.2	0.0		
Total %	45.1	2.7	0.0	47.8	1.8	8.8	0.0	10.6	5.3	36.3	0.0	41.6	
Exiting Leg Total				43				9				61	113

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Russell Street				Deer Street				Deer Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	5	1	0	6	1	2	0	3	1	7	0	8	17
4:15 PM	7	0	0	7	0	0	0	0	1	8	0	9	16
4:30 PM	3	1	0	4	1	3	0	4	0	4	0	4	12
4:45 PM	6	1	0	7	0	2	0	2	3	4	0	7	16
Total Volume	21	3	0	24	2	7	0	9	5	23	0	28	61
% Approach Total	87.5	12.5	0.0		22.2	77.8	0.0		17.9	82.1	0.0		
PHF	0.750	0.750	0.000	0.857	0.500	0.583	0.000	0.563	0.417	0.719	0.000	0.778	0.897
Entering Leg	21	3	0	24	2	7	0	9	5	23	0	28	61
Exiting Leg				25				8				28	61
Total				49				17				56	122

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Buses

	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:15 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	4	0	0	4	0	0	0	0	0	3	0	3	7
5:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
Total	5	0	0	5	0	0	0	0	0	4	0	4	9
Grand Total	9	0	0	9	0	0	0	0	0	7	0	7	16
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	56.3	0.0	0.0	56.3	0.0	0.0	0.0	0.0	0.0	43.8	0.0	43.8	
Exiting Leg Total				7				0				9	16

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
5:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
Total Volume	5	0	0	5	0	0	0	0	0	4	0	4	9
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.417	0.000	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.750
Entering Leg	5	0	0	5	0	0	0	0	0	4	0	4	9
Exiting Leg				4				0				5	9
Total				9				0				9	18

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Russell Street from North				Deer Street from East				Deer Street from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Russell Street				Deer Street				Deer Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Russell Street				Deer Street				Deer Street				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Bicycles (on Roadway and Crosswalks)**

	Russell Street from North						Deer Street from East						Deer Street from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
5:15 PM	0	0	0	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	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Russell Street from North						Deer Street from East						Deer Street from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **196718 H**
Location: **N: Russell Street**
Location: **E: Deer Street W: Deer Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Russell Street						Deer Street						Deer Street						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	1	1	0	0	0	2	3	5	0	0	0	1	0	1	7
Total	0	0	0	0	2	2	0	0	0	4	6	10	0	0	0	1	0	1	13
5:00 PM	0	0	0	0	1	1	0	0	0	2	6	8	0	0	0	1	1	2	11
5:15 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	1	1	0	0	0	1	1	2	0	0	0	0	0	0	3
Total	0	0	0	0	2	2	0	0	0	4	10	14	0	0	0	1	1	2	18
Grand Total	0	0	0	0	4	4	0	0	0	8	16	24	0	0	0	2	1	3	31
Approach %	0	0	0	0	100		0	0	0	33.333	66.667		0	0	0	66.667	33.333		
Total %	0	0	0	0	12.903	12.903	0	0	0	25.806	51.613	77.419	0	0	0	6.4516	3.2258	9.6774	
Exiting Leg Total						4						24						3	31

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Russell Street						Deer Street						Deer Street						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:15 PM	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	1	1	0	0	0	2	3	5	0	0	0	1	0	1	7
5:00 PM	0	0	0	0	1	1	0	0	0	2	6	8	0	0	0	1	1	2	11
Total Volume	0	0	0	0	3	3	0	0	0	5	12	17	0	0	0	2	1	3	23
% Approach Total	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	29.4	70.6		0.0	0.0	0.0	66.7	33.3		
PHF	0.000	0.000	0.000	0.000	0.750	0.750	0.000	0.000	0.000	0.625	0.500	0.531	0.000	0.000	0.000	0.500	0.250	0.375	0.523
Entering Leg	0	0	0	0	3	3	0	0	0	5	12	17	0	0	0	2	1	3	23
Exiting Leg						3						17						3	23
Total						6						34						6	46

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	2	46	0	48	59	2	0	61	1	9	0	10	119
4:15 PM	8	46	0	54	51	1	0	52	2	4	0	6	112
4:30 PM	4	55	0	59	51	1	0	52	3	9	0	12	123
4:45 PM	4	55	0	59	47	2	0	49	2	7	0	9	117
Total	18	202	0	220	208	6	0	214	8	29	0	37	471
5:00 PM	5	76	0	81	70	1	0	71	3	10	0	13	165
5:15 PM	2	64	0	66	58	1	0	59	0	5	0	5	130
5:30 PM	5	93	0	98	60	1	0	61	1	4	0	5	164
5:45 PM	11	73	0	84	48	1	0	49	1	6	0	7	140
Total	23	306	0	329	236	4	0	240	5	25	0	30	599
Grand Total	41	508	0	549	444	10	0	454	13	54	0	67	1070
Approach %	7.5	92.5	0.0		97.8	2.2	0.0		19.4	80.6	0.0		
Total %	3.8	47.5	0.0	51.3	41.5	0.9	0.0	42.4	1.2	5.0	0.0	6.3	
Exiting Leg Total				498				521				51	1070
Cars	41	499	0	540	437	10	0	447	13	54	0	67	1054
% Cars	100.0	98.2	0.0	98.4	98.4	100.0	0.0	98.5	100.0	100.0	0.0	100.0	98.5
Exiting Leg Total				491				512				51	1054
Heavy Vehicles	0	9	0	9	7	0	0	7	0	0	0	0	16
% Heavy Vehicles	0.0	1.8	0.0	1.6	1.6	0.0	0.0	1.5	0.0	0.0	0.0	0.0	1.5
Exiting Leg Total				7				9				0	16

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	5	76	0	81	70	1	0	71	3	10	0	13	165
5:15 PM	2	64	0	66	58	1	0	59	0	5	0	5	130
5:30 PM	5	93	0	98	60	1	0	61	1	4	0	5	164
5:45 PM	11	73	0	84	48	1	0	49	1	6	0	7	140
Total Volume	23	306	0	329	236	4	0	240	5	25	0	30	599
% Approach Total	7.0	93.0	0.0		98.3	1.7	0.0		16.7	83.3	0.0		
PHF	0.523	0.823	0.000	0.839	0.843	1.000	0.000	0.845	0.417	0.625	0.000	0.577	0.908
Cars	23	301	0	324	232	4	0	236	5	25	0	30	590
Cars %	100.0	98.4	0.0	98.5	98.3	100.0	0.0	98.3	100.0	100.0	0.0	100.0	98.5
Heavy Vehicles	0	5	0	5	4	0	0	4	0	0	0	0	9
Heavy Vehicles %	0.0	1.6	0.0	1.5	1.7	0.0	0.0	1.7	0.0	0.0	0.0	0.0	1.5
Cars Enter Leg	23	301	0	324	232	4	0	236	5	25	0	30	590
Heavy Enter Leg	0	5	0	5	4	0	0	4	0	0	0	0	9
Total Entering Leg	23	306	0	329	236	4	0	240	5	25	0	30	599
Cars Exiting Leg				257				306				27	590
Heavy Exiting Leg				4				5				0	9
Total Exiting Leg				261				311				27	599

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	2	45	0	47	58	2	0	60	1	9	0	10	117
4:15 PM	8	44	0	52	50	1	0	51	2	4	0	6	109
4:30 PM	4	55	0	59	51	1	0	52	3	9	0	12	123
4:45 PM	4	54	0	58	46	2	0	48	2	7	0	9	115
Total	18	198	0	216	205	6	0	211	8	29	0	37	464
5:00 PM	5	75	0	80	69	1	0	70	3	10	0	13	163
5:15 PM	2	64	0	66	57	1	0	58	0	5	0	5	129
5:30 PM	5	90	0	95	60	1	0	61	1	4	0	5	161
5:45 PM	11	72	0	83	46	1	0	47	1	6	0	7	137
Total	23	301	0	324	232	4	0	236	5	25	0	30	590
Grand Total	41	499	0	540	437	10	0	447	13	54	0	67	1054
Approach %	7.6	92.4	0.0		97.8	2.2	0.0		19.4	80.6	0.0		
Total %	3.9	47.3	0.0	51.2	41.5	0.9	0.0	42.4	1.2	5.1	0.0	6.4	
Exiting Leg Total				491				512				51	1054

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	5	75	0	80	69	1	0	70	3	10	0	13	163
5:15 PM	2	64	0	66	57	1	0	58	0	5	0	5	129
5:30 PM	5	90	0	95	60	1	0	61	1	4	0	5	161
5:45 PM	11	72	0	83	46	1	0	47	1	6	0	7	137
Total Volume	23	301	0	324	232	4	0	236	5	25	0	30	590
% Approach Total	7.1	92.9	0.0		98.3	1.7	0.0		16.7	83.3	0.0		
PHF	0.523	0.836	0.000	0.853	0.841	1.000	0.000	0.843	0.417	0.625	0.000	0.577	0.905
Entering Leg	23	301	0	324	232	4	0	236	5	25	0	30	590
Exiting Leg				257				306				27	590
Total				581				542				57	1180

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
4:15 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	4	0	4	3	0	0	3	0	0	0	0	7
5:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
5:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:30 PM	0	3	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	5	0	5	4	0	0	4	0	0	0	0	9
Grand Total	0	9	0	9	7	0	0	7	0	0	0	0	16
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	56.3	0.0	56.3	43.8	0.0	0.0	43.8	0.0	0.0	0.0	0.0	
Exiting Leg Total				7				9				0	16
Buses	0	9	0	9	7	0	0	7	0	0	0	0	16
% Buses	0.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Exiting Leg Total				7				9				0	16
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
5:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:30 PM	0	3	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total Volume	0	5	0	5	4	0	0	4	0	0	0	0	9
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.417	0.000	0.417	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.750
Buses	0	5	0	5	4	0	0	4	0	0	0	0	9
Buses %	0.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	5	0	5	4	0	0	4	0	0	0	0	9
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	5	0	5	4	0	0	4	0	0	0	0	9
Buses				4				5				0	9
Single-Unit Trucks				0				0				0	0
Articulated Trucks				0				0				0	0
Total Exiting Leg				4				5				0	9

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	1	40	0	41	50	2	0	52	1	6	0	7	100
4:15 PM	8	38	0	46	41	1	0	42	1	4	0	5	93
4:30 PM	3	52	0	55	46	1	0	47	2	7	0	9	111
4:45 PM	3	47	0	50	41	2	0	43	1	4	0	5	98
Total	15	177	0	192	178	6	0	184	5	21	0	26	402
5:00 PM	2	68	0	70	64	1	0	65	3	6	0	9	144
5:15 PM	1	54	0	55	53	1	0	54	0	3	0	3	112
5:30 PM	3	83	0	86	54	1	0	55	1	4	0	5	146
5:45 PM	10	65	0	75	42	1	0	43	1	4	0	5	123
Total	16	270	0	286	213	4	0	217	5	17	0	22	525
Grand Total	31	447	0	478	391	10	0	401	10	38	0	48	927
Approach %	6.5	93.5	0.0		97.5	2.5	0.0		20.8	79.2	0.0		
Total %	3.3	48.2	0.0	51.6	42.2	1.1	0.0	43.3	1.1	4.1	0.0	5.2	
Exiting Leg Total				429				457				41	927

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	2	68	0	70	64	1	0	65	3	6	0	9	144
5:15 PM	1	54	0	55	53	1	0	54	0	3	0	3	112
5:30 PM	3	83	0	86	54	1	0	55	1	4	0	5	146
5:45 PM	10	65	0	75	42	1	0	43	1	4	0	5	123
Total Volume	16	270	0	286	213	4	0	217	5	17	0	22	525
% Approach Total	5.6	94.4	0.0		98.2	1.8	0.0		22.7	77.3	0.0		
PHF	0.400	0.813	0.000	0.831	0.832	1.000	0.000	0.835	0.417	0.708	0.000	0.611	0.899
Entering Leg	16	270	0	286	213	4	0	217	5	17	0	22	525
Exiting Leg				230				275				20	525
Total				516				492				42	1050

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Light Goods Vehicle

	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	1	5	0	6	8	0	0	8	0	3	0	3	17
4:15 PM	0	6	0	6	9	0	0	9	1	0	0	1	16
4:30 PM	1	3	0	4	5	0	0	5	1	2	0	3	12
4:45 PM	1	7	0	8	5	0	0	5	1	3	0	4	17
Total	3	21	0	24	27	0	0	27	3	8	0	11	62
5:00 PM	3	7	0	10	5	0	0	5	0	4	0	4	19
5:15 PM	1	10	0	11	4	0	0	4	0	2	0	2	17
5:30 PM	2	7	0	9	6	0	0	6	0	0	0	0	15
5:45 PM	1	7	0	8	4	0	0	4	0	2	0	2	14
Total	7	31	0	38	19	0	0	19	0	8	0	8	65
Grand Total	10	52	0	62	46	0	0	46	3	16	0	19	127
Approach %	16.1	83.9	0.0		100.0	0.0	0.0		15.8	84.2	0.0		
Total %	7.9	40.9	0.0	48.8	36.2	0.0	0.0	36.2	2.4	12.6	0.0	15.0	
Exiting Leg Total				62				55				10	127

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:45 PM	1	7	0	8	5	0	0	5	1	3	0	4	17
5:00 PM	3	7	0	10	5	0	0	5	0	4	0	4	19
5:15 PM	1	10	0	11	4	0	0	4	0	2	0	2	17
5:30 PM	2	7	0	9	6	0	0	6	0	0	0	0	15
Total Volume	7	31	0	38	20	0	0	20	1	9	0	10	68
% Approach Total	18.4	81.6	0.0		100.0	0.0	0.0		10.0	90.0	0.0		
PHF	0.583	0.775	0.000	0.864	0.833	0.000	0.000	0.833	0.250	0.563	0.000	0.625	0.895
Entering Leg	7	31	0	38	20	0	0	20	1	9	0	10	68
Exiting Leg				29				32				7	68
Total				67				52				17	136

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
4:15 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	4	0	4	3	0	0	3	0	0	0	0	7
5:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
5:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:30 PM	0	3	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	5	0	5	4	0	0	4	0	0	0	0	9
Grand Total	0	9	0	9	7	0	0	7	0	0	0	0	16
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	56.3	0.0	56.3	43.8	0.0	0.0	43.8	0.0	0.0	0.0	0.0	
Exiting Leg Total				7				9				0	16

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
5:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
5:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:30 PM	0	3	0	3	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total Volume	0	5	0	5	4	0	0	4	0	0	0	0	9
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.417	0.000	0.417	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	5	0	5	4	0	0	4	0	0	0	0	9
Exiting Leg				4				5				0	9
Total				9				9				0	18

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Russell Street from North				Russell Street from South				Green Street from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Articulated Trucks

	Russell Street				Russell Street				Green Street				
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Russell Street				Russell Street				Green Street				
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Russell Street from North						Russell Street from South						Green Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total	0	0	0	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	0	0	0
5:15 PM	0	0	0	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	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Russell Street from North						Russell Street from South						Green Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	0	0	0
4:30 PM	0	0	0	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	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **196718 I**
Location: **N: Russell Street S: Russell Street**
Location: **W: Green Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Russell Street from North						Russell Street from South						Green Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	1	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	1	1	2	0	0	0	0	2	2	0	0	0	0	1	1	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	2	0	0	0	1	2	3	0	0	0	0	1	1	6
5:00 PM	0	0	0	1	1	2	0	0	0	0	2	2	0	0	0	0	1	1	5
5:15 PM	0	0	0	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	0	0	0
5:45 PM	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	1	1	2	4
Total	0	0	0	2	2	4	0	0	0	0	2	2	0	0	0	1	2	3	9
Grand Total	0	0	0	3	3	6	0	0	0	1	4	5	0	0	0	1	3	4	15
Approach %	0	0	0	50	50		0	0	0	20	80		0	0	0	25	75		
Total %	0	0	0	20	20	40	0	0	0	6.6667	26.667	33.333	0	0	0	6.6667	20	26.667	
Exiting Leg Total						6						5						4	15

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Russell Street from North						Russell Street from South						Green Street from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	1	1	2	0	0	0	0	2	2	0	0	0	0	1	1	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	1	1	2	0	0	0	0	2	2	0	0	0	0	1	1	5
Total Volume	0	0	0	2	2	4	0	0	0	1	4	5	0	0	0	0	2	2	11
% Approach Total	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	20.0	80.0		0.0	0.0	0.0	0.0	100.0		
PHF	0.000	0.000	0.000	0.500	0.500	0.500	0.000	0.000	0.000	0.250	0.500	0.625	0.000	0.000	0.000	0.000	0.500	0.500	0.550
Entering Leg	0	0	0	2	2	4	0	0	0	1	4	5	0	0	0	0	2	2	11
Exiting Leg						4						5						2	11
Total						8						10						4	22

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	72	0	0	72	2	62	0	64	48	39	0	87	223
4:15 PM	78	0	0	78	0	57	0	57	54	53	0	107	242
4:30 PM	88	0	0	88	4	54	0	58	62	60	1	123	269
4:45 PM	86	0	0	86	2	53	0	55	55	71	0	126	267
Total	324	0	0	324	8	226	0	234	219	223	1	443	1001
5:00 PM	132	0	0	132	3	78	0	81	81	63	0	144	357
5:15 PM	84	0	0	84	0	64	0	64	69	59	0	128	276
5:30 PM	78	0	0	78	3	54	0	57	95	84	0	179	314
5:45 PM	81	0	0	81	0	60	0	60	84	69	0	153	294
Total	375	0	0	375	6	256	0	262	329	275	0	604	1241
Grand Total	699	0	0	699	14	482	0	496	548	498	1	1047	2242
Approach %	100.0	0.0	0.0		2.8	97.2	0.0		52.3	47.6	0.1		
Total %	31.2	0.0	0.0	31.2	0.6	21.5	0.0	22.1	24.4	22.2	0.0	46.7	
Exiting Leg Total				512				548				1182	2242
Cars	697	0	0	697	14	475	0	489	539	495	1	1035	2221
% Cars	99.7	0.0	0.0	99.7	100.0	98.5	0.0	98.6	98.4	99.4	100.0	98.9	99.1
Exiting Leg Total				509				539				1173	2221
Heavy Vehicles	2	0	0	2	0	7	0	7	9	3	0	12	21
% Heavy Vehicles	0.3	0.0	0.0	0.3	0.0	1.5	0.0	1.4	1.6	0.6	0.0	1.1	0.9
Exiting Leg Total				3				9				9	21

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	132	0	0	132	3	78	0	81	81	63	0	144	357
5:15 PM	84	0	0	84	0	64	0	64	69	59	0	128	276
5:30 PM	78	0	0	78	3	54	0	57	95	84	0	179	314
5:45 PM	81	0	0	81	0	60	0	60	84	69	0	153	294
Total Volume	375	0	0	375	6	256	0	262	329	275	0	604	1241
% Approach Total	100.0	0.0	0.0		2.3	97.7	0.0		54.5	45.5	0.0		
PHF	0.710	0.000	0.000	0.710	0.500	0.821	0.000	0.809	0.866	0.818	0.000	0.844	0.869
Cars	375	0	0	375	6	252	0	258	324	273	0	597	1230
Cars %	100.0	0.0	0.0	100.0	100.0	98.4	0.0	98.5	98.5	99.3	0.0	98.8	99.1
Heavy Vehicles	0	0	0	0	0	4	0	4	5	2	0	7	11
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.5	1.5	0.7	0.0	1.2	0.9
Cars Enter Leg	375	0	0	375	6	252	0	258	324	273	0	597	1230
Heavy Enter Leg	0	0	0	0	0	4	0	4	5	2	0	7	11
Total Entering Leg	375	0	0	375	6	256	0	262	329	275	0	604	1241
Cars Exiting Leg				279				324				627	1230
Heavy Exiting Leg				2				5				4	11
Total Exiting Leg				281				329				631	1241

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	72	0	0	72	2	61	0	63	47	39	0	86	221
4:15 PM	76	0	0	76	0	56	0	56	52	53	0	105	237
4:30 PM	88	0	0	88	4	54	0	58	62	59	1	122	268
4:45 PM	86	0	0	86	2	52	0	54	54	71	0	125	265
Total	322	0	0	322	8	223	0	231	215	222	1	438	991
5:00 PM	132	0	0	132	3	77	0	80	80	63	0	143	355
5:15 PM	84	0	0	84	0	63	0	63	69	58	0	127	274
5:30 PM	78	0	0	78	3	54	0	57	92	84	0	176	311
5:45 PM	81	0	0	81	0	58	0	58	83	68	0	151	290
Total	375	0	0	375	6	252	0	258	324	273	0	597	1230
Grand Total	697	0	0	697	14	475	0	489	539	495	1	1035	2221
Approach %	100.0	0.0	0.0		2.9	97.1	0.0		52.1	47.8	0.1		
Total %	31.4	0.0	0.0	31.4	0.6	21.4	0.0	22.0	24.3	22.3	0.0	46.6	
Exiting Leg Total				509				539				1173	2221

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	132	0	0	132	3	77	0	80	80	63	0	143	355
5:15 PM	84	0	0	84	0	63	0	63	69	58	0	127	274
5:30 PM	78	0	0	78	3	54	0	57	92	84	0	176	311
5:45 PM	81	0	0	81	0	58	0	58	83	68	0	151	290
Total Volume	375	0	0	375	6	252	0	258	324	273	0	597	1230
% Approach Total	100.0	0.0	0.0		2.3	97.7	0.0		54.3	45.7	0.0		
PHF	0.710	0.000	0.000	0.710	0.500	0.818	0.000	0.806	0.880	0.813	0.000	0.848	0.866
Entering Leg	375	0	0	375	6	252	0	258	324	273	0	597	1230
Exiting Leg				279				324				627	1230
Total				654				582				1224	2460

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
4:15 PM	2	0	0	2	0	1	0	1	2	0	0	2	5
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	2	0	0	2	0	3	0	3	4	1	0	5	10
5:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
5:15 PM	0	0	0	0	0	1	0	1	0	1	0	1	2
5:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
5:45 PM	0	0	0	0	0	2	0	2	1	1	0	2	4
Total	0	0	0	0	0	4	0	4	5	2	0	7	11
Grand Total	2	0	0	2	0	7	0	7	9	3	0	12	21
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		75.0	25.0	0.0		
Total %	9.5	0.0	0.0	9.5	0.0	33.3	0.0	33.3	42.9	14.3	0.0	57.1	
Exiting Leg Total				3				9				9	21
Buses	1	0	0	1	0	7	0	7	9	0	0	9	17
% Buses	50.0	0.0	0.0	50.0	0.0	100.0	0.0	100.0	100.0	0.0	0.0	75.0	81.0
Exiting Leg Total				0				9				8	17
Single-Unit Trucks	1	0	0	1	0	0	0	0	0	3	0	3	4
% Single-Unit	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	25.0	19.0
Exiting Leg Total				3				0				1	4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
5:15 PM	0	0	0	0	0	1	0	1	0	1	0	1	2
5:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
5:45 PM	0	0	0	0	0	2	0	2	1	1	0	2	4
Total Volume	0	0	0	0	0	4	0	4	5	2	0	7	11
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		71.4	28.6	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.417	0.500	0.000	0.583	0.688
Buses	0	0	0	0	0	4	0	4	5	0	0	5	9
Buses %	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0	0.0	0.0	71.4	81.8
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	2	0	2	2
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	28.6	18.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	0	0	0	0	4	0	4	5	0	0	5	9
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	2	0	2	2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	0	0	0	0	4	0	4	5	2	0	7	11
Buses				0				5				4	9
Single-Unit Trucks				2				0				0	2
Articulated Trucks				0				0				0	0
Total Exiting Leg				2				5				4	11

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	67	0	0	67	1	53	0	54	42	37	0	79	200
4:15 PM	67	0	0	67	0	47	0	47	46	49	0	95	209
4:30 PM	82	0	0	82	4	48	0	52	59	53	1	113	247
4:45 PM	75	0	0	75	2	43	0	45	48	64	0	112	232
Total	291	0	0	291	7	191	0	198	195	203	1	399	888
5:00 PM	117	0	0	117	2	69	0	71	69	54	0	123	311
5:15 PM	82	0	0	82	0	56	0	56	58	54	0	112	250
5:30 PM	78	0	0	78	3	49	0	52	84	82	0	166	296
5:45 PM	80	0	0	80	0	50	0	50	75	68	0	143	273
Total	357	0	0	357	5	224	0	229	286	258	0	544	1130
Grand Total	648	0	0	648	12	415	0	427	481	461	1	943	2018
Approach %	100.0	0.0	0.0		2.8	97.2	0.0		51.0	48.9	0.1		
Total %	32.1	0.0	0.0	32.1	0.6	20.6	0.0	21.2	23.8	22.8	0.0	46.7	
Exiting Leg Total				473				481				1064	2018

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	117	0	0	117	2	69	0	71	69	54	0	123	311
5:15 PM	82	0	0	82	0	56	0	56	58	54	0	112	250
5:30 PM	78	0	0	78	3	49	0	52	84	82	0	166	296
5:45 PM	80	0	0	80	0	50	0	50	75	68	0	143	273
Total Volume	357	0	0	357	5	224	0	229	286	258	0	544	1130
% Approach Total	100.0	0.0	0.0		2.2	97.8	0.0		52.6	47.4	0.0		
PHF	0.763	0.000	0.000	0.763	0.417	0.812	0.000	0.806	0.851	0.787	0.000	0.819	0.908
Entering Leg	357	0	0	357	5	224	0	229	286	258	0	544	1130
Exiting Leg				263				286				581	1130
Total				620				515				1125	2260

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Light Goods Vehicle**

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	5	0	0	5	1	8	0	9	5	2	0	7	21
4:15 PM	9	0	0	9	0	9	0	9	6	4	0	10	28
4:30 PM	6	0	0	6	0	6	0	6	3	6	0	9	21
4:45 PM	11	0	0	11	0	9	0	9	6	7	0	13	33
Total	31	0	0	31	1	32	0	33	20	19	0	39	103
5:00 PM	15	0	0	15	1	8	0	9	11	9	0	20	44
5:15 PM	2	0	0	2	0	7	0	7	11	4	0	15	24
5:30 PM	0	0	0	0	0	5	0	5	8	2	0	10	15
5:45 PM	1	0	0	1	0	8	0	8	8	0	0	8	17
Total	18	0	0	18	1	28	0	29	38	15	0	53	100
Grand Total	49	0	0	49	2	60	0	62	58	34	0	92	203
Approach %	100.0	0.0	0.0		3.2	96.8	0.0		63.0	37.0	0.0		
Total %	24.1	0.0	0.0	24.1	1.0	29.6	0.0	30.5	28.6	16.7	0.0	45.3	
Exiting Leg Total				36				58				109	203

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:15 PM	9	0	0	9	0	9	0	9	6	4	0	10	28
4:30 PM	6	0	0	6	0	6	0	6	3	6	0	9	21
4:45 PM	11	0	0	11	0	9	0	9	6	7	0	13	33
5:00 PM	15	0	0	15	1	8	0	9	11	9	0	20	44
Total Volume	41	0	0	41	1	32	0	33	26	26	0	52	126
% Approach Total	100.0	0.0	0.0		3.0	97.0	0.0		50.0	50.0	0.0		
PHF	0.683	0.000	0.000	0.683	0.250	0.889	0.000	0.917	0.591	0.722	0.000	0.650	0.716
Entering Leg	41	0	0	41	1	32	0	33	26	26	0	52	126
Exiting Leg				27				26				73	126
Total				68				59				125	252

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
4:15 PM	1	0	0	1	0	1	0	1	2	0	0	2	4
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	1	0	0	1	0	3	0	3	4	0	0	4	8
5:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
5:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
5:45 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
Total	0	0	0	0	0	4	0	4	5	0	0	5	9
Grand Total	1	0	0	1	0	7	0	7	9	0	0	9	17
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	5.9	0.0	0.0	5.9	0.0	41.2	0.0	41.2	52.9	0.0	0.0	52.9	
Exiting Leg Total				0				9				8	17

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
5:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
5:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	3	0	0	3	3
5:45 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
Total Volume	0	0	0	0	0	4	0	4	5	0	0	5	9
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.417	0.000	0.000	0.417	0.750
Entering Leg	0	0	0	0	0	4	0	4	5	0	0	5	9
Exiting Leg				0				5				4	9
Total				0				9				9	18

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	1	0	1	2
5:00 PM	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	1	0	1	1
5:30 PM	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	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	2	0	2	2
Grand Total	1	0	0	1	0	0	0	0	0	3	0	3	4
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	75.0	
Exiting Leg Total				3				0				1	4

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	1	0	0	0	0	0	1	0	1	2
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.500
Entering Leg	1	0	0	1	0	0	0	0	0	1	0	1	2
Exiting Leg				1				0				1	2
Total				2				0				2	4

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Articulated Trucks

	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				0				0				0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Market Street from East				Russell Street from South				Market Street from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	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
4:30 PM	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
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg				0				0				0	0
Total				0				0				0	0

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Market Street from East						Russell Street from South						Market Street from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	0	1	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	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	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	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						1	1

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Market Street from East						Russell Street from South						Market Street from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	0	1	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	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg						0						0						1	1
Total						1						0						1	2

PDI File #: **196718 J**
Location: **S: Russell Street**
Location: **E: Market Street W: Market Street**
City, State: **Portsmouth, NH**
Client: **Tighe & Bond/ M. Santos**
Site Code: **200076019**
Count Date: **Thursday, January 31, 2019**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Market Street						Russell Street						Market Street						
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	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	1	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	1	1	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	0	0	0	0
Total	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	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	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	2	2	0	0	0	1	0	1	0	0	0	0	0	0	3
Approach %	0	0	0	0	100		0	0	0	100	0		0	0	0	0	0		
Total %	0	0	0	0	66.667	66.667	0	0	0	33.333	0	33.333	0	0	0	0	0	0	
Exiting Leg Total						2						1						0	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Market Street						Russell Street						Market Street						
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	1	1	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	0	0	0	0
5:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	2	2	0	0	0	1	0	1	0	0	0	0	0	0	3
% Approach Total	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	0	0	0	2	2	0	0	0	1	0	1	0	0	0	0	0	0	3
Exiting Leg						2						1						0	3
Total						4						2						0	6

Seasonal Adjustment Factors

Group 4 Peak Adjustment Factor

Year	2014	2015	2016
Adj. Factor	1.25	1.179865	1.151118

Average 1.19

GROUP	COUNTER	TOWN	LOCATION
04	02051003	BOW	NH 3A south of Robinson Rd
04	02089001	CHICHESTE	NH 28 (Suncook Valley Rd) north of Bear Hill Rd
04	02091001	CLAREMON	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	0
04	02255001	LEE	NH 125 (Calef Hwy) north of Pinkham Rd
04	02287001	MARLBOR(	NH 12 at Swanzey TL
04	02297001	MERRIMA(	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 HA	US 1 (Lafayette Rd) north of North Rd
04	62387052	RINDGE	US 202 at Jaffrey TL (north of County Rd)
04	62389040	ROCHESTE	NH 16 (Spaulding TPK) between Exit 12-13
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)

Trip Generation

Land Use	Size	Units	Daily			AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Office (710)	70	ksf	376	376	752	106	15	121	25	117	142
Retail (820)	4	ksf	337	337	674	47	41	88	28	28	56
TOTAL			**713**	**713**	**1426**	**153**	**56**	**209**	**53**	**145**	**198**
Office Trip Generation (710)											
Transit Trips	1.50%		6	6	12	2	0	2	0	2	2
Walk/Bike Trips	8.0%		30	30	60	8	1	9	2	9	11
Total New Vehicle Trips			340	340	680	96	14	110	23	106	129
Retail Trip Generation (710)											
Transit Trips	1.50%		5	5	10	1	1	2	0	0	0
Walk/Bike Trips	8.0%		27	27	54	4	3	7	2	2	4
Total New Vehicle Trips			305	305	610	42	37	79	26	26	52
Net New Trip Generation			**645**	**645**	**1290**	**138**	**51**	**189**	**49**	**132**	**181**

ITE Trip Generation 10, Office, Weekday Daily

Query | Filter

DATA SOURCE:
Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE:
710

LAND USE CATEGORY:
(700-799) Office

LAND USE :
710 - General Office Building

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

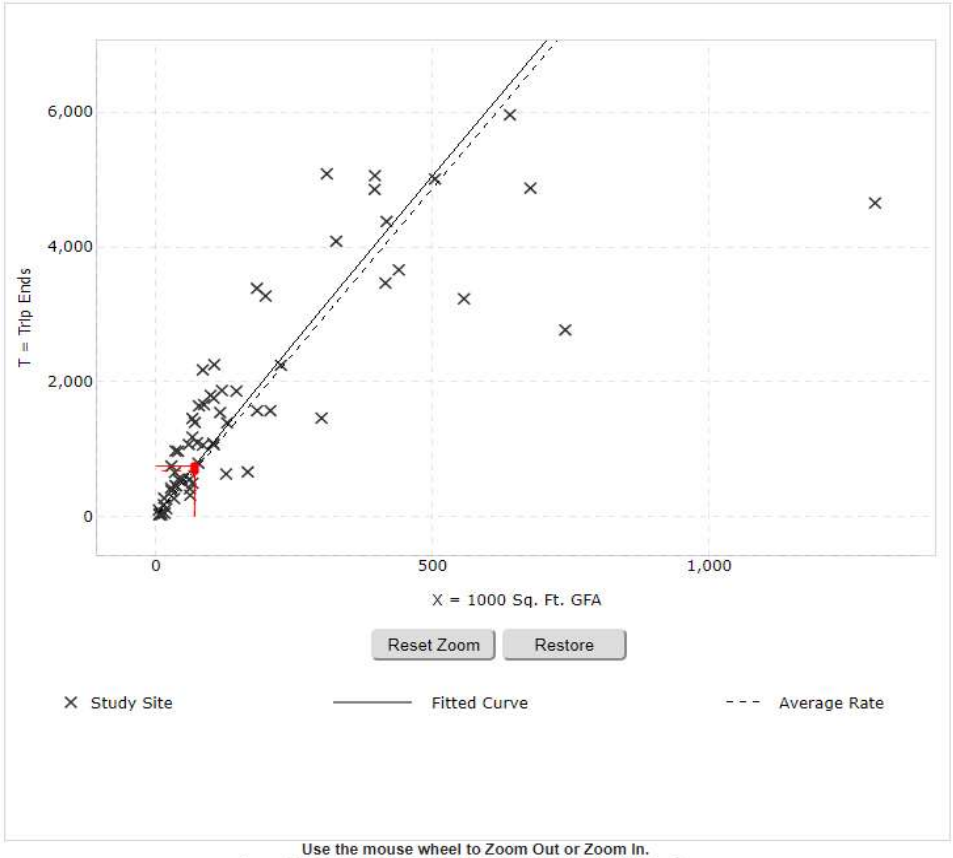
TIME PERIOD:
Weekday

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
70 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
General Office Building (710) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
66

Avg. 1000 Sq. Ft. GFA:
171

Average Rate:
9.74

Range of Rates:
2.71 - 27.56

Standard Deviation:
5.15

Fitted Curve Equation:
Ln(T) = 0.97 Ln(X) + 2.50

R^2:
0.83

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 682 (Total), 341 (Entry), 341 (Exit)
Fitted Curve: 751 (Total), 375 (Entry), 376 (Exit)

ITE Trip Generation 10, Retail, Weekday Daily

Query | Filter

DATA SOURCE:
Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE:
820

LAND USE CATEGORY:
(800-899) Retail

LAND USE :
820 - Shopping Center

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GLA

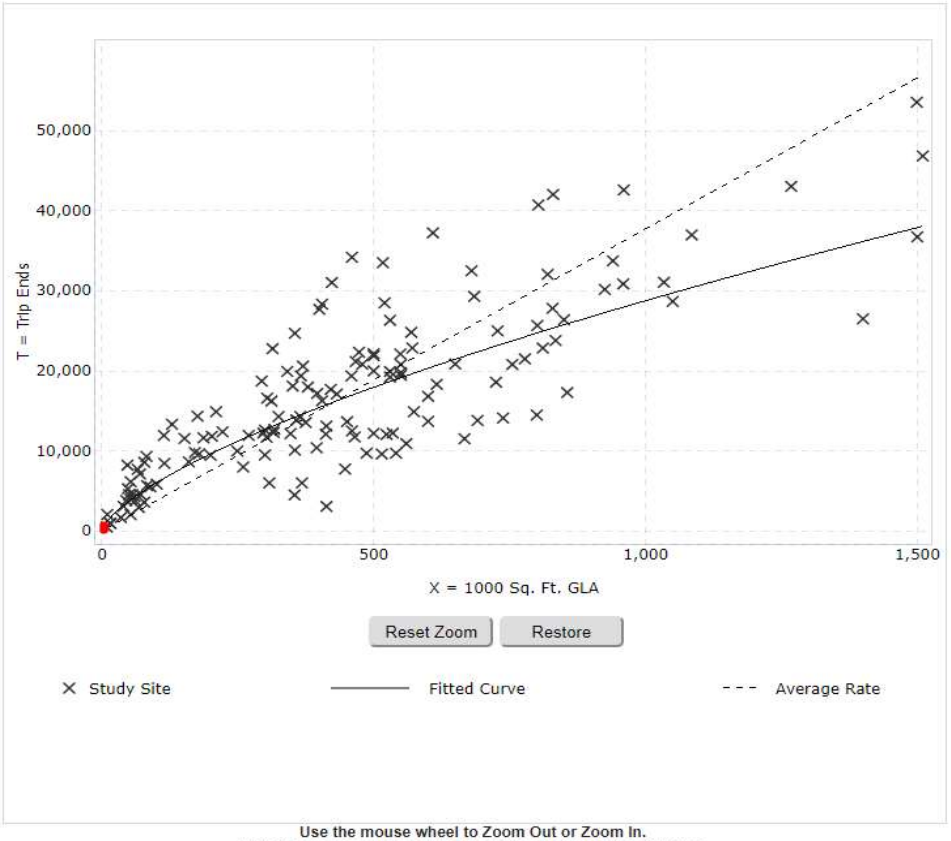
TIME PERIOD:
Weekday

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
4 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Shopping Center (820) Click for more details

Independent Variable:
1000 Sq. Ft. GLA

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
147

Avg. 1000 Sq. Ft. GLA:
453

Average Rate:
37.75

Range of Rates:
7.42 - 207.98

Standard Deviation:
16.41

Fitted Curve Equation:
Ln(T) = 0.68 Ln(X) + 5.57

R^2:
0.76

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 151 (Total), 75 (Entry), 76 (Exit)
Fitted Curve: 674 (Total), 337 (Entry), 337 (Exit)

ITE Trip Generation 10, Office, Weekday AM Peak Hour

Query | Filter

DATA SOURCE:
Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE:
710

LAND USE CATEGORY:
(700-799) Office

LAND USE :
710 - General Office Building

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

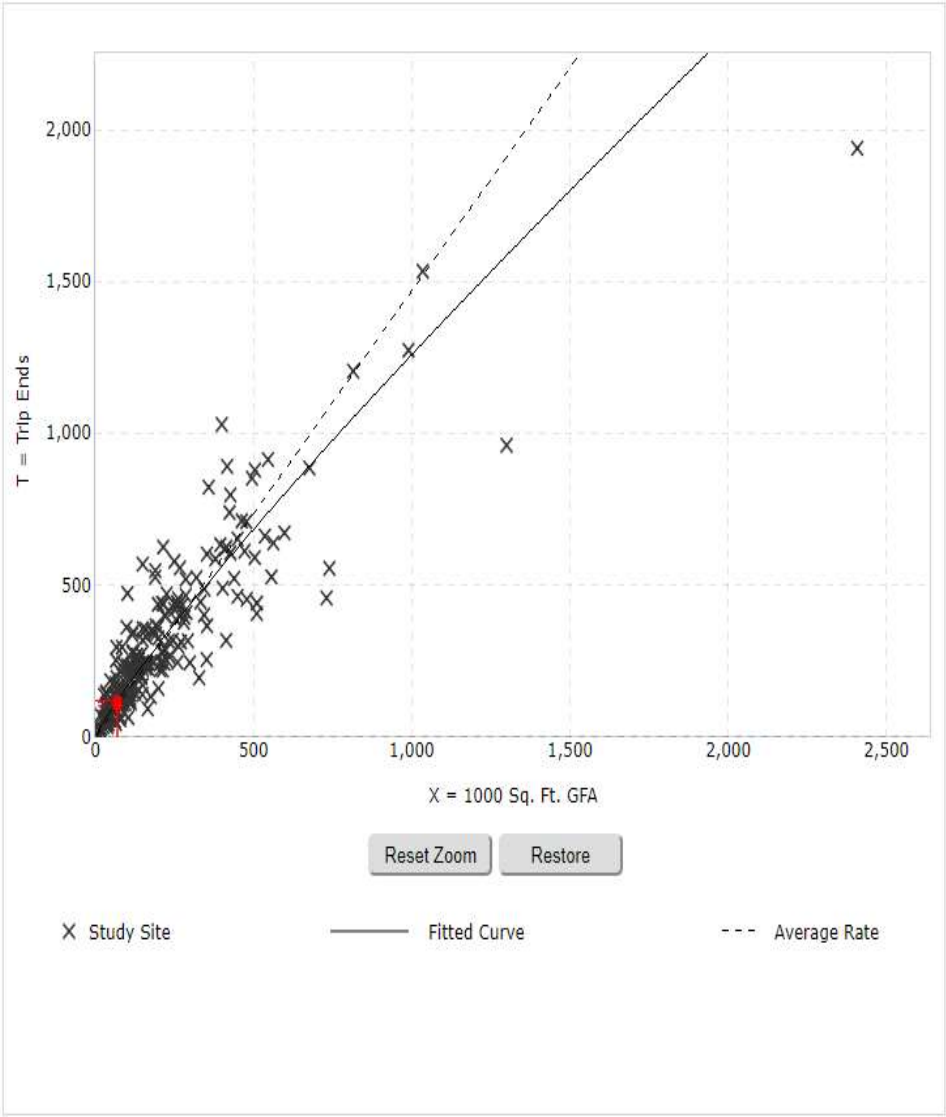
TIME PERIOD:
Weekday, AM Peak Hour of Generator

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
70 Calculate

Data Plot and Equation



DATA STATISTICS

Land Use:
General Office Building (710) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
AM Peak Hour of Generator

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
228

Avg. 1000 Sq. Ft. GFA:
209

Average Rate:
1.47

Range of Rates:
0.57 - 4.93

Standard Deviation:
0.60

Fitted Curve Equation:
Ln(T) = 0.88 Ln(X) + 1.06

R^2:
0.84

Directional Distribution:
88% entering, 12% exiting

Calculated Trip Ends:
Average Rate: 103 (Total), 91 (Entry), 12 (Exit)
Fitted Curve: 121 (Total), 106 (Entry), 15 (Exit)

ITE Trip Generation 10, Retail, Weekday AM Peak Hour

Query | Filter

DATA SOURCE:
Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE:
820

LAND USE CATEGORY:
(800-899) Retail

LAND USE :
820 - Shopping Center

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GLA

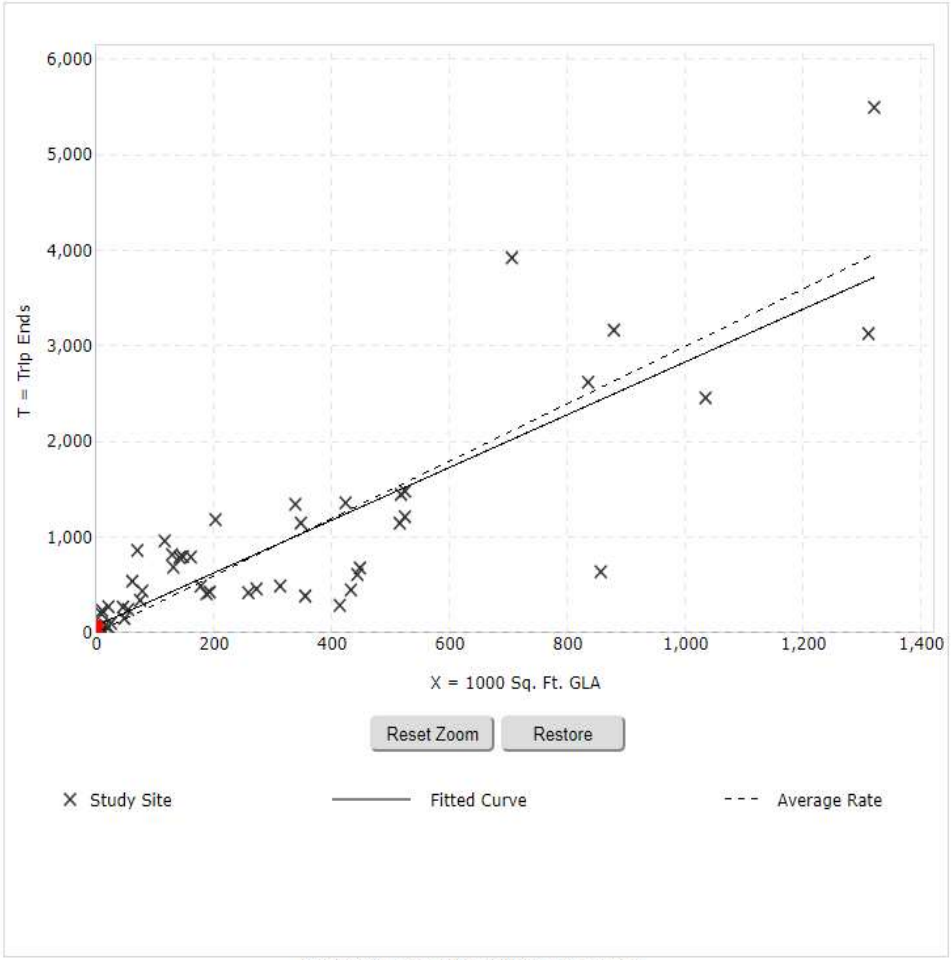
TIME PERIOD:
Weekday, AM Peak Hour of Generator

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
4 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Shopping Center (820) Click for more details

Independent Variable:
1000 Sq. Ft. GLA

Time Period:
Weekday
AM Peak Hour of Generator

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
47

Avg. 1000 Sq. Ft. GLA:
323

Average Rate:
3.00

Range of Rates:
0.70 - 23.74

Standard Deviation:
1.85

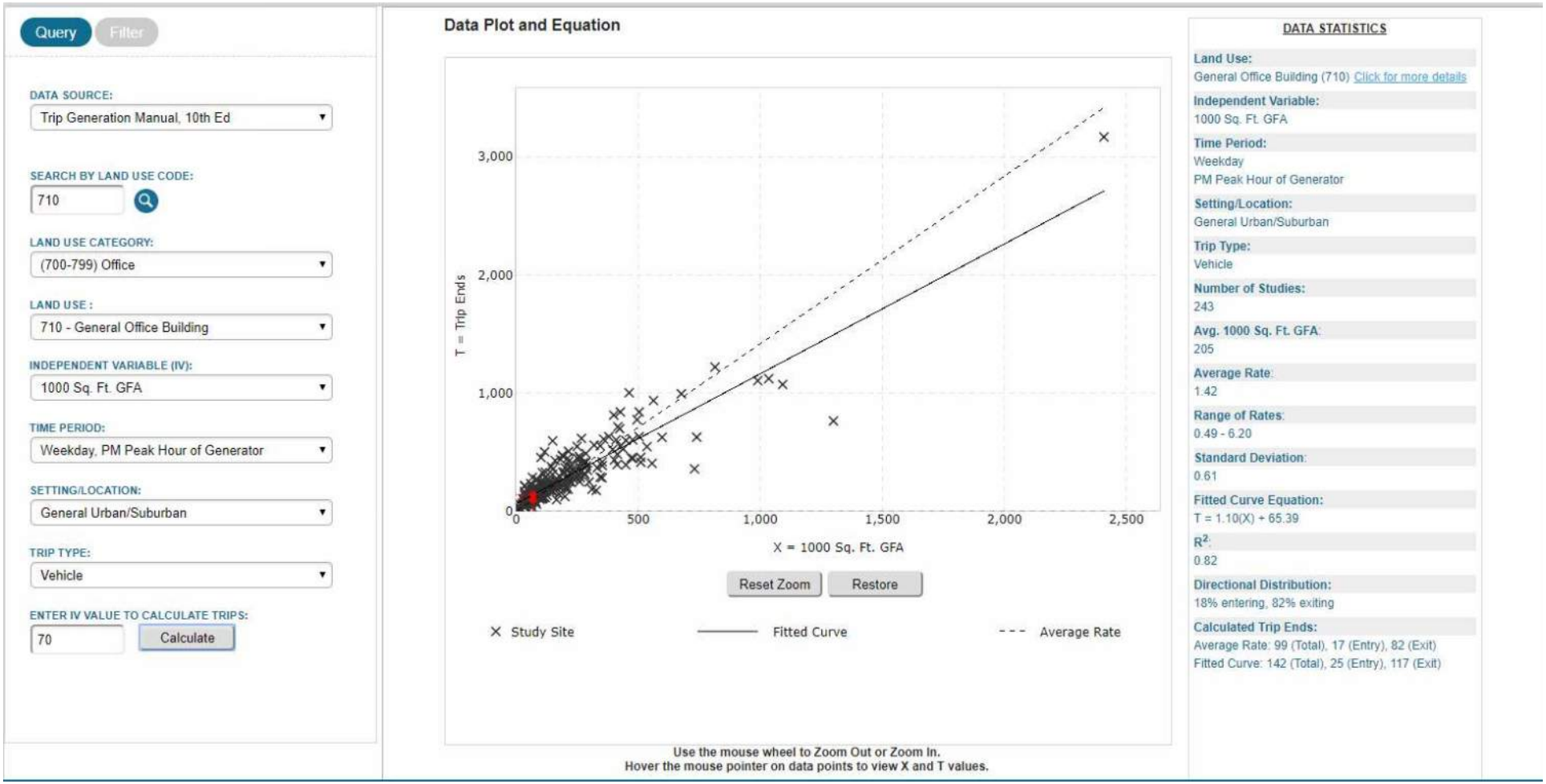
Fitted Curve Equation:
T = 2.76(X) + 77.28

R^2:
0.71

Directional Distribution:
54% entering, 46% exiting

Calculated Trip Ends:
Average Rate: 12 (Total), 6 (Entry), 6 (Exit)
Fitted Curve: 88 (Total), 47 (Entry), 41 (Exit)

ITE Trip Generation 10, Office, Weekday PM Peak Hour



ITE Trip Generation 10, Retail, Weekday PM Peak Hour

Query | Filter

DATA SOURCE:
Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE:
820

LAND USE CATEGORY:
(800-899) Retail

LAND USE :
820 - Shopping Center

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GLA

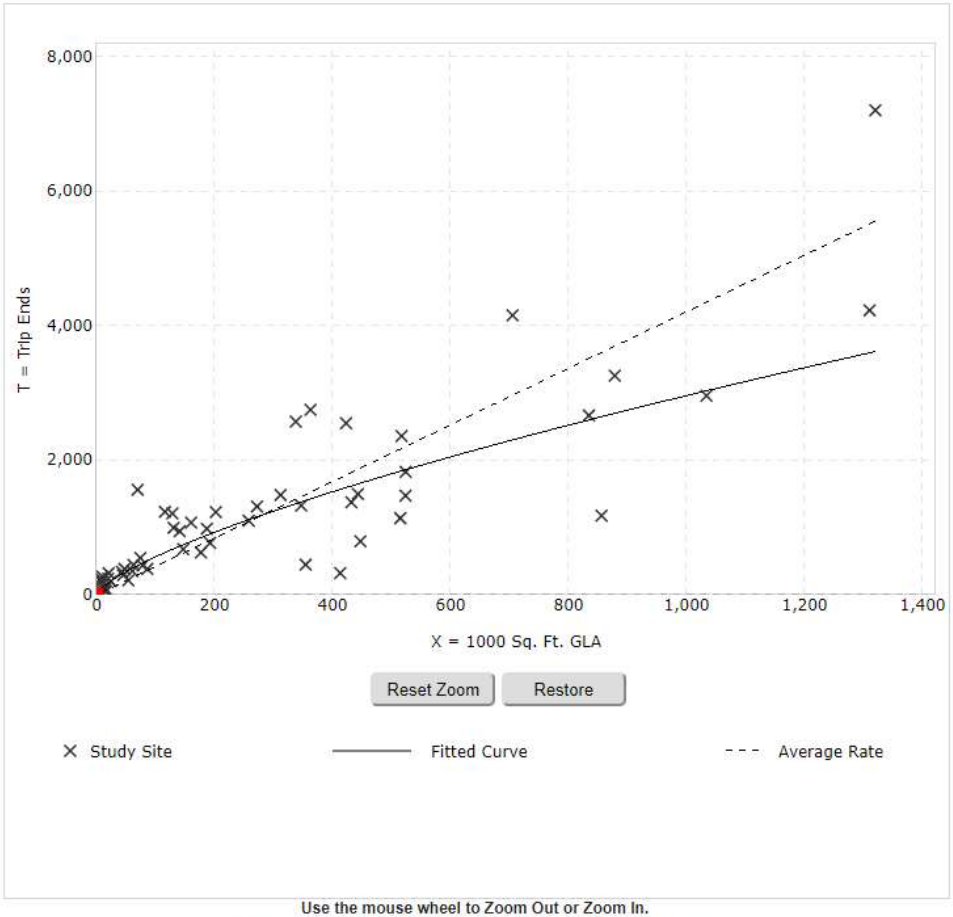
TIME PERIOD:
Weekday, PM Peak Hour of Generator

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
4 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Shopping Center (820) Click for more details

Independent Variable:
1000 Sq. Ft. GLA

Time Period:
Weekday
PM Peak Hour of Generator

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
53

Avg. 1000 Sq. Ft. GLA:
298

Average Rate:
4.21

Range of Rates:
0.78 - 27.27

Standard Deviation:
2.47

Fitted Curve Equation:
Ln(T) = 0.72 Ln(X) + 3.02

R^2:
0.76

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 17 (Total), 8 (Entry), 9 (Exit)
Fitted Curve: 56 (Total), 28 (Entry), 28 (Exit)

Trip Distribution

Deer Street Associates Development Trip Distribution

The distribution of the retail-based site-generated traffic volumes for the Deer Street Development was based upon average traffic volumes at five (5) gateway locations into the Downtown Portsmouth roadway network: Maplewood Avenue, Market Street, Congress Street, Islington Street, and Middle Street. The resulting primary trip distribution is shown in Table 8.

Table 8 – Retail-Based Trip Distribution Summary

Direction	Entering %	Exiting %
Maplewood Ave to/from Northwest	30%	30%
Market St to/from Northwest	15%	15%
Congress St to/from Northeast	20%	20%
Islington St to/from Southwest	10%	10%
Middle St to/from South	25%	25%
Total	**100%**	**100%**

The distribution of the residential-based site-generated traffic volumes for the Deer Street Development was based upon Journey to Work data obtained from the United States Census Bureau, 2000. The resulting primary trip distribution is shown in Table 9.

Table 9 – Residential-Based Trip Distribution Summary

Direction	Entering %	Exiting %
Maplewood Ave to/from Northwest	55%	55%
Market St to/from Northwest	10%	10%
Congress St to/from Northeast	15%	15%
Islington St to/from Southwest	5%	5%
Middle St to/from South	15%	15%
Total	**100%**	**100%**

The distribution of the office-based site-generated traffic volumes for the Deer Street Development was based upon Journey to Home data obtained from the United States Census Bureau, 2000. The resulting primary trip distribution is shown in Table 10.

Table 10 – Office-Based Trip Distribution Summary

Direction	Entering %	Exiting %
Maplewood Ave to/from Northwest	60%	60%
Market St to/from Northwest	20%	20%
Congress St to/from Northeast	10%	10%
Islington St to/from Southwest	5%	5%
Middle St to/from South	5%	5%
Total	**100%**	**100%**

The resulting site-generated traffic-volume networks for the Deer Street Development during the weekday morning, weekday evening, and Saturday peak periods are presented in Figure 14 (A through C).

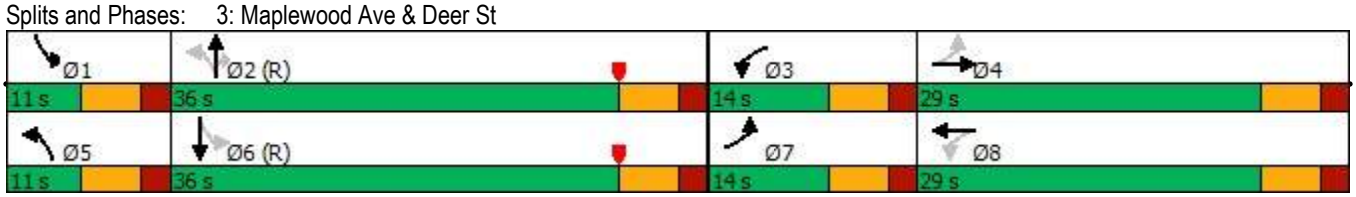
Capacity Analysis Worksheets

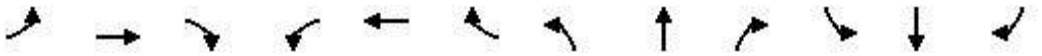
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	136	69	287	138	88	48	453	218	70	382	149
Future Volume (vph)	230	136	69	287	138	88	48	453	218	70	382	149
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	348	311	0	378	298	0	55	521	251	85	648	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	28.0	28.0	11.0	25.0	
Total Split (s)	14.0	29.0		14.0	29.0		11.0	36.0	36.0	11.0	36.0	
Total Split (%)	15.6%	32.2%		15.6%	32.2%		12.2%	40.0%	40.0%	12.2%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
v/c Ratio	1.32	0.78		1.39	0.72		0.28	0.73	0.32	0.30	0.93	
Control Delay	194.9	44.1		221.2	39.1		17.2	33.5	4.2	16.1	49.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	194.9	44.1		221.2	39.1		17.2	33.5	4.2	16.1	49.7	
Queue Length 50th (ft)	~181	153		~212	139		16	270	0	24	~394	
Queue Length 95th (ft)	#165	153		#258	171		37	#429	45	48	#537	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	263	487		272	503		193	709	796	284	698	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.32	0.64		1.39	0.59		0.28	0.73	0.32	0.30	0.93	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	136	69	287	138	88	48	453	218	70	382	149
Future Volume (vph)	230	136	69	287	138	88	48	453	218	70	382	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	1827		1770	1871		1711	1801	1636	1711	1725	
Flt Permitted	0.32	1.00		0.30	1.00		0.12	1.00	1.00	0.24	1.00	
Satd. Flow (perm)	564	1827		554	1871		210	1801	1636	432	1725	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	348	206	105	378	182	116	55	521	251	85	466	182
RTOR Reduction (vph)	0	21	0	0	27	0	0	0	155	0	14	0
Lane Group Flow (vph)	348	290	0	378	271	0	55	521	96	85	634	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	26.6	18.6		26.6	18.6		39.1	34.3	34.3	39.7	34.6	
Effective Green, g (s)	26.6	18.6		26.6	18.6		39.1	34.3	34.3	39.7	34.6	
Actuated g/C Ratio	0.30	0.21		0.30	0.21		0.43	0.38	0.38	0.44	0.38	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	263	377		271	386		171	686	623	263	663	
v/s Ratio Prot	0.12	0.16		c0.12	0.14		0.02	0.29		c0.02	c0.37	
v/s Ratio Perm	0.27			c0.29			0.12		0.06	0.12		
v/c Ratio	1.32	0.77		1.39	0.70		0.32	0.76	0.15	0.32	0.96	
Uniform Delay, d1	30.1	33.7		29.8	33.1		18.6	24.3	18.3	16.6	27.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	169.5	9.1		198.7	6.1		1.1	7.7	0.5	0.7	25.7	
Delay (s)	199.6	42.7		228.5	39.2		19.7	32.0	18.8	17.3	52.6	
Level of Service	F	D		F	D		B	C	B	B	D	
Approach Delay (s)		125.6			145.1			27.2			48.5	
Approach LOS		F			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	82.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	53	39	1	2	4
Future Vol, veh/h	4	53	39	1	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	78	58	1	4	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	59	0	-	0	149	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1545	-	-	-	843	1007
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	934	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1545	-	-	-	840	1007
Mov Cap-2 Maneuver	-	-	-	-	840	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	934	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1545	-	-	-	944
HCM Lane V/C Ratio	0.004	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	18.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	346	52	65	50	44	525
Future Vol, veh/h	346	52	65	50	44	525
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	384	58	74	57	49	583

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	131	0	-	0	929	103
Stage 1	-	-	-	-	103	-
Stage 2	-	-	-	-	826	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1454	-	-	-	297	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	430	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1454	-	-	-	216	952
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	29.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1454	-	-	-	753
HCM Lane V/C Ratio	0.264	-	-	-	0.84
HCM Control Delay (s)	8.4	0	-	-	29.4
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	1.1	-	-	-	9.6

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	9	679	3	2	617
Future Vol, veh/h	4	9	679	3	2	617
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	58	58	78	78	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	16	871	4	2	726

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1603	873	0	0	875	0
Stage 1	873	-	-	-	-	-
Stage 2	730	-	-	-	-	-
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	116	349	-	-	771	-
Stage 1	409	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	116	349	-	-	771	-
Mov Cap-2 Maneuver	116	-	-	-	-	-
Stage 1	407	-	-	-	-	-
Stage 2	477	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	216	771	-
HCM Lane V/C Ratio	-	-	0.104	0.003	-
HCM Control Delay (s)	-	-	23.6	9.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	121.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	434	7	0	442	318	519
Future Vol, veh/h	434	7	0	442	318	519
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	536	9	0	623	379	618

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1002	379	-	0	-	0
Stage 1	379	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 269	668	0	-	-	-
Stage 1	692	-	0	-	-	-
Stage 2	~ 535	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 269	668	-	-	-	-
Mov Cap-2 Maneuver	~ 269	-	-	-	-	-
Stage 1	692	-	-	-	-	-
Stage 2	~ 535	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 482.5	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	269	668	-	-
HCM Lane V/C Ratio	-	1.992	0.013	-	-
HCM Control Delay (s)	-	$ 490.1	10.5	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	38.6	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	64	663	25	52	580
Future Vol, veh/h	29	64	663	25	52	580
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	80	829	31	58	652

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1613	845	0	0	860	0
Stage 1	845	-	-	-	-	-
Stage 2	768	-	-	-	-	-
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	115	363	-	-	781	-
Stage 1	421	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	102	363	-	-	781	-
Mov Cap-2 Maneuver	102	-	-	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	458	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	44.5	0	0.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	202	781	-
HCM Lane V/C Ratio	-	-	0.575	0.075	-
HCM Control Delay (s)	-	-	44.5	10	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	3.1	0.2	-

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	12	668	33	14	607
Future Vol, veh/h	32	12	668	33	14	607
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	16	846	42	17	723

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1624	867	0	0	888	0
Stage 1	867	-	-	-	-	-
Stage 2	757	-	-	-	-	-
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	113	352	-	-	763	-
Stage 1	411	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	109	352	-	-	763	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	396	-	-	-	-	-
Stage 2	463	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	51.3	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	134	763	-
HCM Lane V/C Ratio	-	-	0.438	0.022	-
HCM Control Delay (s)	-	-	51.3	9.8	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	1.9	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	2	4	72	62	16
Future Vol, veh/h	12	2	4	72	62	16
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	5	5	94	89	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	205	101	112	0	-	0
Stage 1	101	-	-	-	-	-
Stage 2	104	-	-	-	-	-
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	783	954	1478	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	780	954	1478	-	-	-
Mov Cap-2 Maneuver	780	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	801	-	-
HCM Lane V/C Ratio	0.004	-	0.04	-	-
HCM Control Delay (s)	7.4	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	7	7	409	491	45
Future Vol, veh/h	42	7	7	409	491	45
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	12	8	481	585	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1109	612	639	0	-	0
Stage 1	612	-	-	-	-	-
Stage 2	497	-	-	-	-	-
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	232	493	945	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	229	493	945	-	-	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	611	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.8	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	945	-	248	-	-
HCM Lane V/C Ratio	0.009	-	0.341	-	-
HCM Control Delay (s)	8.8	0	26.8	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	1.4	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	42	31	13	28	32
Future Vol, veh/h	7	42	31	13	28	32
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	45	38	16	46	52

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	190	46	0	0	54	0
Stage 1	46	-	-	-	-	-
Stage 2	144	-	-	-	-	-
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	799	1023	-	-	1551	-
Stage 1	976	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	774	1023	-	-	1551	-
Mov Cap-2 Maneuver	774	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	883	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	3.4
HCM LOS	A		

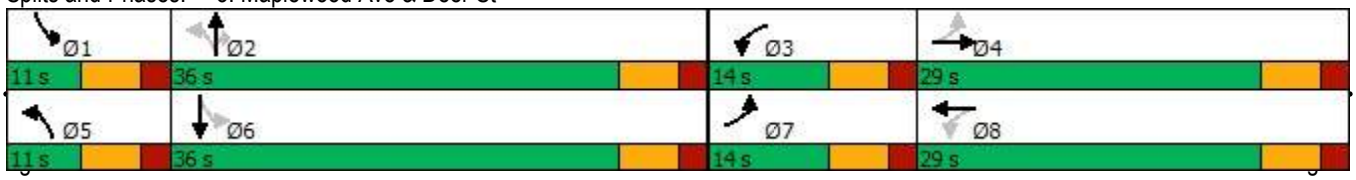
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	978	1551	-
HCM Lane V/C Ratio	-	-	0.054	0.03	-
HCM Control Delay (s)	-	-	8.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

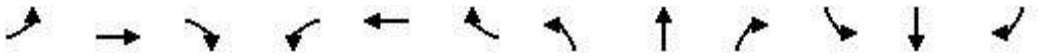
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	152	85	287	141	88	51	459	218	70	393	159
Future Volume (vph)	278	152	85	287	141	88	51	459	218	70	393	159
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	421	359	0	378	302	0	59	528	251	85	673	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	28.0	28.0	11.0	25.0	
Total Split (s)	14.0	29.0		14.0	29.0		11.0	36.0	36.0	11.0	36.0	
Total Split (%)	15.6%	32.2%		15.6%	32.2%		12.2%	40.0%	40.0%	12.2%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
v/c Ratio	1.40	0.82		1.37	0.67		0.32	0.81	0.34	0.37	1.06	
Control Delay	224.5	44.6		213.2	34.2		18.6	38.5	4.4	18.7	82.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	224.5	44.6		213.2	34.2		18.6	38.5	4.4	18.7	82.0	
Queue Length 50th (ft)	~273	172		~213	134		18	272	0	26	~430	
Queue Length 95th (ft)	#266	177		#285	174		39	#438	45	48	#566	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	300	523		275	540		184	648	749	231	635	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.40	0.69		1.37	0.56		0.32	0.81	0.34	0.37	1.06	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 84.3
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	152	85	287	141	88	51	459	218	70	393	159
Future Volume (vph)	278	152	85	287	141	88	51	459	218	70	393	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	1821		1770	1872		1711	1801	1636	1711	1723	
Flt Permitted	0.36	1.00		0.25	1.00		0.13	1.00	1.00	0.21	1.00	
Satd. Flow (perm)	620	1821		465	1872		238	1801	1636	372	1723	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	421	230	129	378	186	116	59	528	251	85	479	194
RTOR Reduction (vph)	0	23	0	0	26	0	0	0	162	0	15	0
Lane Group Flow (vph)	421	336	0	378	276	0	59	528	89	85	658	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	27.4	19.3		27.4	19.3		34.1	30.3	30.3	34.1	30.3	
Effective Green, g (s)	27.4	19.3		27.4	19.3		34.1	30.3	30.3	34.1	30.3	
Actuated g/C Ratio	0.32	0.23		0.32	0.23		0.40	0.35	0.35	0.40	0.35	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	296	411		272	422		160	638	579	207	610	
v/s Ratio Prot	c0.13	0.18		0.13	0.15		0.02	0.29		c0.02	c0.38	
v/s Ratio Perm	c0.32			0.31			0.13		0.05	0.14		
v/c Ratio	1.42	0.82		1.39	0.65		0.37	0.83	0.15	0.41	1.08	
Uniform Delay, d1	27.6	31.4		26.7	30.1		20.2	25.2	18.8	18.1	27.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	208.7	11.9		196.4	4.0		1.4	11.8	0.6	1.3	59.2	
Delay (s)	236.3	43.3		223.1	34.1		21.6	37.0	19.4	19.4	86.8	
Level of Service	F	D		F	C		C	D	B	B	F	
Approach Delay (s)		147.5			139.1			30.6			79.3	
Approach LOS		F			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	96.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	24.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	88	50	18	14	19
Future Vol, veh/h	15	88	50	18	14	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	129	75	27	28	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	102	0	-	0	262	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	173	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1490	-	-	-	727	969
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	857	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1490	-	-	-	715	969
Mov Cap-2 Maneuver	-	-	-	-	715	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	857	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1490	-	-	-	842
HCM Lane V/C Ratio	0.015	-	-	-	0.078
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	19.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	362	52	65	50	44	528
Future Vol, veh/h	362	52	65	50	44	528
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	402	58	74	57	49	587

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	131	0	-	0	965	103
Stage 1	-	-	-	-	103	-
Stage 2	-	-	-	-	862	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1454	-	-	-	283	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	414	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1454	-	-	-	202	952
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	414	-

Approach	EB	WB	SB
HCM Control Delay, s	7.4	0	31.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1454	-	-	-	741
HCM Lane V/C Ratio	0.277	-	-	-	0.858
HCM Control Delay (s)	8.4	0	-	-	31.7
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	1.1	-	-	-	10.2

Intersection	
Int Delay, s/veh	139.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	460	7	0	442	318	529
Future Vol, veh/h	460	7	0	442	318	529
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	568	9	0	623	379	630

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1002	379	-	0	-	0
Stage 1	379	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 269	668	0	-	-	-
Stage 1	692	-	0	-	-	-
Stage 2	~ 535	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 269	668	-	-	-	-
Mov Cap-2 Maneuver	~ 269	-	-	-	-	-
Stage 1	692	-	-	-	-	-
Stage 2	~ 535	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 534.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	269	668	-	-
HCM Lane V/C Ratio	-	2.111	0.013	-	-
HCM Control Delay (s)	-	$ 542.7	10.5	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	42.4	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	105	711	25	71	590
Future Vol, veh/h	32	105	711	25	71	590
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	131	889	31	80	663

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1728	905	0	0	920	0
Stage 1	905	-	-	-	-	-
Stage 2	823	-	-	-	-	-
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	97	335	-	-	742	-
Stage 1	395	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	80	335	-	-	742	-
Mov Cap-2 Maneuver	80	-	-	-	-	-
Stage 1	327	-	-	-	-	-
Stage 2	431	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	89.5	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	192	742	-
HCM Lane V/C Ratio	-	-	0.892	0.108	-
HCM Control Delay (s)	-	-	89.5	10.4	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	6.8	0.4	-

Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	47	21	713	41	16	617
Future Vol, veh/h	47	21	713	41	16	617
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	28	903	52	19	735

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1702	929	0	0	955	0
Stage 1	929	-	-	-	-	-
Stage 2	773	-	-	-	-	-
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	101	324	-	-	720	-
Stage 1	385	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	96	324	-	-	720	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	368	-	-	-	-	-
Stage 2	455	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	90	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	123	720	-
HCM Lane V/C Ratio	-	-	0.737	0.026	-
HCM Control Delay (s)	-	-	90	10.1	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	4.2	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	21	13	84	78	19
Future Vol, veh/h	32	21	13	84	78	19
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	48	17	109	111	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	268	125	138	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	143	-	-	-	-	-
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	721	926	1446	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	712	926	1446	-	-	-
Mov Cap-2 Maneuver	712	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	884	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1446	-	784	-	-
HCM Lane V/C Ratio	0.012	-	0.154	-	-
HCM Control Delay (s)	7.5	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	7	7	425	494	51
Future Vol, veh/h	53	7	7	425	494	51
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	12	8	500	588	61

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1135	619	649	0	-	0
Stage 1	619	-	-	-	-	-
Stage 2	516	-	-	-	-	-
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	224	489	937	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	221	489	937	-	-	-
Mov Cap-2 Maneuver	221	-	-	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.6	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	937	-	236	-	-
HCM Lane V/C Ratio	0.009	-	0.438	-	-
HCM Control Delay (s)	8.9	0	31.6	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	2.1	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	48	49	13	39	59
Future Vol, veh/h	7	48	49	13	39	59
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	52	60	16	64	97

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	293	68	0	0	76	0
Stage 1	68	-	-	-	-	-
Stage 2	225	-	-	-	-	-
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	698	995	-	-	1523	-
Stage 1	955	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	667	995	-	-	1523	-
Mov Cap-2 Maneuver	667	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	812	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	3
HCM LOS	A		

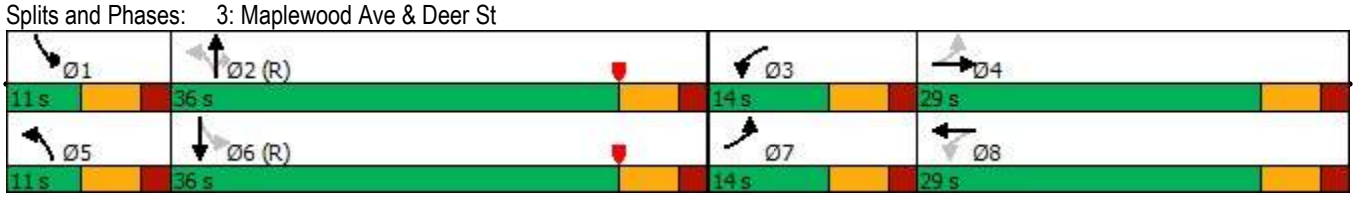
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	936	1523	-
HCM Lane V/C Ratio	-	-	0.063	0.042	-
HCM Control Delay (s)	-	-	9.1	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

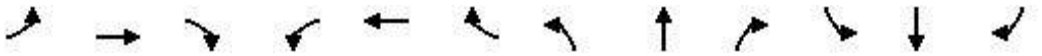
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	145	70	308	148	94	49	496	238	75	423	154
Future Volume (vph)	239	145	70	308	148	94	49	496	238	75	423	154
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	326	0	405	319	0	56	570	274	91	704	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	28.0	28.0	11.0	25.0	
Total Split (s)	14.0	29.0		14.0	29.0		11.0	36.0	36.0	11.0	36.0	
Total Split (%)	15.6%	32.2%		15.6%	32.2%		12.2%	40.0%	40.0%	12.2%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
v/c Ratio	1.41	0.79		1.51	0.75		0.30	0.82	0.34	0.38	1.02	
Control Delay	233.3	44.9		271.3	40.5		17.7	38.7	4.2	18.3	69.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	233.3	44.9		271.3	40.5		17.7	38.7	4.2	18.3	69.6	
Queue Length 50th (ft)	~205	161		~247	151		16	313	0	27	~470	
Queue Length 95th (ft)	#194	162		#298	185		38	#492	46	51	#604	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	256	487		268	503		189	699	803	242	691	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.41	0.67		1.51	0.63		0.30	0.82	0.34	0.38	1.02	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	145	70	308	148	94	49	496	238	75	423	154
Future Volume (vph)	239	145	70	308	148	94	49	496	238	75	423	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	1831		1770	1871		1711	1801	1636	1711	1729	
Flt Permitted	0.29	1.00		0.28	1.00		0.12	1.00	1.00	0.18	1.00	
Satd. Flow (perm)	511	1831		522	1871		213	1801	1636	327	1729	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	362	220	106	405	195	124	56	570	274	91	516	188
RTOR Reduction (vph)	0	20	0	0	27	0	0	0	171	0	14	0
Lane Group Flow (vph)	362	306	0	405	292	0	56	570	103	91	690	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	27.2	19.2		27.2	19.2		38.5	33.8	33.8	39.1	34.1	
Effective Green, g (s)	27.2	19.2		27.2	19.2		38.5	33.8	33.8	39.1	34.1	
Actuated g/C Ratio	0.30	0.21		0.30	0.21		0.43	0.38	0.38	0.43	0.38	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	255	390		268	399		169	676	614	218	655	
v/s Ratio Prot	0.13	0.17		c0.13	0.16		0.02	0.32		c0.02	c0.40	
v/s Ratio Perm	0.30			c0.32			0.12		0.06	0.16		
v/c Ratio	1.42	0.78		1.51	0.73		0.33	0.84	0.17	0.42	1.05	
Uniform Delay, d1	29.5	33.4		29.4	33.0		20.3	25.7	18.7	17.8	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	210.3	9.9		248.4	7.2		1.2	12.2	0.6	1.3	50.2	
Delay (s)	239.8	43.3		277.8	40.3		21.4	37.9	19.3	19.1	78.2	
Level of Service	F	D		F	D		C	D	B	B	E	
Approach Delay (s)		146.7			173.1			31.2			71.4	
Approach LOS		F			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	100.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	46	42	1	2	4
Future Vol, veh/h	4	46	42	1	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	68	63	1	4	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	64	0	-	0	144	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	80	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1538	-	-	-	849	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1538	-	-	-	846	1000
Mov Cap-2 Maneuver	-	-	-	-	846	-
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1538	-	-	-	943
HCM Lane V/C Ratio	0.004	-	-	-	0.013
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	24.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	373	57	72	52	45	563
Future Vol, veh/h	373	57	72	52	45	563
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	414	63	82	59	50	626

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	141	0	-	0	1003	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	891	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1442	-	-	-	268	941
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	401	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1442	-	-	-	188	941
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	401	-

Approach	EB	WB	SB
HCM Control Delay, s	7.4	0	42.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1442	-	-	-	726
HCM Lane V/C Ratio	0.287	-	-	-	0.931
HCM Control Delay (s)	8.5	0	-	-	42.5
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	1.2	-	-	-	13.1

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	9	736	3	2	667
Future Vol, veh/h	4	9	736	3	2	667
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	58	58	78	78	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	17	944	4	2	785

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1735	946	0	0	948	0
Stage 1	946	-	-	-	-	-
Stage 2	789	-	-	-	-	-
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	96	317	-	-	724	-
Stage 1	377	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	96	317	-	-	724	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.6	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	191	724	-
HCM Lane V/C Ratio	-	-	0.126	0.003	-
HCM Control Delay (s)	-	-	26.6	10	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	173.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	466	8	0	489	353	560
Future Vol, veh/h	466	8	0	489	353	560
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	575	10	0	689	420	667

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1109	420	-	0	-	0
Stage 1	420	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 232	633	0	-	-	-
Stage 1	663	-	0	-	-	-
Stage 2	~ 498	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 232	633	-	-	-	-
Mov Cap-2 Maneuver	~ 232	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	~ 498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 699.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	232	633	-	-
HCM Lane V/C Ratio	-	2.48	0.016	-	-
HCM Control Delay (s)	-	$ 711.5	10.8	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	47.5	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	69	718	28	56	627
Future Vol, veh/h	32	69	718	28	56	627
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	86	898	35	63	704

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1746	916	0	0	933	0
Stage 1	916	-	-	-	-	-
Stage 2	830	-	-	-	-	-
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	95	330	-	-	734	-
Stage 1	390	-	-	-	-	-
Stage 2	428	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	82	330	-	-	734	-
Mov Cap-2 Maneuver	82	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	428	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	71.4	0	0.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	169	734	-
HCM Lane V/C Ratio	-	-	0.747	0.086	-
HCM Control Delay (s)	-	-	71.4	10.4	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	4.7	0.3	-

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	13	724	35	15	656
Future Vol, veh/h	34	13	724	35	15	656
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	17	916	44	18	781

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1755	938	0	0	960	0
Stage 1	938	-	-	-	-	-
Stage 2	817	-	-	-	-	-
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	94	321	-	-	717	-
Stage 1	381	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	90	321	-	-	717	-
Mov Cap-2 Maneuver	90	-	-	-	-	-
Stage 1	364	-	-	-	-	-
Stage 2	434	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	71.9	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	112	717	-
HCM Lane V/C Ratio	-	-	0.56	0.025	-
HCM Control Delay (s)	-	-	71.9	10.1	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	2.7	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	2	4	76	65	18
Future Vol, veh/h	13	2	4	76	65	18
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	5	5	99	93	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	215	106	119	0	-	0
Stage 1	106	-	-	-	-	-
Stage 2	109	-	-	-	-	-
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	773	948	1469	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	770	948	1469	-	-	-
Mov Cap-2 Maneuver	770	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1469	-	790	-	-
HCM Lane V/C Ratio	0.004	-	0.043	-	-
HCM Control Delay (s)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	8	8	439	529	48
Future Vol, veh/h	45	8	8	439	529	48
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	14	9	516	630	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1193	659	687	0	-	0
Stage 1	659	-	-	-	-	-
Stage 2	534	-	-	-	-	-
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	206	464	907	-	-	-
Stage 1	515	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	203	464	907	-	-	-
Mov Cap-2 Maneuver	203	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	588	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.1	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	907	-	222	-	-
HCM Lane V/C Ratio	0.01	-	0.412	-	-
HCM Control Delay (s)	9	0	32.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	1.9	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	45	33	14	29	34
Future Vol, veh/h	8	45	33	14	29	34
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	48	41	17	48	56

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	202	50	0	0	58	0
Stage 1	50	-	-	-	-	-
Stage 2	152	-	-	-	-	-
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	787	1018	-	-	1546	-
Stage 1	972	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	762	1018	-	-	1546	-
Mov Cap-2 Maneuver	762	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	3.4
HCM LOS	A		

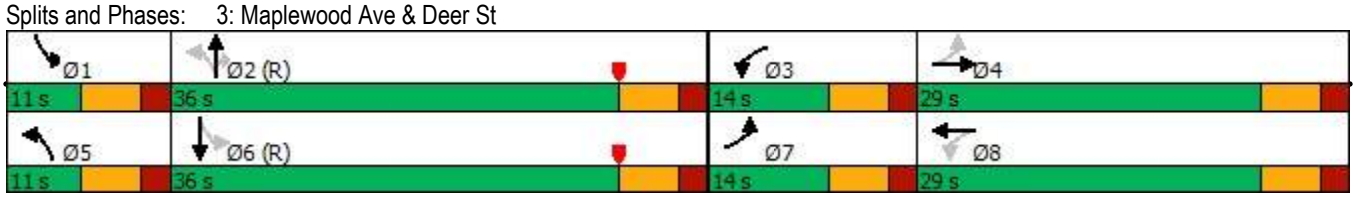
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	969	1546	-
HCM Lane V/C Ratio	-	-	0.059	0.031	-
HCM Control Delay (s)	-	-	8.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

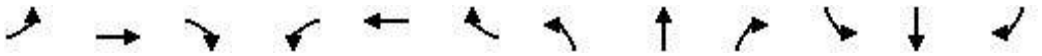
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	161	86	308	151	94	52	502	238	75	434	164
Future Volume (vph)	287	161	86	308	151	94	52	502	238	75	434	164
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	435	374	0	405	323	0	60	577	274	91	729	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	28.0	28.0	11.0	25.0	
Total Split (s)	14.0	29.0		14.0	29.0		11.0	36.0	36.0	11.0	36.0	
Total Split (%)	15.6%	32.2%		15.6%	32.2%		12.2%	40.0%	40.0%	12.2%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
v/c Ratio	1.60	0.85		1.61	0.71		0.33	0.85	0.35	0.43	1.09	
Control Delay	308.5	48.6		313.0	37.3		18.9	41.8	4.2	20.7	91.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	308.5	48.6		313.0	37.3		18.9	41.8	4.2	20.7	91.7	
Queue Length 50th (ft)	~261	183		~260	148		18	318	0	29	~512	
Queue Length 95th (ft)	#253	186		#340	188		40	#501	46	51	#633	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	272	487		252	502		183	680	788	212	669	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.60	0.77		1.61	0.64		0.33	0.85	0.35	0.43	1.09	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	161	86	308	151	94	52	502	238	75	434	164
Future Volume (vph)	287	161	86	308	151	94	52	502	238	75	434	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	1824		1770	1873		1711	1801	1636	1711	1727	
Flt Permitted	0.32	1.00		0.22	1.00		0.12	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	548	1824		414	1873		220	1801	1636	288	1727	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	435	244	130	405	199	124	60	577	274	91	529	200
RTOR Reduction (vph)	0	22	0	0	25	0	0	0	174	0	15	0
Lane Group Flow (vph)	435	352	0	405	298	0	60	577	100	91	714	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	28.7	20.7		28.7	20.7		37.1	32.8	32.8	37.5	33.0	
Effective Green, g (s)	28.7	20.7		28.7	20.7		37.1	32.8	32.8	37.5	33.0	
Actuated g/C Ratio	0.32	0.23		0.32	0.23		0.41	0.36	0.36	0.42	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	272	419		252	430		161	656	596	191	633	
v/s Ratio Prot	0.14	0.19		c0.14	0.16		0.02	0.32		c0.02	c0.41	
v/s Ratio Perm	0.37			c0.37			0.14		0.06	0.17		
v/c Ratio	1.60	0.84		1.61	0.69		0.37	0.88	0.17	0.48	1.13	
Uniform Delay, d1	29.0	33.1		28.0	31.7		20.9	26.8	19.4	19.0	28.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	286.3	13.7		291.0	5.1		1.5	15.6	0.6	1.9	76.7	
Delay (s)	315.3	46.8		318.9	36.9		22.3	42.3	20.0	20.9	105.2	
Level of Service	F	D		F	D		C	D	B	C	F	
Approach Delay (s)		191.2			193.8			34.3			95.9	
Approach LOS		F			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	124.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	91	53	18	14	19
Future Vol, veh/h	15	91	53	18	14	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	134	79	27	28	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	106	0	-	0	271	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	178	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1485	-	-	-	718	964
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	853	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1485	-	-	-	707	964
Mov Cap-2 Maneuver	-	-	-	-	707	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	853	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1485	-	-	-	835
HCM Lane V/C Ratio	0.015	-	-	-	0.079
HCM Control Delay (s)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	27.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	389	57	72	52	45	566
Future Vol, veh/h	389	57	72	52	45	566
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	432	63	82	59	50	629

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	141	0	-	0	1039	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	927	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1442	-	-	-	255	941
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1442	-	-	-	176	941
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	SB
HCM Control Delay, s	7.5	0	47
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1442	-	-	-	713
HCM Lane V/C Ratio	0.3	-	-	-	0.952
HCM Control Delay (s)	8.6	0	-	-	47
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	1.3	-	-	-	14

Intersection	
Int Delay, s/veh	195.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	492	8	0	489	353	570
Future Vol, veh/h	492	8	0	489	353	570
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	607	10	0	689	420	679

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1109	420	-	0	-	0
Stage 1	420	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 232	633	0	-	-	-
Stage 1	663	-	0	-	-	-
Stage 2	~ 498	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 232	633	-	-	-	-
Mov Cap-2 Maneuver	~ 232	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	~ 498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 760.8	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	232	633	-	-
HCM Lane V/C Ratio	-	2.618	0.016	-	-
HCM Control Delay (s)	-	$ 773	10.8	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	51.4	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	15.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	110	766	28	75	637
Future Vol, veh/h	35	110	766	28	75	637
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	138	958	35	84	716

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1860	976	0	0	993	0
Stage 1	976	-	-	-	-	-
Stage 2	884	-	-	-	-	-
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	81	305	-	-	696	-
Stage 1	365	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	65	305	-	-	696	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	292	-	-	-	-	-
Stage 2	404	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	165.8	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	161	696	-
HCM Lane V/C Ratio	-	-	1.126	0.121	-
HCM Control Delay (s)	-	-	165.8	10.9	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	9.6	0.4	-

Intersection	
Int Delay, s/veh	7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	49	22	769	44	17	666
Future Vol, veh/h	49	22	769	44	17	666
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	29	973	56	20	793

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1834	1001	0	0	1029	0
Stage 1	1001	-	-	-	-	-
Stage 2	833	-	-	-	-	-
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	84	295	-	-	675	-
Stage 1	355	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	80	295	-	-	675	-
Mov Cap-2 Maneuver	80	-	-	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	427	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	143.4	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	103	675	-
HCM Lane V/C Ratio	-	-	0.919	0.03	-
HCM Control Delay (s)	-	-	143.4	10.5	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	5.5	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	21	13	88	81	21
Future Vol, veh/h	33	21	13	88	81	21
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	48	17	114	116	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	279	131	146	0	-	0
Stage 1	131	-	-	-	-	-
Stage 2	148	-	-	-	-	-
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	711	919	1436	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	702	919	1436	-	-	-
Mov Cap-2 Maneuver	702	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1436	-	773	-	-
HCM Lane V/C Ratio	0.012	-	0.159	-	-
HCM Control Delay (s)	7.5	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	8	8	455	532	54
Future Vol, veh/h	56	8	8	455	532	54
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	14	9	535	633	64

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1218	665	697	0	-	0
Stage 1	665	-	-	-	-	-
Stage 2	553	-	-	-	-	-
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	199	460	899	-	-	-
Stage 1	511	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	196	460	899	-	-	-
Mov Cap-2 Maneuver	196	-	-	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	576	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	39.4	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	899	-	211	-	-
HCM Lane V/C Ratio	0.01	-	0.523	-	-
HCM Control Delay (s)	9	0	39.4	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0	-	2.7	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	51	51	14	10	61
Future Vol, veh/h	8	51	51	14	10	61
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	55	63	17	16	100

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	204	72	0	0	80	0
Stage 1	72	-	-	-	-	-
Stage 2	132	-	-	-	-	-
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	784	990	-	-	1518	-
Stage 1	951	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	775	990	-	-	1518	-
Mov Cap-2 Maneuver	775	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	894	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	954	1518	-
HCM Lane V/C Ratio	-	-	0.066	0.011	-
HCM Control Delay (s)	-	-	9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

APPENDIX H

111 Maplewood Avenue Traffic Evaluation
Response to Comments

Responses to TAC Traffic Comments
Proposed Office Building at 111 Maplewood Avenue
Portsmouth, NH

TO: Eric Eby, PE
Parking and Transportation Engineer
Department of Public Works
City of Portsmouth, NH

FROM: Vinod Kalikiri, PE, PTOE

DATE: April 18, 2019

Tighe & Bond prepared a detailed traffic evaluation dated March 18, 2019 for the above referenced project as part of the Site Review and Subdivision submittal to the City of Portsmouth Technical Advisory Committee (TAC). This memorandum includes revised analysis based on feedback provided by the City Traffic Engineer on the original traffic study.

Specifically, the following revisions were made to the original analysis and the underlying analytical assumptions.

- Traffic diversion assumptions related to the US Route 1 Bypass Bridge project were removed from the No-Build and Build analysis.
- Future conditions traffic associated with the Deer Street Associates (DSA) development and the Harbor Corp Redevelopment, as well as any traffic improvements by the two projects within the study area were assumed to be in place only in the 2030 analysis.
- Trip distribution assumptions for the commercial component of the project were revised to be consistent with the corresponding assumptions included in the DSA traffic study.
- In addition, newly available permanent traffic count station data from NHDOT were reviewed to confirm if the seasonal adjustment factor used in the original study was too high. The seasonal adjustment factor was not revised based on the review of the new permanent count station data.

Revised capacity analysis summary tabulation is presented in Tables 1 and 2 for signalized and unsignalized study intersections, respectively. Also included in the attachment to this memorandum are revised traffic volume networks and Synchro analysis worksheets resulting from the above outlined revisions.

Overall, while the revisions to the analytical assumptions changed some of the traffic volumes, the overall finding of the original study that certain movements at the study locations are expected to be constrained with or without the project related traffic remains valid. A review of the analysis results indicated that the exclusive pedestrian phase at the intersection significantly contributes to the reduced capacity. As part of the Maplewood Avenue corridor road diet project, newer signal timing may be implemented by the City's signal design consultant which may be better suited for the future conditions. Since new signal timings are not yet available, analysis of the 2020 No-Build and Build conditions were based on existing timings provided by the City. It is unclear if the road diet project will also include replacement of the exclusive pedestrian phase with a concurrent phase. Signal timing changes and/or phasing changes as part of the road diet project has the potential to provide some capacity enhancement at the intersection in the short term. As discussed in the original study, signal

phasing and geometric improvements are also proposed by other private development projects in the longer term, which will provide additional capacity at the intersection.

Compared to the area roadway traffic volumes, the additional traffic estimated for the project at the various study intersections, including the Maplewood Avenue/Deer Street signalized intersection, is nominal. The Site Plans show the elimination of one of the unsignalized curb cuts for the east parcel, which promotes access management. Further, as shown in the Site Plans, the project will implement significant enhancements to the pedestrian accommodations around the Site. The limited additional traffic estimated for the project do not warrant any significant capacity enhancements at study intersections. The proponent will continue to work with the City staff during the project review to further refine the proposed pedestrian and streetscape enhancements to the area.

\\tighebond.com\data\Data\Projects\K\K0076 The Kane Company - General Proposals\0076-019 Maplewood\Traffic\Memos\2019-04-16 Traffic Responses.docx

TABLE 1: Signalized Intersection Operations Summary

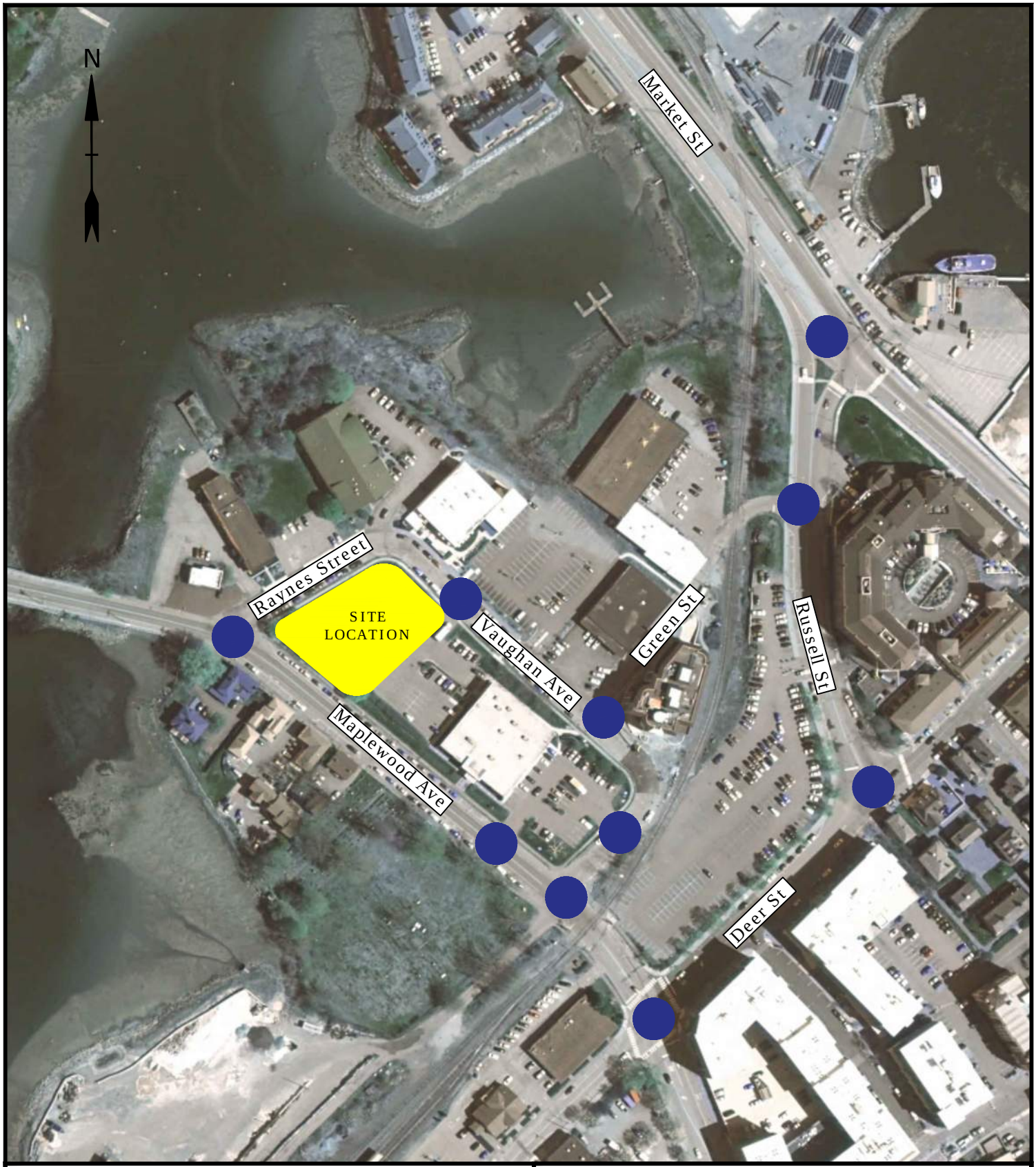
Intersection / Lane Group	2020 No Build					2020 Build					2030 No Build					2030 Build				
	V/C	Del	LOS	50th Q	95th Q	V/C	Del	LOS	50th Q	95th Q	V/C	Del	LOS	50th Q	95th Q	V/C	Del	LOS	50th Q	95th Q
Maplewood Ave / Deer St																				
Deer St EBL/T/R	1.14	>120	F	~274	#274	>1.2	>120	F	~465	#430	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Deer St EBL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	>1.2	>120	F	~205	#194	>1.2	>120	F	~261	#253
Deer St EBT/R	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.78	43	D	161	162	0.84	47	D	183	186
Deer St WBL	>1.2	>120	F	~264	#340	>1.2	>120	F	~306	#381	>1.2	>120	F	~280	#328	>1.2	>120	F	~335	#405
Deer St WBT/R	0.41	36	D	109	146	0.42	36	D	113	149	0.73	40	D	151	185	0.69	37	D	148	188
Maplewood Ave NBL	0.04	12	B	5	16	0.05	12	B	7	19	0.33	21	C	16	38	0.37	22	C	18	40
Maplewood Ave NBT	0.50	18	B	210	296	0.51	18	B	220	309	0.84	38	D	313	#492	0.89	44	D	327	#514
Maplewood Ave NBR	0.14	13	B	0	33	0.14	13	B	2	35	0.17	19	B	0	46	0.17	20	B	0	46
Maplewood Ave SBL	0.14	9	A	15	28	0.14	9	A	15	28	0.42	19	B	27	51	0.49	21	C	29	51
Maplewood Ave SBT/R	0.48	11	B	178	220	0.49	12	B	183	226	1.02	67	E	~439	#573	1.07	84	F	~463	#585
Overall Intersection	0.77	60	E			0.88	111	F			>1.2	106	F			>1.2	>120	F		

LOS	level-of-service
Del	Average intersection delay, measured in seconds
v/c	Volume to capacity ratio
50th Q and 95th Q	Percentile queues measured in feet
#	95th percentile volume exceeds capacity, queue may be longer
~	Volume exceeds capacity. Queues are shown after two signal cycles

TABLE 2: Unsignalized Intersection Operations Summary

Intersection / Lane Group	2020 No Build				2020 Build				2030 No Build				2030 Build			
	V/C	Del	LOS	95th Q	V/C	Del	LOS	95th Q	V/C	Del	LOS	95th Q	V/C	Del	LOS	95th Q
Maplewood Ave / Raynes Ave:																
Maplewood Ave SBL/T	0.1	10	A	0.2	0.1	10	A	0.3	0.1	10	B	0.3	0.1	11	B	0.4
Raynes Ave WBL/R	0.4	26	D	1.9	0.5	32	D	2.9	0.7	70	F	4.6	0.9	107	F	7.0
Maplewood Ave / Kennebunk Bank Driveway:																
Maplewood Ave SBL/T	0.0	9	A	0.0	NA	NA	NA	NA	0.0	10	A	0.0	NA	NA	NA	NA
Kennebunk Bank WBL/R	0.1	18	C	0.2	NA	NA	NA	NA	0.1	27	D	0.4	NA	NA	NA	NA
Maplewood Ave / Vaughan St:																
Maplewood Ave SBL/T	0.0	9	A	0.1	0.0	10	A	0.1	0.0	10	B	0.1	0.0	11	B	0.1
Vaughan St WBL/R	0.3	30	D	1.2	0.6	47	E	2.9	0.5	68	F	2.6	1.0	>120	F	6.5
Vaughan St / Kennebunk Bank Driveway:																
Vaughan St EBL/T	0.0	7	A	0.0	0.0	8	A	0.0	0.0	7	A	0.0	0.0	8	A	0.0
Kennebunk Bank SBL/R	0.0	9	A	0.0	0.1	10	A	0.2	0.0	9	A	0.0	0.1	10	A	0.2
Vaughan St / Green St:																
Vaughan St SBL/T	0.1	7	A	0.1	0.0	8	A	0.1	0.0	7	A	0.1	0.0	8	A	0.1
Green St WBL/R	0.2	9	A	0.2	0.1	9	A	0.2	0.1	9	A	0.2	0.1	9	A	0.2
Vaughan St / Site Driveway:																
Vaughan St NBL/T	0.0	7	A	0.0	0.0	8	A	0.1	0.0	8	A	0.0	0.0	8	A	0.1
Site Driveway EBL/R	0.0	10	A	0.1	0.1	10.2	B	0.5	0.0	10	A	0.1	0.2	10	B	0.5
Deer St / Russell St:																
Deer St EBL/T	0.2	8	A	0.7	0.2	8	A	0.8	0.3	9	A	1.2	0.3	9	A	1.3
Russell St SBL/R	0.5	13	B	2.8	0.5	14	B	3.4	1.0	47	E	14.3	1.0	58	F	17.0
Green St / Russell St:																
Russell St NBL/T	0.0	9	A	0.0	0.0	9	A	0.0	0.0	9	A	0.0	0.0	9	A	0.0
Green St EBL	0.2	19	C	1.0	0.3	22	C	1.3	0.4	32	D	1.9	0.5	40	E	2.7
Russell St / Market St:																
Russell St EBL	>1.2	>120	F	24.4	>1.2	>120	F	27.9	>1.2	>120	F	47.5	>1.2	>120	F	51.2
Russell St EBR	0.0	11	B	0.0	0.0	11	B	0.0	0.0	11	B	0.0	0.0	11	B	0.0

LOS	level-of-service
Del	Average intersection delay, measured in seconds
v/c	Volume to capacity ratio
95th Q	Percentile queues measured in vehicles



Legend

Study Area Location

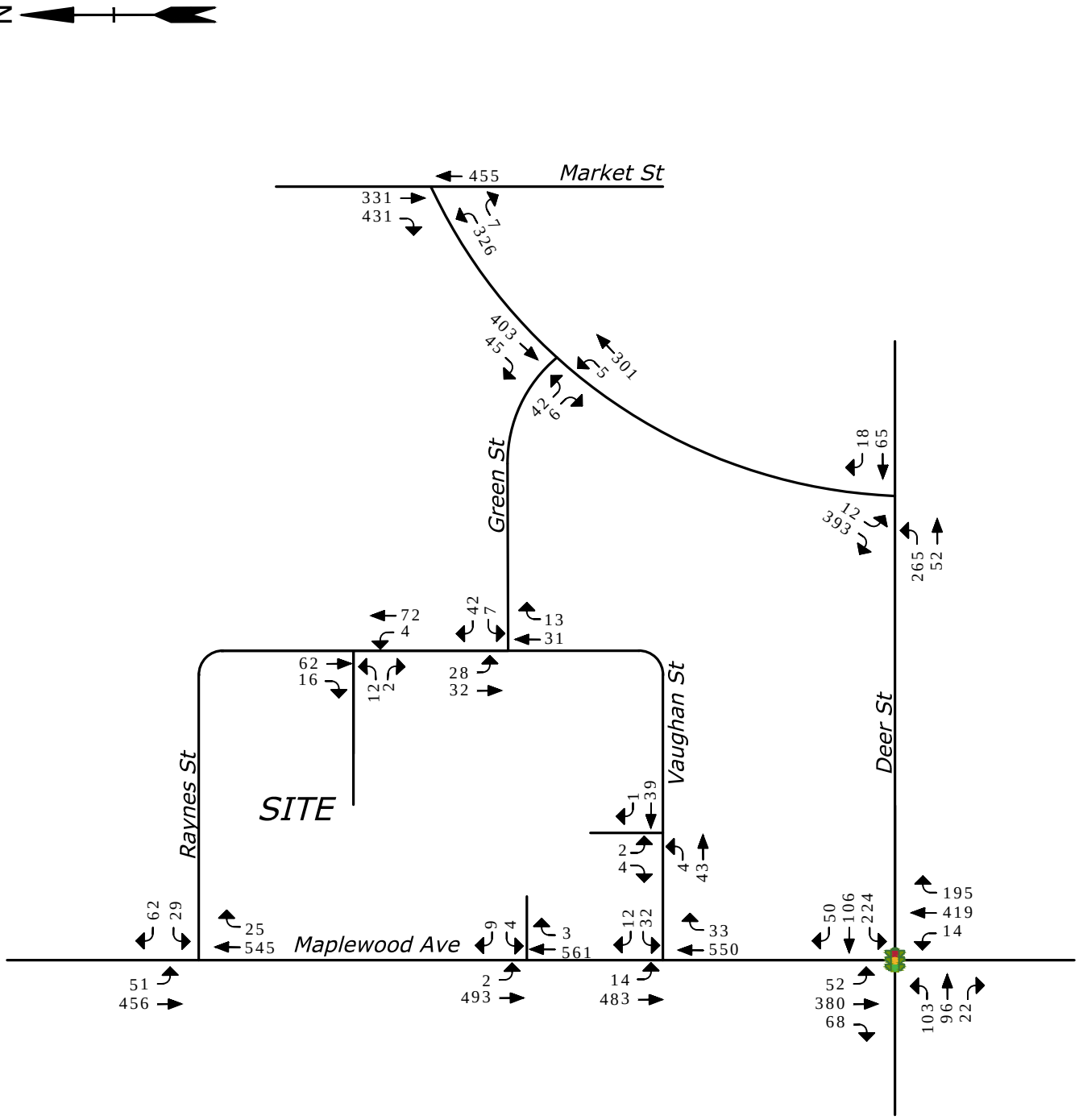
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

Study Area

DATE: 03/18/2019
SCALE: 1" = 200'
FIGURE 1

Tighe&Bond
www.tighebond.com

Apr 11, 2019-11:44am Plotted By: YMayboroda
Tighe & Bond, Inc. C:\Users\YMayboroda\appdata\local\temp\AcPublish_5272\Diversion figure - Future_April2019.dwg



LEGEND

TRAFFIC SIGNAL

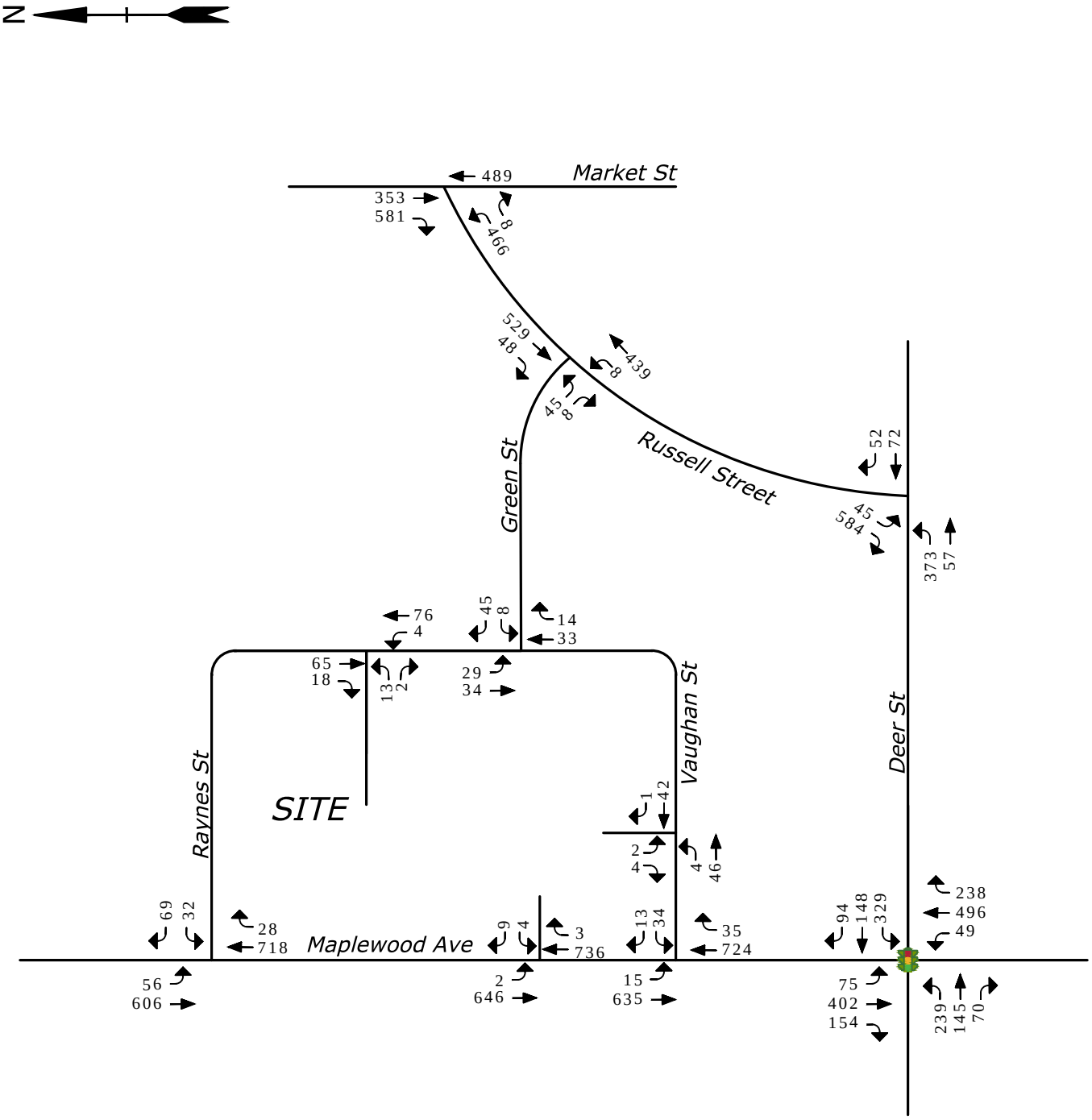
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

2020 No Build Peak Hour Traffic Volumes

DATE: 03/18/2019
SCALE: No Scale
FIGURE 2

Tighe&Bond
www.tighebond.com

Apr 11, 2019-11:44am Plotted By: YMayboroda
Tighe & Bond, Inc. C:\Users\YMayboroda\appdata\local\temp\AcPublish_5272\Diversion figure - Future_April2019.dwg



LEGEND

TRAFFIC SIGNAL

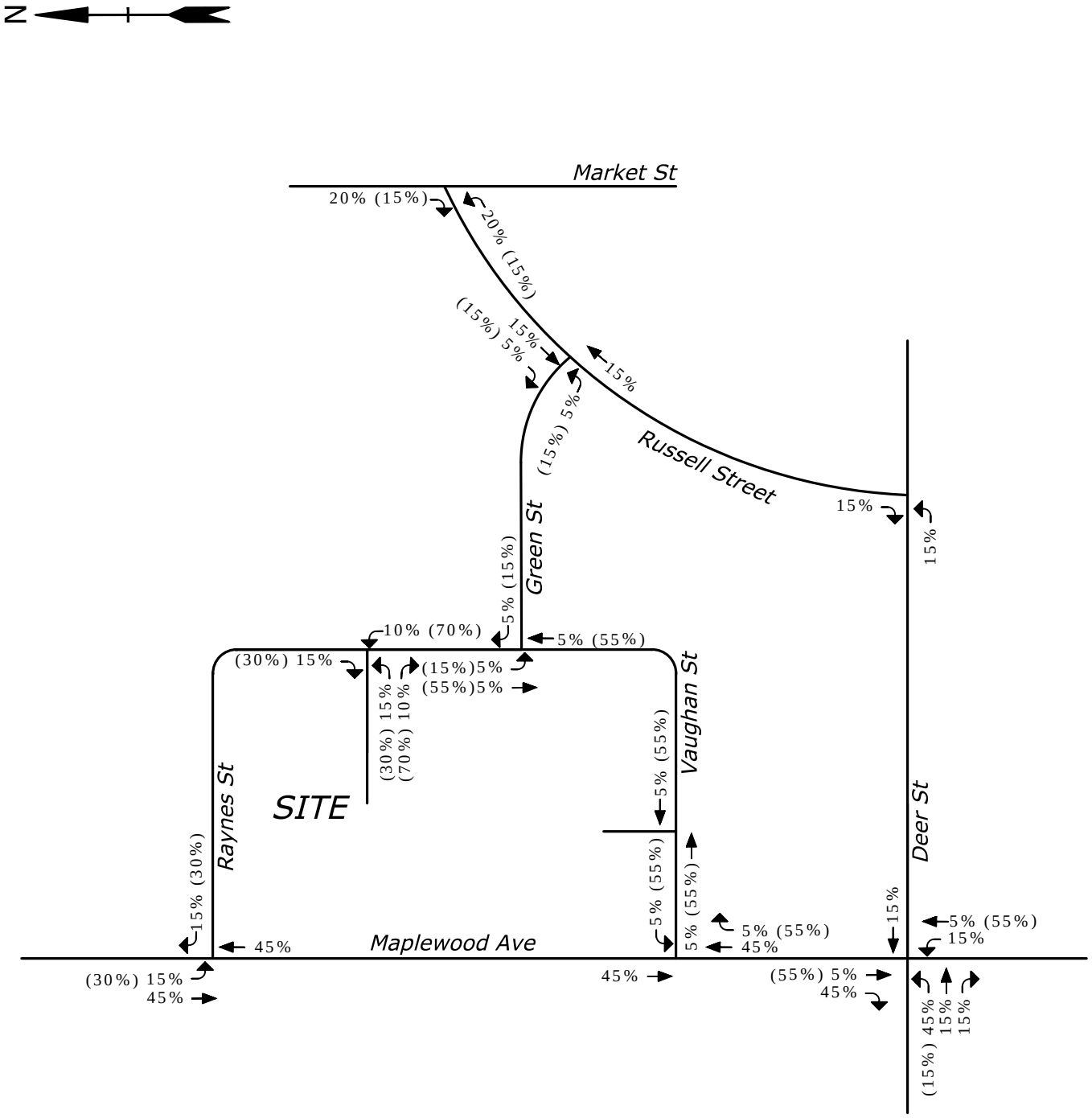
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

2030 No Build Peak Hour Traffic Volumes

DATE: 03/18/2019
SCALE: No Scale
FIGURE 3

Tighe&Bond
www.tighebond.com

Apr 11, 2019-11:44am Plotted By: YMayboroda
Tighe & Bond, Inc. C:\Users\YMayboroda\appdata\local\temp\AcPublish_5272\Diversion figure - Future_April2019.dwg



LEGEND

XX Office Trips
(XX) Retail Trips

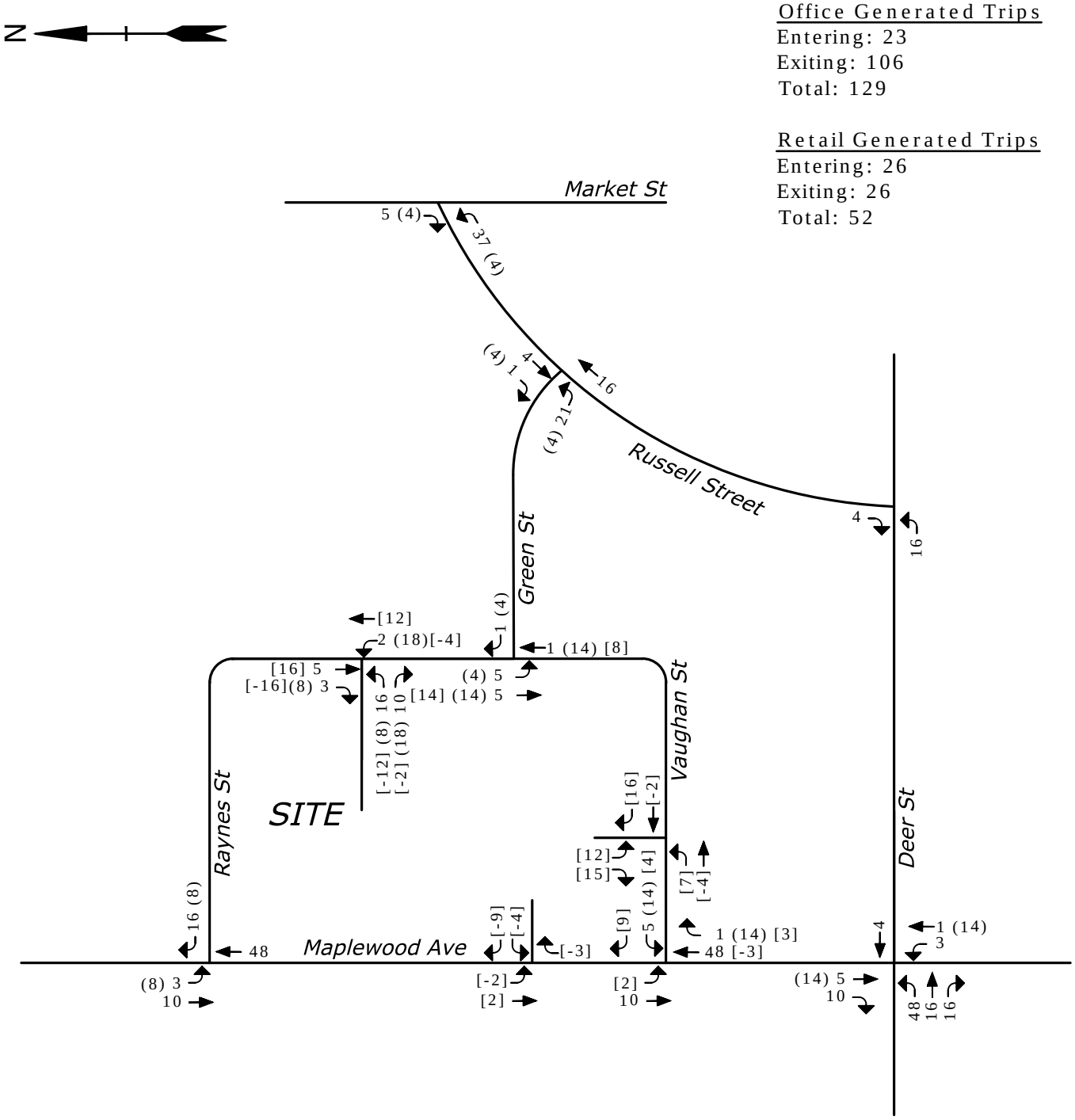
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

Trip Distribution

DATE: 03/18/2019
SCALE: No Scale
FIGURE 4

Tighe&Bond
www.tighebond.com

Apr 11, 2019-11:44am Plotted By: YMayboroda
Tighe & Bond, Inc. C:\Users\YMayboroda\appdata\local\temp\AcPublish_5272\Diversion figure - Future_April2019.dwg



LEGEND

XX	Office Trips
(XX)	Retail Trips
[XX]	Driveway Redistribution

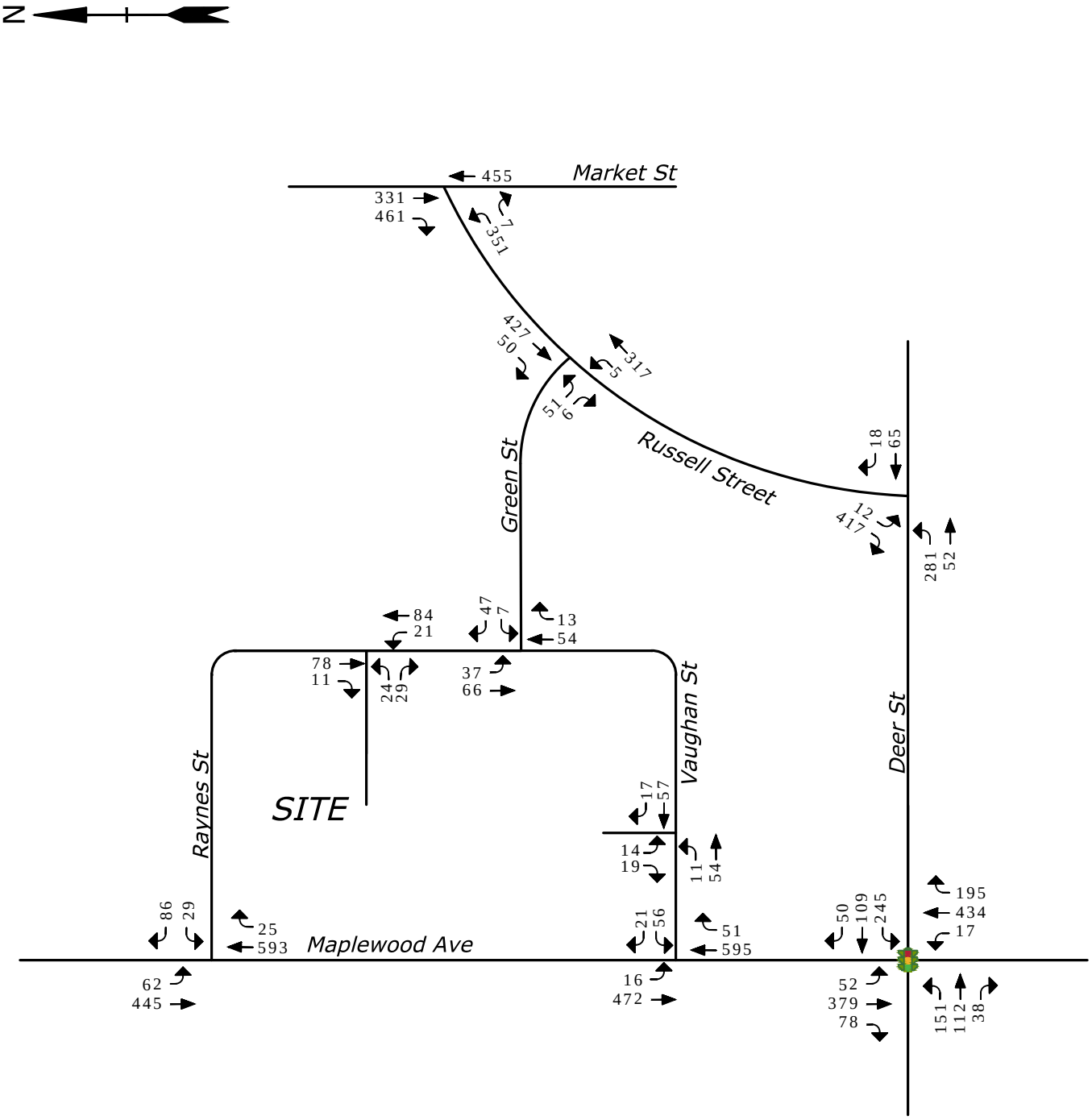
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

Site Generated Trips

DATE: 03/18/2019
SCALE: No Scale
FIGURE 5

Tighe&Bond
www.tighebond.com

Apr 11, 2019-11:44am Plotted By: YMayboroda
Tighe & Bond, Inc. C:\Users\YMayboroda\appdata\local\temp\AcPublish_5272\Diversion figure - Future_April2019.dwg



LEGEND

TRAFFIC SIGNAL

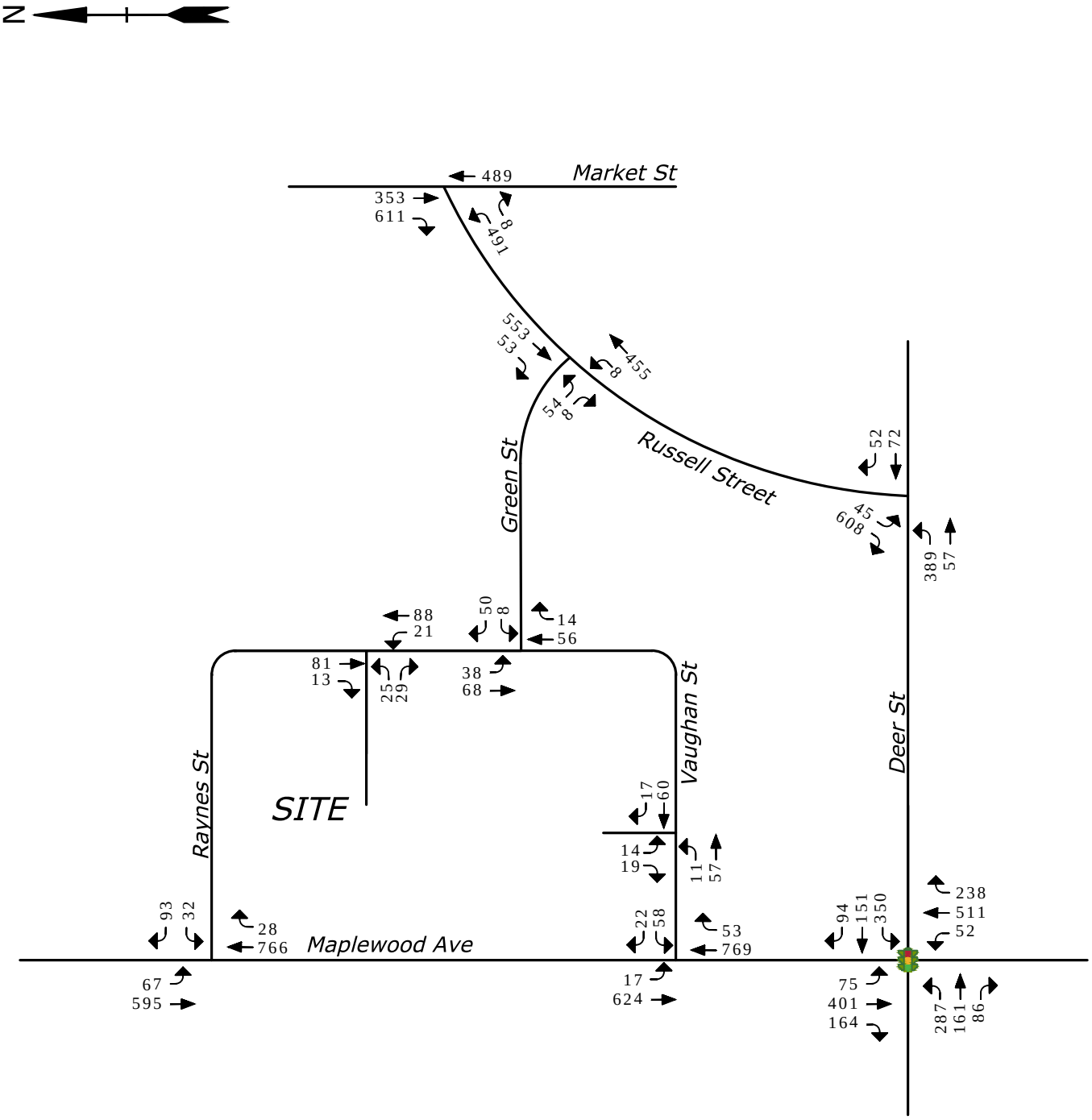
Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

2020 Build Peak Hour Traffic Volumes

DATE: 03/18/2019
SCALE: No Scale
FIGURE 6

Tighe&Bond
www.tighebond.com

Apr 11, 2019-11:44am Plotted By: YMayboroda
Tighe & Bond, Inc. C:\Users\YMayboroda\appdata\local\temp\AcPublish_5272\Diversion figure - Future_April2019.dwg



LEGEND

TRAFFIC SIGNAL

Proposed Office Building
111 Maplewood Avenue, Portsmouth NH

2030 Build Peak Hour Traffic Volumes

DATE: 03/18/2019
SCALE: No Scale
FIGURE 7

Tighe&Bond
www.tighebond.com

Apr 11, 2019-11:44am Plotted By: YMayboroda
Tighe & Bond, Inc. C:\Users\YMayboroda\appdata\local\temp\AcPublish_5272\Diversion figure - Future_April2019.dwg

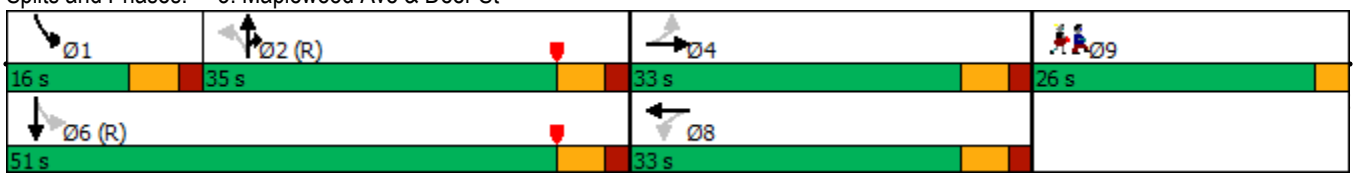
Capacity Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	96	22	224	106	50	14	419	195	52	380	68
Future Volume (vph)	103	96	22	224	106	50	14	419	195	52	380	68
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	334	0	295	205	0	16	482	224	63	546	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	11.0	16.0	
Total Split (s)	33.0	33.0		33.0	33.0		35.0	35.0	35.0	16.0	51.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		31.8%	31.8%	31.8%	14.5%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	Max	Max		None	None		C-Max	C-Max	C-Max	None	C-Max	
v/c Ratio		1.14		1.27	0.43		0.04	0.49	0.22	0.13	0.48	
Control Delay		134.2		187.5	34.5		13.4	18.3	2.4	7.9	11.5	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		134.2		187.5	34.5		13.4	18.3	2.4	7.9	11.5	
Queue Length 50th (ft)		~274		~264	109		5	210	0	15	178	
Queue Length 95th (ft)		#274		#340	146		16	296	33	28	220	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)		293		232	480		454	988	998	503	1138	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		1.14		1.27	0.43		0.04	0.49	0.22	0.13	0.48	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	96	22	224	106	50	14	419	195	52	380	68
Future Volume (vph)	103	96	22	224	106	50	14	419	195	52	380	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.99		1.00	0.95		1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1856		1770	1891		1711	1801	1636	1711	1760	
Flt Permitted		0.62		0.51	1.00		0.46	1.00	1.00	0.35	1.00	
Satd. Flow (perm)		1181		947	1891		829	1801	1636	629	1760	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	156	145	33	295	139	66	16	482	224	63	463	83
RTOR Reduction (vph)	0	4	0	0	16	0	0	0	103	0	4	0
Lane Group Flow (vph)	0	330	0	295	189	0	16	482	121	63	542	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		27.0		27.0	27.0		59.2	59.2	59.2	71.0	71.0	
Effective Green, g (s)		27.0		27.0	27.0		59.2	59.2	59.2	71.0	71.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.54	0.54	0.54	0.65	0.65	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		289		232	464		446	969	880	463	1136	
v/s Ratio Prot					0.10			0.27	0.07	0.01	c0.31	
v/s Ratio Perm		0.28		c0.31			0.02			0.08		
v/c Ratio		1.14		1.27	0.41		0.04	0.50	0.14	0.14	0.48	
Uniform Delay, d1		41.5		41.5	34.8		12.0	16.0	12.7	8.9	10.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		97.2		151.5	0.8		0.2	1.8	0.3	0.1	1.4	
Delay (s)		138.7		193.0	35.6		12.1	17.8	13.0	9.0	11.4	
Level of Service		F		F	D		B	B	B	A	B	
Approach Delay (s)		138.7			128.5			16.2			11.2	
Approach LOS		F			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	59.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	43	39	1	2	4
Future Vol, veh/h	4	43	39	1	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	63	58	1	4	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	59	0	-	0	134	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1545	-	-	-	860	1007
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1545	-	-	-	857	1007
Mov Cap-2 Maneuver	-	-	-	-	857	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1545	-	-	-	951
HCM Lane V/C Ratio	0.004	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	265	52	65	18	12	393
Future Vol, veh/h	265	52	65	18	12	393
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	294	58	74	20	13	437

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	94	0	-	0	730	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	646	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1500	-	-	-	389	975
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	522	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1500	-	-	-	310	975
Mov Cap-2 Maneuver	-	-	-	-	310	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	522	-

Approach	EB	WB	SB
HCM Control Delay, s	6.7	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1500	-	-	-	917
HCM Lane V/C Ratio	0.196	-	-	-	0.491
HCM Control Delay (s)	8	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	2.8

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	9	561	3	2	493
Future Vol, veh/h	4	9	561	3	2	493
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	58	58	78	78	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	16	719	4	2	580

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1305	721	0	0	723	0
Stage 1	721	-	-	-	-	-
Stage 2	584	-	-	-	-	-
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	177	427	-	-	879	-
Stage 1	482	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	427	-	-	879	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	557	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	297	879	-
HCM Lane V/C Ratio	-	-	0.075	0.003	-
HCM Control Delay (s)	-	-	18.1	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	63.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	326	6	0	455	331	431
Future Vol, veh/h	326	6	0	455	331	431
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	402	7	0	641	394	513

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1035	394	-	0	-	0
Stage 1	394	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 257	655	0	-	-	-
Stage 1	681	-	0	-	-	-
Stage 2	525	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 257	655	-	-	-	-
Mov Cap-2 Maneuver	~ 257	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 302.5	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	257	655	-	-
HCM Lane V/C Ratio	-	1.566	0.011	-	-
HCM Control Delay (s)	-	$ 307.9	10.6	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	24.4	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	62	545	25	51	456
Future Vol, veh/h	29	62	545	25	51	456
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	78	681	31	57	512

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1323	697	0	0	712	0
Stage 1	697	-	-	-	-	-
Stage 2	626	-	-	-	-	-
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	172	441	-	-	888	-
Stage 1	494	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	157	441	-	-	888	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	450	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.4	0	0.9
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	280	888	-
HCM Lane V/C Ratio	-	-	0.406	0.065	-
HCM Control Delay (s)	-	-	26.4	9.3	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.9	0.2	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	12	550	33	14	483
Future Vol, veh/h	32	12	550	33	14	483
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	16	696	42	17	575

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1326	717	0	0	738	0
Stage 1	717	-	-	-	-	-
Stage 2	609	-	-	-	-	-
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	172	430	-	-	868	-
Stage 1	484	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	167	430	-	-	868	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	470	-	-	-	-	-
Stage 2	543	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.3	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	200	868	-
HCM Lane V/C Ratio	-	-	0.293	0.019	-
HCM Control Delay (s)	-	-	30.3	9.2	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	2	4	72	62	16
Future Vol, veh/h	12	2	4	72	62	16
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	5	5	94	89	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	205	101	112	0	-	0
Stage 1	101	-	-	-	-	-
Stage 2	104	-	-	-	-	-
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	783	954	1478	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	780	954	1478	-	-	-
Mov Cap-2 Maneuver	780	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	801	-	-
HCM Lane V/C Ratio	0.004	-	0.04	-	-
HCM Control Delay (s)	7.4	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	7	5	301	403	45
Future Vol, veh/h	42	7	5	301	403	45
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	12	6	354	480	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	873	507	534	0	-	0
Stage 1	507	-	-	-	-	-
Stage 2	366	-	-	-	-	-
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	321	566	1034	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	319	566	1034	-	-	-
Mov Cap-2 Maneuver	319	-	-	-	-	-
Stage 1	601	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.1	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1034	-	340	-	-
HCM Lane V/C Ratio	0.006	-	0.248	-	-
HCM Control Delay (s)	8.5	0	19.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	42	31	13	28	32
Future Vol, veh/h	7	42	31	13	28	32
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	45	38	16	46	52

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	190	46	0	0	54	0
Stage 1	46	-	-	-	-	-
Stage 2	144	-	-	-	-	-
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	799	1023	-	-	1551	-
Stage 1	976	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	774	1023	-	-	1551	-
Mov Cap-2 Maneuver	774	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	883	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	3.4
HCM LOS	A		

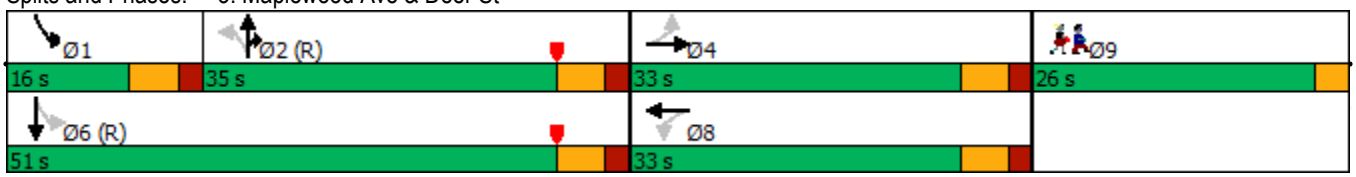
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	978	1551	-
HCM Lane V/C Ratio	-	-	0.054	0.03	-
HCM Control Delay (s)	-	-	8.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	112	38	245	109	50	17	434	195	52	379	78
Future Volume (vph)	151	112	38	245	109	50	17	434	195	52	379	78
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	457	0	322	209	0	20	499	224	63	557	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0	16.0	11.0	16.0	
Total Split (s)	33.0	33.0		33.0	33.0		35.0	35.0	35.0	16.0	51.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		31.8%	31.8%	31.8%	14.5%	46.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	None	C-Max	
v/c Ratio		1.61		1.41	0.44		0.04	0.51	0.22	0.14	0.49	
Control Delay		319.7		240.2	34.9		13.5	18.7	2.6	7.9	11.7	
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		319.7		240.2	34.9		13.5	18.7	2.6	7.9	11.7	
Queue Length 50th (ft)		~465		~306	113		7	220	2	15	183	
Queue Length 95th (ft)		#430		#381	149		19	309	35	28	226	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)		284		229	479		450	988	996	492	1136	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		1.61		1.41	0.44		0.04	0.51	0.22	0.13	0.49	

Intersection Summary

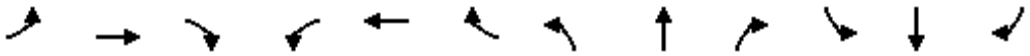
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Peak Hour Factor	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	24%
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	112	38	245	109	50	17	434	195	52	379	78
Future Volume (vph)	151	112	38	245	109	50	17	434	195	52	379	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.98		1.00	0.95		1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1846		1770	1893		1711	1801	1636	1711	1755	
Flt Permitted		0.60		0.50	1.00		0.46	1.00	1.00	0.34	1.00	
Satd. Flow (perm)		1140		933	1893		820	1801	1636	607	1755	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	229	170	58	322	143	66	20	499	224	63	462	95
RTOR Reduction (vph)	0	5	0	0	15	0	0	0	101	0	4	0
Lane Group Flow (vph)	0	452	0	322	194	0	20	499	123	63	553	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Prot	pm+pt	NA	
Protected Phases		4			8			2	2	1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		27.0		27.0	27.0		59.2	59.2	59.2	71.0	71.0	
Effective Green, g (s)		27.0		27.0	27.0		59.2	59.2	59.2	71.0	71.0	
Actuated g/C Ratio		0.25		0.25	0.25		0.54	0.54	0.54	0.65	0.65	
Clearance Time (s)		6.0		6.0	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	3.0	3.0	
Lane Grp Cap (vph)		279		229	464		441	969	880	450	1132	
v/s Ratio Prot					0.10			c0.28	0.08	0.01	c0.32	
v/s Ratio Perm		c0.40		0.35			0.02			0.08		
v/c Ratio		1.62		1.41	0.42		0.05	0.51	0.14	0.14	0.49	
Uniform Delay, d1		41.5		41.5	34.9		12.0	16.2	12.7	9.0	10.1	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		295.7		206.8	0.6		0.2	2.0	0.3	0.1	1.5	
Delay (s)		337.2		248.3	35.5		12.2	18.2	13.0	9.2	11.6	
Level of Service		F		F	D		B	B	B	A	B	
Approach Delay (s)		337.2			164.5			16.5			11.4	
Approach LOS		F			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	110.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	54	57	17	14	19
Future Vol, veh/h	11	54	57	17	14	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	79	85	25	28	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	110	0	-	0	209	98
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1480	-	-	-	779	958
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	914	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1480	-	-	-	770	958
Mov Cap-2 Maneuver	-	-	-	-	770	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	914	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1480	-	-	-	868
HCM Lane V/C Ratio	0.011	-	-	-	0.076
HCM Control Delay (s)	7.5	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	281	52	65	81	12	417
Future Vol, veh/h	281	52	65	81	12	417
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	312	58	74	92	13	463

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	166	0	-	0	802	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	682	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1412	-	-	-	353	931
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	502	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1412	-	-	-	273	931
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	502	-

Approach	EB	WB	SB
HCM Control Delay, s	7	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1412	-	-	-	872
HCM Lane V/C Ratio	0.221	-	-	-	0.547
HCM Control Delay (s)	8.3	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	3.4

Intersection	
Int Delay, s/veh	76.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	351	7	0	455	331	461
Future Vol, veh/h	351	7	0	455	331	461
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	433	9	0	641	394	549

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1035	394	-	0	-	0
Stage 1	394	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 257	655	0	-	-	-
Stage 1	681	-	0	-	-	-
Stage 2	525	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 257	655	-	-	-	-
Mov Cap-2 Maneuver	~ 257	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s$	352.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	257	655	-	-
HCM Lane V/C Ratio	-	1.686	0.013	-	-
HCM Control Delay (s)	-	$ 359	10.6	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	27.9	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	86	593	25	62	445
Future Vol, veh/h	29	86	593	25	62	445
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	108	741	31	70	500

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1397	757	0	0	772	0
Stage 1	757	-	-	-	-	-
Stage 2	640	-	-	-	-	-
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	155	408	-	-	843	-
Stage 1	463	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	137	408	-	-	843	-
Mov Cap-2 Maneuver	137	-	-	-	-	-
Stage 1	410	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.2	0	1.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	272	843	-
HCM Lane V/C Ratio	-	-	0.528	0.083	-
HCM Control Delay (s)	-	-	32.2	9.7	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	2.9	0.3	-

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	21	595	51	16	472
Future Vol, veh/h	56	21	595	51	16	472
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	28	753	65	19	562

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1386	786	0	0	818	0
Stage 1	786	-	-	-	-	-
Stage 2	600	-	-	-	-	-
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	158	392	-	-	810	-
Stage 1	449	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	153	392	-	-	810	-
Mov Cap-2 Maneuver	153	-	-	-	-	-
Stage 1	434	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	46.8	0	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	184	810	-
HCM Lane V/C Ratio	-	-	0.558	0.024	-
HCM Control Delay (s)	-	-	46.8	9.6	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	2.9	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	29	21	84	78	11
Future Vol, veh/h	24	29	21	84	78	11
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	66	27	109	111	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	282	119	127	0	-	0
Stage 1	119	-	-	-	-	-
Stage 2	163	-	-	-	-	-
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	708	933	1459	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	866	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	694	933	1459	-	-	-
Mov Cap-2 Maneuver	694	-	-	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	866	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1459	-	807	-	-
HCM Lane V/C Ratio	0.019	-	0.149	-	-
HCM Control Delay (s)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	51	6	6	317	427	50
Future Vol, veh/h	51	6	6	317	427	50
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	10	7	373	508	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	925	538	568	0	-	0
Stage 1	538	-	-	-	-	-
Stage 2	387	-	-	-	-	-
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	299	543	1004	-	-	-
Stage 1	585	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	296	543	1004	-	-	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.8	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1004	-	311	-	-
HCM Lane V/C Ratio	0.007	-	0.316	-	-
HCM Control Delay (s)	8.6	0	21.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-

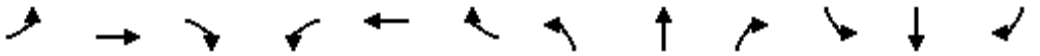
Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	47	54	13	37	66
Future Vol, veh/h	7	47	54	13	37	66
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	51	67	16	61	108

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	305	75	0	0	83	0
Stage 1	75	-	-	-	-	-
Stage 2	230	-	-	-	-	-
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	687	986	-	-	1514	-
Stage 1	948	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	657	986	-	-	1514	-
Mov Cap-2 Maneuver	657	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	926	1514	-
HCM Lane V/C Ratio	-	-	0.063	0.04	-
HCM Control Delay (s)	-	-	9.1	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

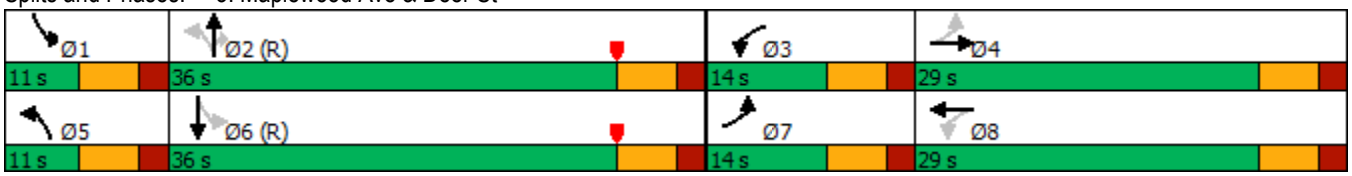


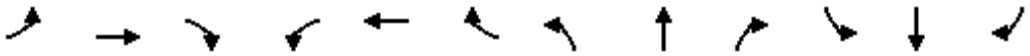
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	145	70	329	148	94	49	496	238	75	402	154
Future Volume (vph)	239	145	70	329	148	94	49	496	238	75	402	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	12	14	14	11	11	13	11	11	11
Storage Length (ft)	0		0	0		100	0		0	0		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		363			453			585			231	
Travel Time (s)		9.9			12.4			16.0			5.3	
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	326	0	433	319	0	56	570	274	91	678	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	28.0	28.0	11.0	25.0	
Total Split (s)	14.0	29.0		14.0	29.0		11.0	36.0	36.0	11.0	36.0	
Total Split (%)	15.6%	32.2%		15.6%	32.2%		12.2%	40.0%	40.0%	12.2%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
v/c Ratio	1.41	0.79		1.62	0.75		0.30	0.82	0.34	0.38	0.98	
Control Delay	233.3	44.9		315.9	40.5		17.7	38.7	4.2	18.3	60.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	233.3	44.9		315.9	40.5		17.7	38.7	4.2	18.3	60.7	
Queue Length 50th (ft)	~205	161		~280	151		16	313	0	27	~439	
Queue Length 95th (ft)	#194	162		#328	185		38	#492	46	51	#573	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	256	487		268	503		189	699	803	242	690	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.41	0.67		1.62	0.63		0.30	0.82	0.34	0.38	0.98	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	

Offset: 41 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	145	70	329	148	94	49	496	238	75	402	154
Future Volume (vph)	239	145	70	329	148	94	49	496	238	75	402	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	1831		1770	1871		1711	1801	1636	1711	1726	
Flt Permitted	0.29	1.00		0.28	1.00		0.12	1.00	1.00	0.18	1.00	
Satd. Flow (perm)	511	1831		522	1871		213	1801	1636	327	1726	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	362	220	106	433	195	124	56	570	274	91	490	188
RTOR Reduction (vph)	0	20	0	0	27	0	0	0	171	0	14	0
Lane Group Flow (vph)	362	306	0	433	292	0	56	570	103	91	664	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	27.2	19.2		27.2	19.2		38.5	33.8	33.8	39.1	34.1	
Effective Green, g (s)	27.2	19.2		27.2	19.2		38.5	33.8	33.8	39.1	34.1	
Actuated g/C Ratio	0.30	0.21		0.30	0.21		0.43	0.38	0.38	0.43	0.38	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	255	390		268	399		169	676	614	218	653	
v/s Ratio Prot	0.13	0.17		c0.14	0.16		0.02	0.32		c0.02	c0.38	
v/s Ratio Perm	0.30			c0.34			0.12		0.06	0.16		
v/c Ratio	1.42	0.78		1.62	0.73		0.33	0.84	0.17	0.42	1.02	
Uniform Delay, d1	29.5	33.4		29.4	33.0		19.6	25.7	18.7	17.8	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	210.3	9.9		293.7	7.2		1.2	12.2	0.6	1.3	39.4	
Delay (s)	239.8	43.3		323.1	40.3		20.8	37.9	19.3	19.1	67.3	
Level of Service	F	D		F	D		C	D	B	B	E	
Approach Delay (s)		146.7			203.1			31.2			61.6	
Approach LOS		F			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	105.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	46	42	1	2	4
Future Vol, veh/h	4	46	42	1	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	68	63	1	4	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	64	0	-	0	144	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	80	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1538	-	-	-	849	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1538	-	-	-	846	1000
Mov Cap-2 Maneuver	-	-	-	-	846	-
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1538	-	-	-	943
HCM Lane V/C Ratio	0.004	-	-	-	0.013
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	27.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	373	57	72	52	45	584
Future Vol, veh/h	373	57	72	52	45	584
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	414	63	82	59	50	649

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	141	0	-	0	1003	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	891	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1442	-	-	-	268	941
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	401	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1442	-	-	-	188	941
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	401	-

Approach	EB	WB	SB
HCM Control Delay, s	7.4	0	47.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1442	-	-	-	731
HCM Lane V/C Ratio	0.287	-	-	-	0.956
HCM Control Delay (s)	8.5	0	-	-	47.1
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	1.2	-	-	-	14.3

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	9	736	3	2	646
Future Vol, veh/h	4	9	736	3	2	646
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	58	58	78	78	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	16	944	4	2	760

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1710	946	0	0	948	0
Stage 1	946	-	-	-	-	-
Stage 2	764	-	-	-	-	-
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	100	317	-	-	724	-
Stage 1	377	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	100	317	-	-	724	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	460	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.5	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	190	724	-
HCM Lane V/C Ratio	-	-	0.118	0.003	-
HCM Control Delay (s)	-	-	26.5	10	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	171.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	466	8	0	489	353	581
Future Vol, veh/h	466	8	0	489	353	581
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	575	10	0	689	420	692

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1109	420	-	0	-	0
Stage 1	420	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 232	633	0	-	-	-
Stage 1	663	-	0	-	-	-
Stage 2	~ 498	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 232	633	-	-	-	-
Mov Cap-2 Maneuver	~ 232	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	~ 498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 699.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	232	633	-	-
HCM Lane V/C Ratio	-	2.48	0.016	-	-
HCM Control Delay (s)	-	$ 711.5	10.8	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	47.5	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	69	718	28	56	606
Future Vol, veh/h	32	69	718	28	56	606
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	86	898	35	63	681

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1723	916	0	0	933	0
Stage 1	916	-	-	-	-	-
Stage 2	807	-	-	-	-	-
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	98	330	-	-	734	-
Stage 1	390	-	-	-	-	-
Stage 2	439	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	84	330	-	-	734	-
Mov Cap-2 Maneuver	84	-	-	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	439	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	69.5	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	171	734	-
HCM Lane V/C Ratio	-	-	0.738	0.086	-
HCM Control Delay (s)	-	-	69.5	10.4	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	4.6	0.3	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	13	724	35	15	635
Future Vol, veh/h	34	13	724	35	15	635
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	17	916	44	18	756

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1730	938	0	0	960	0
Stage 1	938	-	-	-	-	-
Stage 2	792	-	-	-	-	-
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	97	321	-	-	717	-
Stage 1	381	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	93	321	-	-	717	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	446	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	67.7	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	116	717	-
HCM Lane V/C Ratio	-	-	0.54	0.025	-
HCM Control Delay (s)	-	-	67.7	10.1	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	2.6	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	2	4	76	65	18
Future Vol, veh/h	13	2	4	76	65	18
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	5	5	99	93	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	215	106	119	0	-	0
Stage 1	106	-	-	-	-	-
Stage 2	109	-	-	-	-	-
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	773	948	1469	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	770	948	1469	-	-	-
Mov Cap-2 Maneuver	770	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1469	-	790	-	-
HCM Lane V/C Ratio	0.004	-	0.043	-	-
HCM Control Delay (s)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	8	8	439	529	48
Future Vol, veh/h	45	8	8	439	529	48
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	14	9	516	630	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1193	659	687	0	-	0
Stage 1	659	-	-	-	-	-
Stage 2	534	-	-	-	-	-
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	206	464	907	-	-	-
Stage 1	515	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	203	464	907	-	-	-
Mov Cap-2 Maneuver	203	-	-	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	588	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.1	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	907	-	222	-	-
HCM Lane V/C Ratio	0.01	-	0.412	-	-
HCM Control Delay (s)	9	0	32.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	1.9	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	45	33	14	29	34
Future Vol, veh/h	8	45	33	14	29	34
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	48	41	17	48	56

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	202	50	0	0	58	0
Stage 1	50	-	-	-	-	-
Stage 2	152	-	-	-	-	-
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	787	1018	-	-	1546	-
Stage 1	972	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	762	1018	-	-	1546	-
Mov Cap-2 Maneuver	762	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	3.4
HCM LOS	A		

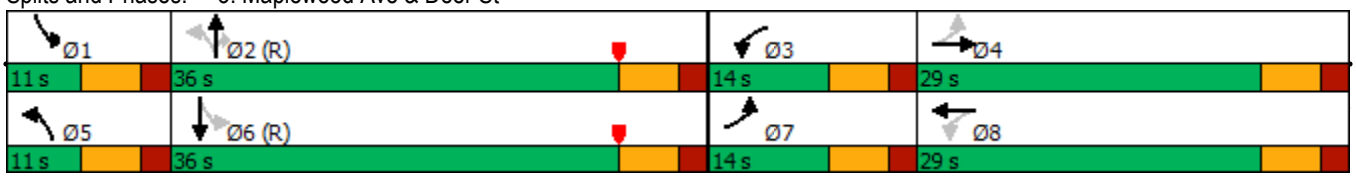
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	969	1546	-
HCM Lane V/C Ratio	-	-	0.059	0.031	-
HCM Control Delay (s)	-	-	8.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	161	86	350	151	94	52	511	238	75	401	164
Future Volume (vph)	287	161	86	350	151	94	52	511	238	75	401	164
Peak Hour Factor	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	435	374	0	461	323	0	60	587	274	91	689	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	29.0		11.0	29.0		11.0	28.0	28.0	11.0	25.0	
Total Split (s)	14.0	29.0		14.0	29.0		11.0	36.0	36.0	11.0	36.0	
Total Split (%)	15.6%	32.2%		15.6%	32.2%		12.2%	40.0%	40.0%	12.2%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
v/c Ratio	1.60	0.85		1.83	0.71		0.33	0.86	0.35	0.44	1.03	
Control Delay	308.5	48.6		409.1	37.3		18.9	43.2	4.2	21.4	73.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	308.5	48.6		409.1	37.3		18.9	43.2	4.2	21.4	73.8	
Queue Length 50th (ft)	~261	183		~335	148		18	327	0	29	~463	
Queue Length 95th (ft)	#253	186		#405	188		40	#514	46	51	#585	
Internal Link Dist (ft)		283			373			505			151	
Turn Bay Length (ft)												
Base Capacity (vph)	272	487		252	502		183	680	788	205	668	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	1.60	0.77		1.83	0.64		0.33	0.86	0.35	0.44	1.03	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 140
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Maplewood Ave & Deer St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	287	161	86	350	151	94	52	511	238	75	401	164
Future Volume (vph)	287	161	86	350	151	94	52	511	238	75	401	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	13	13	12	14	14	11	11	13	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	1824		1770	1873		1711	1801	1636	1711	1722	
Flt Permitted	0.32	1.00		0.22	1.00		0.12	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	548	1824		414	1873		220	1801	1636	269	1722	
Peak-hour factor, PHF	0.66	0.66	0.66	0.76	0.76	0.76	0.87	0.87	0.87	0.82	0.82	0.82
Adj. Flow (vph)	435	244	130	461	199	124	60	587	274	91	489	200
RTOR Reduction (vph)	0	22	0	0	25	0	0	0	174	0	16	0
Lane Group Flow (vph)	435	352	0	461	298	0	60	587	100	91	673	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	28.7	20.7		28.7	20.7		37.1	32.8	32.8	37.5	33.0	
Effective Green, g (s)	28.7	20.7		28.7	20.7		37.1	32.8	32.8	37.5	33.0	
Actuated g/C Ratio	0.32	0.23		0.32	0.23		0.41	0.36	0.36	0.42	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	272	419		252	430		161	656	596	184	631	
v/s Ratio Prot	0.14	0.19		c0.16	0.16		0.02	0.33		c0.02	c0.39	
v/s Ratio Perm	0.37			c0.42			0.14		0.06	0.18		
v/c Ratio	1.60	0.84		1.83	0.69		0.37	0.89	0.17	0.49	1.07	
Uniform Delay, d1	29.0	33.1		28.0	31.7		20.9	27.0	19.4	19.2	28.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	286.3	13.7		388.4	5.1		1.5	17.1	0.6	2.1	55.0	
Delay (s)	315.3	46.8		416.3	36.9		22.3	44.1	20.0	21.3	83.5	
Level of Service	F	D		F	D		C	D	B	C	F	
Approach Delay (s)		191.2			260.0			35.5			76.2	
Approach LOS		F			F			D			E	

Intersection Summary			
HCM 2000 Control Delay	136.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	57	60	17	14	19
Future Vol, veh/h	11	57	60	17	14	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	67	67	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	84	90	25	28	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	115	0	-	0	219	103
Stage 1	-	-	-	-	103	-
Stage 2	-	-	-	-	116	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1474	-	-	-	769	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1474	-	-	-	761	952
Mov Cap-2 Maneuver	-	-	-	-	761	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1474	-	-	-	860
HCM Lane V/C Ratio	0.011	-	-	-	0.077
HCM Control Delay (s)	7.5	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	33.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	389	57	72	52	45	608
Future Vol, veh/h	389	57	72	52	45	608
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	88	88	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	432	63	82	59	50	676

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	141	0	-	0	1039	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	927	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1442	-	-	-	255	941
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1442	-	-	-	176	941
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	SB
HCM Control Delay, s	7.5	0	57.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1442	-	-	-	724
HCM Lane V/C Ratio	0.3	-	-	-	1.002
HCM Control Delay (s)	8.6	0	-	-	57.8
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	1.3	-	-	-	16.6

Intersection	
Int Delay, s/veh	190.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	491	8	0	489	353	611
Future Vol, veh/h	491	8	0	489	353	611
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	71	71	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	606	10	0	689	420	727

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1109	420	-	0	-	0
Stage 1	420	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 232	633	0	-	-	-
Stage 1	663	-	0	-	-	-
Stage 2	~ 498	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 232	633	-	-	-	-
Mov Cap-2 Maneuver	~ 232	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	~ 498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 758.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	232	633	-	-
HCM Lane V/C Ratio	-	2.613	0.016	-	-
HCM Control Delay (s)	-	$ 770.6	10.8	-	-
HCM Lane LOS	-	F	B	-	-
HCM 95th %tile Q(veh)	-	51.2	0	-	-

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	32	93	766	28	67	595
Future Vol, veh/h	32	93	766	28	67	595
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	80	80	80	80	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	116	958	35	75	669

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1795	976	0	0	993	0
Stage 1	976	-	-	-	-	-
Stage 2	819	-	-	-	-	-
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	88	305	-	-	696	-
Stage 1	365	-	-	-	-	-
Stage 2	433	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	305	-	-	696	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	433	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	106.7	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	168	696	-
HCM Lane V/C Ratio	-	-	0.93	0.108	-
HCM Control Delay (s)	-	-	106.7	10.8	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	7	0.4	-

Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	58	22	769	53	17	624
Future Vol, veh/h	58	22	769	53	17	624
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	79	79	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	29	973	67	20	743

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1790	1007	0	0	1040	0
Stage 1	1007	-	-	-	-	-
Stage 2	783	-	-	-	-	-
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	89	292	-	-	669	-
Stage 1	353	-	-	-	-	-
Stage 2	450	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	84	292	-	-	669	-
Mov Cap-2 Maneuver	84	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	450	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	171.9	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	104	669	-
HCM Lane V/C Ratio	-	-	1.026	0.03	-
HCM Control Delay (s)	-	-	171.9	10.5	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	6.5	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	29	21	88	81	13
Future Vol, veh/h	25	29	21	88	81	13
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	44	44	77	77	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	66	27	114	116	19

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	294	126	135	0	-	0
Stage 1	126	-	-	-	-	-
Stage 2	168	-	-	-	-	-
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	697	924	1449	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	683	924	1449	-	-	-
Mov Cap-2 Maneuver	683	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1449	-	794	-	-
HCM Lane V/C Ratio	0.019	-	0.155	-	-
HCM Control Delay (s)	7.5	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	54	8	8	455	553	53
Future Vol, veh/h	54	8	8	455	553	53
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	58	58	85	85	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	14	9	535	658	63

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1243	690	721	0	-	0
Stage 1	690	-	-	-	-	-
Stage 2	553	-	-	-	-	-
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	193	445	881	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	190	445	881	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	576	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	40.2	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	881	-	205	-	-
HCM Lane V/C Ratio	0.011	-	0.521	-	-
HCM Control Delay (s)	9.1	0	40.2	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0	-	2.7	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	50	56	14	38	68
Future Vol, veh/h	8	50	56	14	38	68
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	93	93	81	81	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	54	69	17	62	111

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	313	78	0	0	86	0
Stage 1	78	-	-	-	-	-
Stage 2	235	-	-	-	-	-
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	680	983	-	-	1510	-
Stage 1	945	-	-	-	-	-
Stage 2	804	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	650	983	-	-	1510	-
Mov Cap-2 Maneuver	650	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	804	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	918	1510	-
HCM Lane V/C Ratio	-	-	0.068	0.041	-
HCM Control Delay (s)	-	-	9.2	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

APPENDIX I

Raw Traffic Data
(June 2021)

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 1
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Raynes Avenue
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Eastbound				Raynes Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	69	5	0	2	84	0	0	0	0	0	0	6	0	4
11:15 AM	0	0	87	0	0	4	92	0	0	0	0	0	0	2	0	12
11:30 AM	0	0	93	2	0	7	102	0	0	0	0	0	1	5	0	7
11:45 AM	0	0	72	2	0	8	87	0	0	0	0	0	0	7	0	4
12:00 PM	1	0	89	7	0	4	98	0	0	0	0	0	0	6	0	11
12:15 PM	0	0	66	1	0	3	99	0	0	0	0	0	0	3	0	5
12:30 PM	0	0	63	2	0	13	101	0	0	0	0	0	0	6	0	5
12:45 PM	0	0	89	5	0	9	87	0	0	0	0	0	0	7	0	5

MID PEAK HOUR	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Eastbound				Raynes Avenue Westbound			
11:15 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:15 PM	**1**	**0**	**341**	**11**	**0**	**23**	**379**	**0**	**0**	**0**	**0**	**0**	**1**	**20**	**0**	**34**
PHF	**0.91**				**0.92**				**0.00**				**0.81**			
HV %	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 1
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Raynes Avenue
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Eastbound				Raynes Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Eastbound				Raynes Avenue Westbound			
11:15 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:15 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.50**				**0.25**				**0.00**				**0.00**			

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 1
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Raynes Avenue
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Eastbound				Raynes Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	4	0	2	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	7
11:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
11:45 AM	0	2	0	0	0	2	0	1	0	0	0	0	0	0	0	3
12:00 PM	0	3	0	1	0	2	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	4
12:45 PM	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	4

MID PEAK HOUR 11:15 AM to 12:15 PM	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Eastbound				Raynes Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	5	0	1	0	9	0	5	0	0	0	0	0	0	0	14

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Vaughan Street & Drive
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Drive Eastbound				Vaughan Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	72	5	0	0	91	0	0	0	0	0	0	1	0	2
11:15 AM	0	0	86	2	0	0	92	1	0	0	0	1	0	3	0	1
11:30 AM	0	0	94	6	0	3	104	0	0	0	0	0	0	1	0	1
11:45 AM	0	0	73	9	0	3	88	2	0	0	0	1	0	2	0	2
12:00 PM	0	0	94	10	0	0	105	0	0	0	0	0	0	4	0	0
12:15 PM	0	1	69	8	0	3	96	0	0	0	0	0	0	2	0	0
12:30 PM	0	0	61	6	0	13	95	0	0	0	0	0	0	3	0	2
12:45 PM	0	0	94	10	0	3	91	0	0	0	0	0	0	3	0	2

MID PEAK HOUR	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Drive Eastbound				Vaughan Street Westbound			
11:15 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:15 PM	**0**	**0**	**347**	**27**	**0**	**6**	**389**	**3**	**0**	**0**	**0**	**2**	**0**	**10**	**0**	**4**
PHF	**0.90**				**0.93**				**0.50**				**0.88**			
HV %	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Vaughan Street & Drive
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Drive Eastbound				Vaughan Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Drive Eastbound				Vaughan Street Westbound			
11:15 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:15 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.50**				**0.25**				**0.00**				**0.00**			

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 2
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Vaughan Street & Drive
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Drive Eastbound				Vaughan Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	4	0	0	0	0	0	6	0	0	0	4
11:15 AM	0	0	0	0	0	4	0	0	0	0	0	3	0	0	0	8
11:30 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	3
11:45 AM	0	2	0	0	0	2	0	0	0	0	0	1	0	0	0	5
12:00 PM	0	3	0	3	0	2	0	1	0	0	0	6	0	0	0	1
12:15 PM	0	1	0	2	0	0	0	2	0	0	0	8	0	0	0	4
12:30 PM	0	1	0	2	0	1	0	1	0	0	0	4	0	0	0	15
12:45 PM	0	1	0	0	0	1	0	9	0	0	0	12	0	0	0	4

MID PEAK HOUR 11:15 AM to 12:15 PM	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Drive Eastbound				Vaughan Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	5	0	3	0	9	0	1	0	0	0	11	0	0	0	17

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 3
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Deer Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Deer Street Eastbound				Deer Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	2	62	43	0	14	70	10	0	4	4	1	0	34	6	10
11:15 AM	0	1	69	33	0	15	72	7	0	9	5	2	0	28	7	9
11:30 AM	0	3	86	36	0	17	89	4	0	8	5	0	0	46	5	6
11:45 AM	0	1	63	41	0	13	71	5	0	5	3	2	0	27	7	14
12:00 PM	0	0	81	37	0	25	76	6	0	6	2	3	0	35	9	17
12:15 PM	0	1	60	43	0	14	78	5	0	4	5	2	0	22	8	13
12:30 PM	0	3	52	50	0	15	71	11	0	5	7	2	0	27	9	10
12:45 PM	0	4	90	27	0	19	67	8	0	4	4	2	0	33	8	10

MID PEAK HOUR	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Deer Street Eastbound				Deer Street Westbound			
11:15 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:15 PM	**0**	**5**	**299**	**147**	**0**	**70**	**308**	**22**	**0**	**28**	**15**	**7**	**0**	**136**	**28**	**46**
PHF	**0.90**				**0.91**				**0.78**				**0.86**			
HV %	**0.0%**	**0.0%**	**1.0%**	**1.4%**	**0.0%**	**1.4%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**2.2%**

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 3
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Deer Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Deer Street Eastbound				Deer Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0
11:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
11:30 AM	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	1
12:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0
12:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	2	1	0	0	0	0	0	0	0	0	0	3	0	0

MID PEAK HOUR	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Deer Street Eastbound				Deer Street Westbound			
11:00 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:00 PM	**0**	**0**	**1**	**3**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	**1**	**1**
PHF	**1.00**				**0.38**				**0.25**				**0.42**			

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 3
Location:	Portsmouth, NH
Street 1:	Maplewood Avenue
Street 2:	Deer Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Deer Street Eastbound				Deer Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	4	0	0	4	8	0	0	0	2	0	0	0	10
11:15 AM	0	0	0	1	0	4	0	0	0	0	0	2	0	0	0	9
11:30 AM	0	0	0	3	0	1	0	1	0	0	0	1	0	0	0	2
11:45 AM	0	2	0	0	0	1	0	1	0	0	0	0	0	0	0	3
12:00 PM	0	2	0	0	0	2	0	3	0	0	0	1	0	1	0	6
12:15 PM	0	1	0	3	0	0	0	4	0	0	0	0	0	0	0	9
12:30 PM	0	1	0	5	0	0	1	4	0	0	0	4	0	0	0	10
12:45 PM	0	1	0	13	0	1	0	1	0	0	0	24	0	0	0	9

MID PEAK HOUR 11:15 AM to 12:15 PM	Maplewood Avenue Northbound				Maplewood Avenue Southbound				Deer Street Eastbound				Deer Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	4	0	4	0	8	0	5	0	0	0	4	0	1	0	20

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Deer Street
Street 2:	Russell Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Northbound				Russell Street Southbound				Deer Street Eastbound				Deer Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	1	1	0	51	0	31	21	0	0	0	11	8
11:15 AM	0	0	0	0	0	0	0	33	0	31	15	0	0	0	19	4
11:30 AM	0	0	0	0	0	1	0	49	0	37	13	0	0	0	30	5
11:45 AM	0	0	0	0	0	1	0	44	0	33	19	0	0	0	17	8
12:00 PM	0	0	0	0	0	2	0	37	0	29	24	0	0	0	27	5
12:15 PM	0	0	0	0	1	0	0	42	1	41	17	0	0	0	15	7
12:30 PM	0	0	0	0	0	2	0	40	0	49	17	0	0	0	14	4
12:45 PM	0	0	0	0	1	1	0	45	0	27	14	0	0	0	18	4

MID PEAK HOUR	Northbound				Russell Street Southbound				Deer Street Eastbound				Deer Street Westbound			
11:30 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:30 PM	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**172**	**1**	**140**	**73**	**0**	**0**	**0**	**89**	**25**
PHF	**0.00**				**0.89**				**0.91**				**0.81**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.9%**	**0.0%**	**1.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.1%**	**12.0%**

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Deer Street
Street 2:	Russell Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Northbound				Russell Street Southbound				Deer Street Eastbound				Deer Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
11:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
11:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0
11:45 AM	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0

MID PEAK HOUR	Northbound				Russell Street Southbound				Deer Street Eastbound				Deer Street Westbound			
11:00 AM to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**3**
PHF	**0.00**				**0.42**				**0.50**				**0.42**			

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 4
Location:	Portsmouth, NH
Street 1:	Deer Street
Street 2:	Russell Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Northbound				Russell Street Southbound				Deer Street Eastbound				Deer Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	1	7	0	0	0	0	0	0	0	6
11:15 AM	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	3	0	0	0	13	0	1	0	6
11:45 AM	0	0	0	0	0	0	0	1	0	2	0	9	0	0	0	8
12:00 PM	0	0	0	0	0	0	1	2	0	0	0	6	0	0	0	9
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	5	0	0	0	6
12:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	7
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	8

MID PEAK HOUR 11:30 AM to 12:30 PM	Northbound				Russell Street Southbound				Deer Street Eastbound				Deer Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	1	7	0	2	0	33	0	1	0	29

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Vaughan Street
Street 2:	Green Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Vaughan Street Northbound				Vaughan Street Southbound				Eastbound				Green Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	4	1	1	0	2	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	1	1	4	1	1	0	0	0	0	0	0	1	0	4
11:30 AM	1	0	5	2	0	2	3	0	0	0	0	0	0	0	0	6
11:45 AM	0	0	8	3	3	2	3	0	0	0	0	0	0	1	0	6
12:00 PM	0	0	8	1	2	1	4	0	0	0	0	0	0	1	0	5
12:15 PM	1	0	10	0	2	3	1	0	0	0	0	0	0	1	0	1
12:30 PM	1	0	9	5	0	1	5	0	0	0	0	0	0	0	0	4
12:45 PM	0	0	10	2	2	1	10	0	0	0	0	0	0	4	0	0

MID PEAK HOUR	Vaughan Street Northbound				Vaughan Street Southbound				Eastbound				Green Street Westbound			
12:00 PM to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
1:00 PM	**2**	**0**	**37**	**8**	**6**	**6**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**10**
PHF	**0.78**				**0.62**				**0.00**				**0.67**			
HV %	**0.0%**	**0.0%**	**2.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Vaughan Street
Street 2:	Green Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Vaughan Street Northbound				Vaughan Street Southbound				Eastbound				Green Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	Vaughan Street Northbound				Vaughan Street Southbound				Eastbound				Green Street Westbound			
12:00 PM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
1:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.25**				**0.00**				**0.00**				**0.00**			

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 5
Location:	Portsmouth, NH
Street 1:	Vaughan Street
Street 2:	Green Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Vaughan Street Northbound				Vaughan Street Southbound				Eastbound				Green Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	26
11:15 AM	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	18
11:30 AM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	31
11:45 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	32
12:00 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	12
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	17
12:30 PM	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	10
12:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4

MID PEAK HOUR 12:00 PM to 1:00 PM	Vaughan Street Northbound				Vaughan Street Southbound				Eastbound				Green 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	15	0	0	0	0	0	0	0	43

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 6
Location:	Portsmouth, NH
Street 1:	Russell Street
Street 2:	Green Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Russell Street Northbound				Russell Street Southbound				Green Street Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	40	0	0	0	43	1	0	2	0	1	0	0	0	0
11:15 AM	0	0	34	0	0	0	33	5	0	2	0	1	0	0	0	0
11:30 AM	0	2	37	0	0	0	48	3	0	2	0	0	0	0	0	0
11:45 AM	0	1	36	0	0	0	45	4	0	2	0	1	0	0	0	0
12:00 PM	0	2	35	0	0	0	43	3	0	1	0	0	0	0	0	0
12:15 PM	0	2	42	0	0	0	39	2	0	3	0	0	0	0	0	0
12:30 PM	0	0	51	0	0	0	42	4	0	1	0	1	0	0	0	0
12:45 PM	0	6	26	0	0	0	43	1	0	1	0	2	0	0	0	0

MID PEAK HOUR	Russell Street Northbound				Russell Street Southbound				Green Street Eastbound				Westbound			
11:45 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:45 PM	**0**	**5**	**164**	**0**	**0**	**0**	**169**	**13**	**0**	**7**	**0**	**2**	**0**	**0**	**0**	**0**
PHF	**0.83**				**0.93**				**0.75**				**0.00**			
HV %	**0.0%**	**0.0%**	**3.0%**	**0.0%**	**0.0%**	**0.0%**	**3.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 6
Location:	Portsmouth, NH
Street 1:	Russell Street
Street 2:	Green Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Russell Street Northbound				Russell Street Southbound				Green Street Eastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	Russell Street Northbound				Russell Street Southbound				Green Street Eastbound				Westbound			
11:30 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:30 PM	**0**	**0**	**5**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.63**				**0.42**				**0.00**				**0.00**			

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 6
Location:	Portsmouth, NH
Street 1:	Russell Street
Street 2:	Green Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Russell Street Northbound				Russell Street Southbound				Green Street Eastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0
12:00 PM	0	0	0	0	0	1	0	2	0	0	0	3	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0

MID PEAK HOUR 11:45 AM to 12:45 PM	Russell Street Northbound				Russell Street Southbound				Green Street Eastbound				Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	1	0	4	0	0	0	5	0	0	0	0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 7
Location:	Portsmouth, NH
Street 1:	Market Street
Street 2:	Russell Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Russell Street Northbound				Southbound				Market Street Eastbound				Market Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	38	0	4	0	0	0	0	0	0	79	44	0	0	67	0
11:15 AM	0	34	0	2	0	0	0	0	0	0	93	38	0	0	43	0
11:30 AM	0	36	0	3	0	0	0	0	0	0	122	51	0	0	58	0
11:45 AM	0	35	0	3	0	0	0	0	0	0	110	49	0	0	75	0
12:00 PM	0	34	0	2	0	0	0	0	0	0	107	45	0	1	56	0
12:15 PM	0	39	0	6	0	0	0	0	0	0	104	40	0	1	65	0
12:30 PM	0	50	0	2	0	0	0	0	0	0	101	46	0	0	57	0
12:45 PM	0	25	0	2	0	0	0	0	0	0	98	44	0	0	58	0

MID PEAK HOUR	Russell Street Northbound				Southbound				Market Street Eastbound				Market Street Westbound			
11:30 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:30 PM	**0**	**144**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**443**	**185**	**0**	**2**	**254**	**0**
PHF	**0.88**				**0.00**				**0.91**				**0.85**			
HV %	**0.0%**	**3.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.2%**	**2.7%**	**0.0%**	**0.0%**	**2.0%**	**0.0%**

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 7
Location:	Portsmouth, NH
Street 1:	Market Street
Street 2:	Russell Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Russell Street Northbound				Southbound				Market Street Eastbound				Market Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	2	0	0	0	0	0	0	0	0	0	3	0	0	0	0
12:00 PM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0
12:15 PM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	4	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0

MID PEAK HOUR	Russell Street Northbound				Southbound				Market Street Eastbound				Market Street Westbound			
11:45 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:45 PM	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**0**	**5**	**0**
PHF	**0.75**				**0.00**				**0.50**				**0.31**			

Client:	Matt Stoutz
Project #:	699_001_TB
BTD #:	Location 7
Location:	Portsmouth, NH
Street 1:	Market Street
Street 2:	Russell Street
Count Date:	6/12/2021
Day of Week:	Saturday
Weather:	Clouds & Sun, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Russell Street Northbound				Southbound				Market Street Eastbound				Market Street Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	3	0	0	0	0	0	0	1	0	0	3	0	1
11:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	4	0	0	0	0	0	0	0	0	0	2	0	6
12:00 PM	0	0	0	4	0	0	0	0	0	2	1	0	0	0	0	2
12:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	4
12:45 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2

MID PEAK HOUR 11:30 AM to 12:30 PM	Russell Street Northbound				Southbound				Market Street Eastbound				Market Street Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	12	0	0	0	0	0	2	1	0	0	2	0	10

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Volume Report

Job 699_001_TB_ATR A
Area Portsmouth, NH
Location Maplewood Avenue, approximately 100 ft south of Raynes Avenue

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

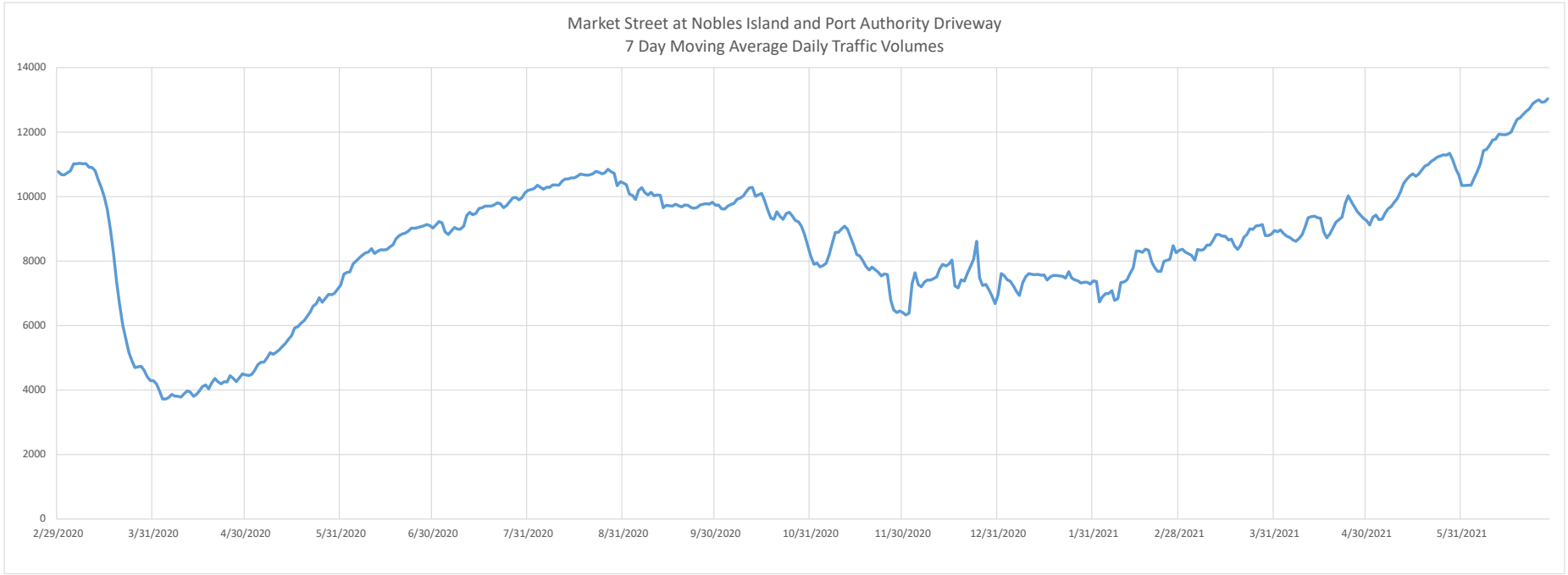
Thursday, June 10, 2021

Time	NB Vehicles & Heavy Vehicles		NB Heavy Vehicles		SB Vehicles & Heavy Vehicles		SB Heavy Vehicles	
0000	13		0		4		0	
0015	9		0		2		0	
0030	7		0		2		0	
0045	12	41	0	0	1	9	0	0
0100	10		0		1		0	
0115	10		0		2		0	
0130	5		0		2		0	
0145	4	29	0	0	3	8	0	0
0200	0		0		4		0	
0215	2		0		0		0	
0230	3		0		3		0	
0245	0	5	0	0	3	10	0	0
0300	3		0		1		0	
0315	1		0		1		0	
0330	3		2		1		0	
0345	6	13	2	4	4	7	0	0
0400	3		1		3		0	
0415	1		0		2		0	
0430	2		0		3		2	
0445	8	14	0	1	17	25	0	2
0500	7		0		6		0	
0515	14		1		10		1	
0530	12		1		15		1	
0545	13	46	0	2	20	51	0	2
0600	12		0		33		4	
0615	14		0		36		0	
0630	24		0		47		1	
0645	31	81	1	1	57	173	2	7
0700	36		0		70		6	
0715	48		2		50		3	
0730	62		5		75		2	
0745	52	198	3	10	117	312	6	17
0800	60		1		116		3	
0815	71		2		112		5	
0830	76		12		105		4	
0845	46	253	2	17	128	461	2	14
0900	44		1		92		2	
0915	53		1		93		2	
0930	52		5		64		2	
0945	42	191	4	11	80	329	3	9
1000	52		2		63		3	
1015	65		5		74		4	
1030	54		3		61		3	
1045	50	221	2	12	89	287	3	13
1100	62		4		75		5	
1115	71		4		97		1	
1130	75		3		63		1	
1145	79	287	3	14	118	353	1	8

Time	NB Vehicles & Heavy Vehicles		NB Heavy Vehicles		SB Vehicles & Heavy Vehicles		SB Heavy Vehicles	
1200	83		3		99		0	
1215	80		1		97		3	
1230	80		4		87		3	
1245	94	337	3	11	89	372	2	8
1300	82		2		81		2	
1315	81		3		88		4	
1330	103		1		76		2	
1345	102	368	2	8	60	305	1	9
1400	104		3		74		1	
1415	113		0		80		0	
1430	110		3		88		3	
1445	125	452	1	7	97	339	1	5
1500	119		5		103		3	
1515	109		1		71		0	
1530	130		2		99		2	
1545	117	475	1	9	108	381	1	6
1600	119		2		88		2	
1615	130		5		103		2	
1630	118		2		108		4	
1645	122	489	1	10	86	385	1	9
1700	128		1		113		0	
1715	117		2		111		0	
1730	114		0		93		1	
1745	97	456	1	4	115	432	1	2
1800	87		1		88		0	
1815	91		2		94		0	
1830	79		0		82		1	
1845	84	341	2	5	79	343	0	1
1900	89		1		77		0	
1915	77		1		60		0	
1930	80		0		46		0	
1945	86	332	1	3	55	238	0	0
2000	66		0		41		0	
2015	62		3		53		0	
2030	70		0		41		0	
2045	68	266	1	4	35	170	0	0
2100	59		0		28		1	
2115	77		0		28		0	
2130	53		1		21		0	
2145	58	247	0	1	13	90	0	1
2200	48		0		15		0	
2215	36		0		26		0	
2230	58		0		14		0	
2245	28	170	0	0	19	74	0	0
2300	26		0		9		0	
2315	34		1		6		0	
2330	30		0		8		0	
2345	23	113	0	1	5	28	0	0
Total	**5425**		**135**		**5182**		**113**	

APPENDIX J

Market Street at Nobles Island
Continuous Count Station Data
(February 2020 to June 2021)



Source: City of Portsmouth

Unitil
Northern Utilities, Inc.

December 3, 2020

Eben Tormey
Project Manager
XSS Hotels

Will Serve Letter for 1 Raynes Ave Portsmouth, NH 03801

Hi Eben,

Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for natural gas service.

Unitil hereby confirms natural gas is available on Raynes Ave to supply the proposed future development.

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

Unitil
Northern Utilities, Inc.

December 3, 2020

Eben Tormey
Project Manager
XSS Hotels

Will Serve Letter for 31 Raynes Ave Portsmouth, NH 03801

Hi Eben,

Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for natural gas service.

Unitil hereby confirms natural gas is available on Raynes Ave to supply the proposed future development.

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

EVERSOURCE ENERGY

November 23, 2021

1700 Lafayette Road
Portsmouth, NH 03801

Michael J Busby
603-436-7708 x555-5678
michael.busby@eversource.com

Neil A. Hansen, PE
Tighe & Bond, Inc.
177 Corporate Drive
Portsmouth, NH 03801

Dear Mr. Hansen:

I am responding to your request to confirm the availability of electric service for the proposed 1 Raynes Avenue/31 Raynes Avenue project being constructed for/by North Mill Pond Holdings, LLC.

The proposed project consists of two (2) 5-story buildings, one building with 60 residential units and approximately 8,100 s/f of retail/office space at the ground level and one building with 128 hotel rooms. The proposed development will be constructed along Raynes Avenue.

The developer will be responsible for the installation of all underground facilities and infrastructure required to service the new buildings. The services will be as shown on attached marked up Utility Plan C-104. To provide a loop service to your project additional infrastructure is required along Green Street and Russel Street, see "Eversource Duct Bank Plan C-401". The developer will work with Eversource to obtain all necessary easements and licenses for the proposed underground facilities listed above.

This letter serves as confirmation that Eversource can provide service to this proposed development so long as all the aforementioned infrastructure is installed and energized. The cost of extending service and installing associated infrastructure improvements necessary to provide service will be borne by the developer unless otherwise agreed upon.

The attached drawing titled "Proposed Mixed Use Development Utilities Plan (C-104)" dated 03/09/2021, and "Eversource Duct Bank Plan C-401" shows transformer locations and infrastructure improvements required 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

PROCON
CONNECT • CREATE • CONSTRUCT

T 603.623.8811
F 603.623.7250
P.O. Box 4430
Manchester, NH 03108
info@proconinc.com

March 16, 2021

City of Portsmouth Planning Board

GREEN BUILDING STATEMENT
Re: Proposed Mixed-Use Development, Raynes Avenue, Portsmouth, NH

The core and shell of the proposed mixed-use buildings at Raynes Avenue are being designed to meet or exceed current Energy Code requirements. A U.S. Department of Energy "COMcheck" will be submitted with the building permit application.

Currently the State of New Hampshire has adopted the 2015 International Energy Conservation Code with amendments, and the design of the new building will be built to current best practices and will exceed these requirements when appropriate.

- Foundation system: Cast in place concrete with continuous rigid insulation installed to depths required by the energy code. Continuous insulation to be provided under the concrete slab on grade for 2 feet along the exterior wall.
- Exterior walls: Continuous insulation outside the framing system and the continuous air barrier, to provide better overall thermal performance. Exterior skin of building to be a combination of brick, wood siding panels and metal wall panels that provide an air space in front of the insulation to allow for moisture management.
- Exterior windows: Thermally broken aluminum framing for common spaces and vinyl windows at apartment and hotel units. All glazing to be insulated, high-performance type to provide enhanced thermal performance and solar control.
- Roofing system: Light colored membrane roofing system over continuous rigid insulation that exceeds the base energy code requirements.
- HVAC systems: Apartment and hotel units to consist of high-efficiency, variable refrigerant flow, split system heat pumps. Ventilation to be provided by high-efficiency DX gas, dedicated outdoor units to provide fresh air to apartment and hotel units and common spaces. Bathroom exhaust to run through energy recovery heat exchanger to preheat incoming makeup air. Domestic hot water to be provided by high efficiency condensing boilers with variable frequency pumps. Apartment and hotel units to have individual temperature controls and common spaces to have digital controls with occupancy sensors.
- Plumbing: All fixtures to be low flow.
- Lighting: Exterior lighting to be LED cutoff fixtures for energy efficiency and to minimize light pollution. All interior lighting to be LED throughout using less than 1 watt / sf. Occupancy sensors to be utilized as required by code.
- Landscaping: Local species that are drought tolerant to be incorporated into plantings list.

Sincerely,

Christopher J. Lizotte AIA, NCARB, LEED AP
Senior Associate - Architecture and Engineering

3 Copley Place
Suite 3202
Boston, MA 02116
P: 617-426-0604
F: 617-426-0607
www.lazparking.com

May 20, 2021

Juliet Walker
Director of Planning
City of Portsmouth

Re: Redevelopment of 1 Raynes Ave, 31 Raynes Ave and 203 Maplewood

Dear Ms. Walker,

My name is Brian Haley and I am the Regional Vice President at LAZ Parking, LLC. LAZ is a national parking operator with over 2,500 facilities and over 200 hotels under parking management service agreements. Since 2014 in Portsmouth, we manage the parking operation for The Marriot Residence Inn, The Hampton Inn & Suites, and the Hilton Garden Inn for the applicant. We have recently begun operations for the AC Hotel since its opening.

We have reviewed the parking plans for the new mixed-use development incorporating a 128-room hotel along with a 60 unit residential dwelling. Based on historical data from the existing Portsmouth operations, the parking ratio to occupied rooms ranges from 65% to 70% based upon seasonality and we would expect to see up to 90 cars on peak nights. For similar residential units, the ratio of vehicles to units ranges from 52% to 57% for a parking demand average of 34 spaces. The property is providing 112 onsite spaces as well as an additional 25 spaces offsite. By utilizing an operating model of 100% valet, we will have the flexibility to fully maximize the tandem spaces and rotate cars as needed. The 137 total spaces available is sufficient to meet the parking demand.

Please let us know if you have any further questions.

Sincerely,

Brian Haley

Regional Vice President

April 30, 2021

City of Portsmouth Planning Department
Conservation Commission
1 Junkins Avenue, 3rd Floor
Portsmouth, NH 03801

Attention: Conservation Commission Board Members

Reference: Raynes Avenue Development Site
Mitigation of Subsurface Environmental Conditions and Feasibility of Stormwater Recharge

Ladies and Gentlemen:

The purpose of this letter is to summarize measures that will be implemented to mitigate existing subsurface environmental conditions during construction of the Raynes Avenue development site as well as the feasibility of on-site recharge/infiltration of stormwater under the New Hampshire Alteration of Terrain regulations.

As a result of the historical site usage, soil and groundwater has been affected by varying levels of contamination which exceed the Site Remediation Standards and Ambient Groundwater Quality Standards contained in the New Hampshire Code of Administrative Rules Env-Or 600. As a result, elements of the Raynes Avenue development project have been designed to mitigate potential future exposure to the on-site contamination as well as to mitigate the potential for off-site migration of contamination. Given the presence of the soil and groundwater contamination, the on-site infiltration of stormwater runoff, such as the use of porous pavement, is prohibited under the provisions of the Alteration of Terrain (AoT) permit.

The Raynes Avenue development site, referenced herein as "project site", is comprised of four (4) contiguous parcels of land including 203 Maplewood Avenue, 31 Raynes Avenue, and 1 Raynes Avenue as well as a vacant parcel of land identified as 205 Maplewood Avenue (Map-Lot: 0123-10). The parcels are currently occupied by three (3) existing 1 to 3-story buildings, paved surface parking lots, and grassy or landscaped areas. Currently, the existing buildings are utilized as a fitness gym and storage space for a café and various dry goods. The existing building on 203 Maplewood Avenue is currently vacant.

The proposed project will require the demolition of the existing structures, and construction of two 5-story buildings which will occupy the southern and eastern portions of the project site. Asphalt paved parking lots and landscaped margins are proposed adjacent to the north of the proposed buildings. Additionally, a community greenway and pedestrian path are proposed along the banks of the North Mill Pond within the limits of the project site. Stormwater runoff from the redeveloped project site will be collected into an on-site storm drain system which will temporarily store and subsequently treat the runoff before leaving the site.

GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERS
2269 Massachusetts Avenue
Cambridge, Massachusetts 02140
(617) 868-1420

Over the past 100 years, the parcels of land that comprise of the project site were utilized for commercial and industrial purposes. Specifically, the 203 Maplewood Avenue building was utilized as a gasoline filling station between the 1930's and 1983 and a dry cleaner/laundromat between 1984 and 2018. The current 2-story office building was constructed at 31 Raynes Avenue in 1940 and subsequently, a storage shed was constructed on the parcel in 1994. The current fitness gym was originally constructed as a warehouse in 1955 at 1 Raynes Avenue and was formerly used as a garage for the New England Telephone Company as well as automotive body repair and painting shop.

The 203 Maplewood Avenue parcel has been assigned NH DES Site Number 199909083 due to presence of petroleum constituents. Over the past 20 years, the current and previous site owners have performed biannual assessments of soil and/or groundwater at the parcel, the results of which have been submitted to the New Hampshire Department of Environmental Services (DES). In 2012, a Groundwater Management Permit (GMP) was recorded for the site under which biannual assessment activities have been performed in accordance with ENV-OR 600, the New Hampshire Contaminated Site Management provisions.

The 205 Maplewood Avenue parcel was historically assigned NH DES Site Number 198810012 due to the elevated concentrations of a petroleum related volatile organic compounds (VOCs) within groundwater on site. The presence of petroleum related VOC was attributed to the former gasoline service station at 203 Maplewood Avenue site. Soil characterization within test pits indicated the presence of coal ash in fill material.

The 31 Raynes Avenue property has also been affected by the presence of chlorinated solvents, metals and petroleum hydrocarbons in soil and groundwater. The result of which indicate the presence of VOCs, metals, and petroleum constituents in certain areas of the project site. The source of these contaminants is likely attributable to historical fill that is typically used within this region of Portsmouth and possibly off-site properties. Additionally, the southern portion of the parcel is listed as an inactive Asbestos Disposal Site due to the presence of asbestos containing material (ACM) that was identified in soil. The DES was notified of the contamination in 2006 after which Site Number 200603011 was assigned to the parcel. Subsequently, remediation activities were performed at a portion of the parcel to remove an underground storage tank and associated contaminated soils. Post remediation assessment activities, which included soil and groundwater testing, were performed on a biannual basis for approximately 4 years after which a No Further Action Certification was issued by the DES in 2011. Between January 2020 and January 2021, McPhail performed soil testing across the site, the result of which indicate the presence of chlorinated solvents, metals, and petroleum constituents in certain areas of the project site. The presence of these contaminants is considered attributable to the historical site use as well as historical filling that is typical within this portion of Portsmouth.

Excavation activities will be performed under a Soil Management Plan (SMP) that will be prepared for the project. Due to the presence of contamination, the SMP will include measures to mitigate potential exposure to the surrounding public from contaminated soils. The excavation activities will involve the removal of shallow contaminated soil from across the area of the project site. Within localized areas of the project site, deeper contaminated

soil will be excavated and removed off-site. These mitigative measures will include limiting on-site stockpiling, segregation of contaminated soils, direct loading of contaminated soils for off-site disposal, dust suppression (i.e., wetting exposed soils, covering stockpiles, etc.) and in-situ treatment of contaminated soils. Temporary methods for protecting water quality including erosion, sediment, and runoff control will be implemented in accordance with Env-Wq 1505.05 as well as a Stormwater Pollution Prevention Plan (SWPPP) that will be prepared prior to the start of site development. In addition, temporary construction dewatering of groundwater will be controlled during redevelopment, including the collection and treatment of groundwater and surface water that may be encountered during the construction of building foundations and subsurface utilities.

As referenced above, the project design has incorporated mitigative elements to prevent potential future exposure to the on-site contamination as well as to prevent the potential for off-site migration of contamination. Specifically, the project design includes engineering controls such as capping of existing contaminated soil with clean fill, hardscaping, and impervious asphalt pavement or by the building foundation. Additionally, the area of contaminated groundwater is proposed to be covered by impervious asphalt pavement, hardscaping, and the building footprint. Furthermore, stormwater runoff will be collected and temporarily stored within two closed-system stormwater detention basins that are designed to prevent infiltration into the groundwater formation that would exacerbate the subsurface contamination. From these detention basins, the stormwater runoff will pass through a filtration system that will reduce particulate-bound pollutants prior to entering the City's storm drain system which discharges into the North Mill Pond.

The New Hampshire Code of Administrative Rules Chapter Env-Wq 1507 defines requirements for the protection of water quality during Alteration of Terrain (AoT) activities. In accordance with Env-Wq 1507.02C, no infiltration practice, filtering practice, groundwater recharge practice, treatment swale, or sediment forebay shall be located in any areas that (1) have contaminants in soil above site-specific soil standards developed pursuant to Env-Or 600, and/or (2) have contaminants in groundwater above the ambient groundwater quality standards established in Env-Or 603.03. Based upon the presence of contaminants in soil and groundwater at the development site which have been and/or are currently being managed in accordance with Env-Or 600, on-site recharge and/or infiltration of stormwater, such as the use of porous pavement, is prohibited pursuant to the provisions set forth within Env-Wq-1507.

In summary, an SMP will be implemented for on-site redevelopment activities. The SMP will include measures to mitigate potential exposure of contaminated soils to the surrounding public. Due to the historical presence of contamination on the project site, on-site recharge and/or infiltration of stormwater is prohibited. Temporary methods for protecting water quality will be implemented in accordance with Env-Wq 1505.05 and SWPPP during redevelopment. Subsequently, the excavations will be replaced by drainage structures or clean fill prior to the installation of the proposed building foundation or impervious surfaces in order to significantly mitigate the potential for off-site migration of the soil and groundwater contamination. Furthermore, stormwater runoff will be collected and filtered within two closed-system stormwater detention basins to reduce particulate-bound pollutants prior to entering North Mill Pond by the City's storm drain system.

We trust that the above is sufficient for your present requirements. Should you have any questions concerning the above, please call us.

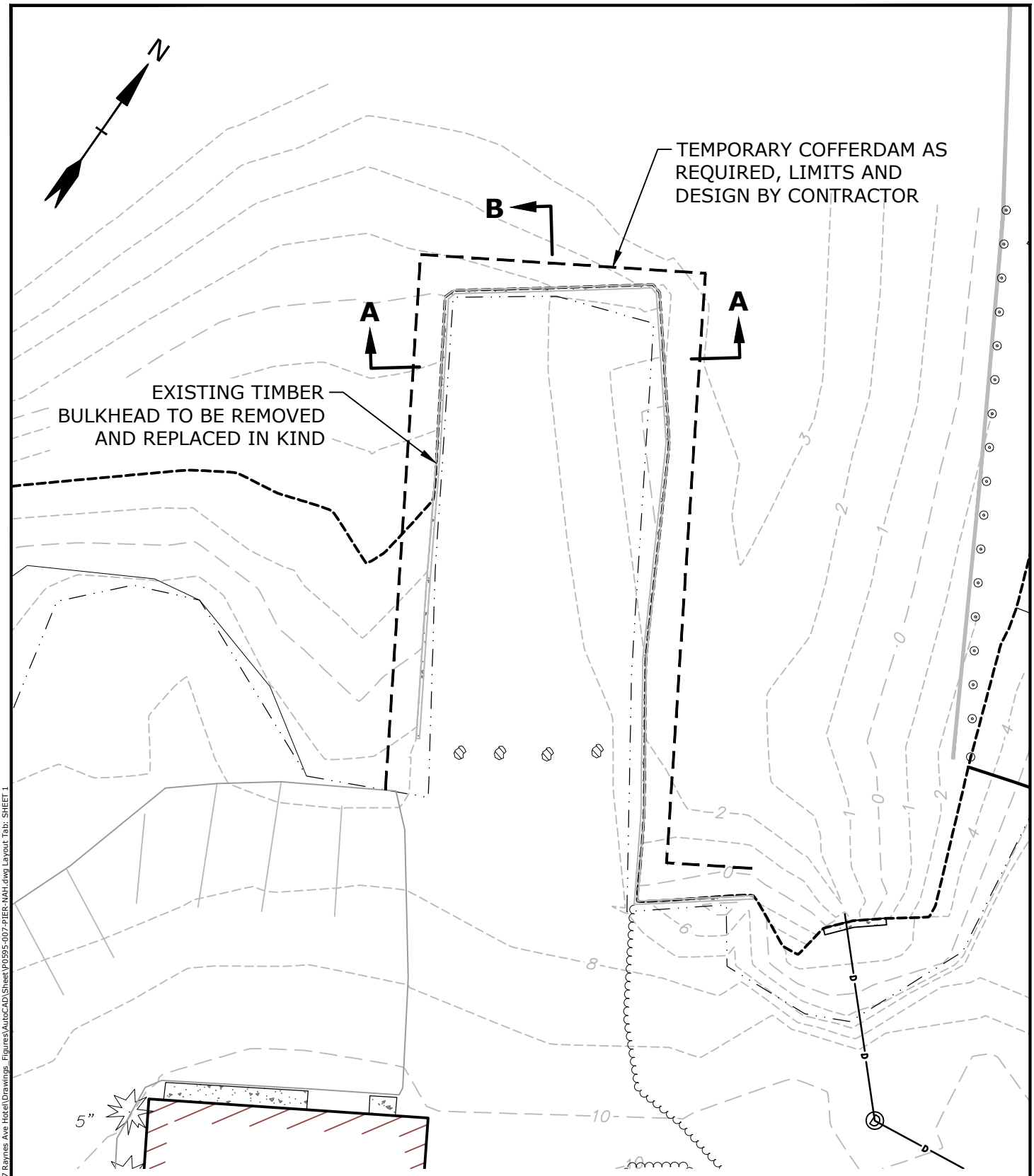
Very truly yours,

McPHAIL ASSOCIATES, LLC

Shakib Ahmed, P.G.

William J. Burns, L.S.P., L.E.P.

6872_Raynes Ave_Con Comm Let._042921.docx
SA/wjb



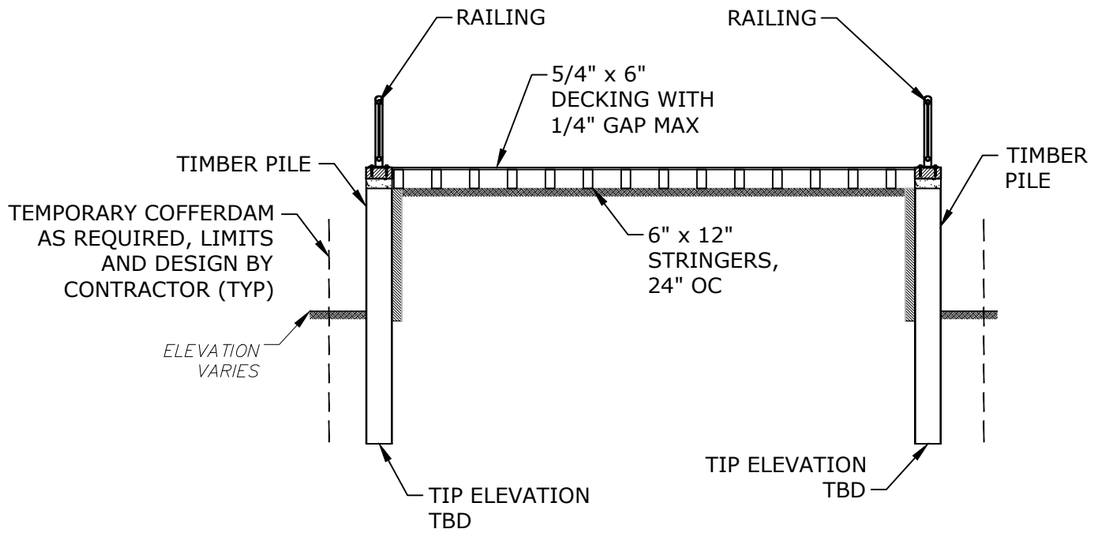
PROPOSED MIXED USE DEVELOPMENT
RAYNES AVE
PORTSMOUTH, NEW HAMPSHIRE

PIER CONCEPT PLAN

DATE:	05/26/2021
FILE:	P0595-007-PIER-NAH.DWG
DRAWN BY:	JAK
CHECKED:	GM
APPROVED:	PMC

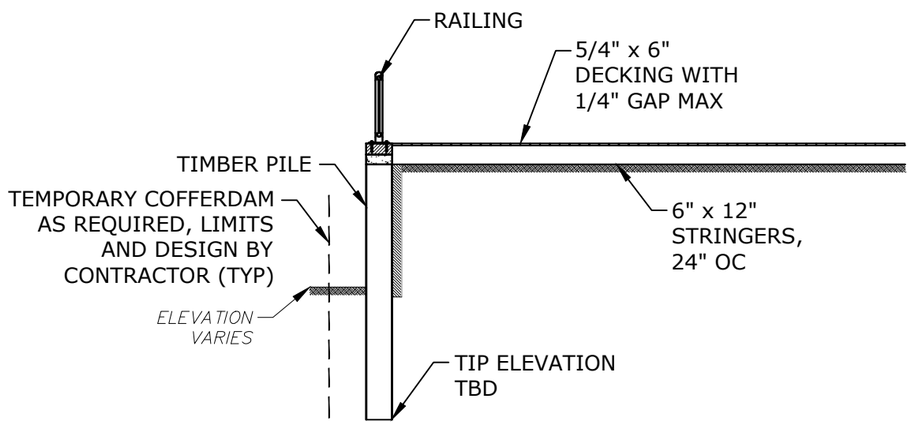
Tighe&Bond
Engineers | Environmental Specialists

Last Save Date: November 23, 2021 11:27 AM By: CKRZCUIK
Plot Date: Tuesday, November 23, 2021 Plotted By: Colter Krzcuik
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings- Figures\AutoCAD\Sheet\P0595-007-PIER-NAH.dwg Layout Tab: SHEET 1



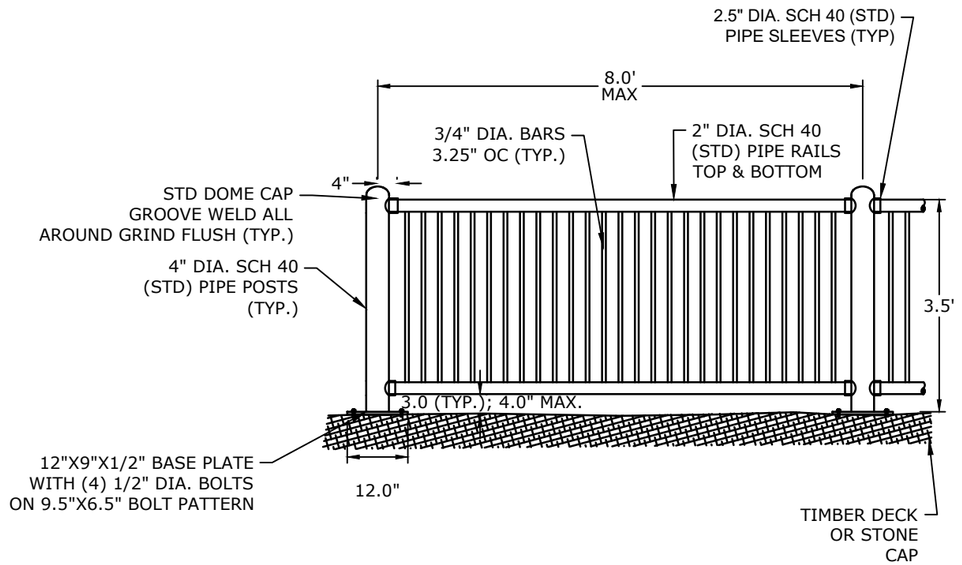
SECTION A / S-1

NTS



SECTION B / S-1

NTS



RAILING NOTES:

1. FABRICATE THE RAILINGS AS SHOWN. EASE ALL EXPOSED EDGES AND GRIND SMOOTH WELDS (GRIND FLUSH AT GROOVE WELDS) PRIOR TO COATING. IF 3/4" VERTICAL RODS ARE SET INTO HORIZONTAL RAILS, THEN SEAL WELD ALL AROUND. IF 3/4" VERTICAL RODS ARE BUTTED UP TO HORIZONTAL RAILS, THEN 1/4" FILLET WELD ALL AROUND.
2. ON STONE: EPOXY GROUT THE BASED PLATE ANCHORS INTO STONE, PROVIDE 6" EMBEDMENT (TYP). ON TIMBER, PREDRILL FOR LAG BOLTS.
3. PLUMB POSTS, SET RAIL PANELS AND GROUT UNDER BASE PLATES (TYP).
4. FOR HOT DIP GALVANIZED COLOR GALV. COATING BASE BID, PROVIDE ADEQUATE VENTING OF PIPES WHERE HIDDEN FROM VIEW AND SO AS NOT TO TRAP WATER.

RAILING DETAIL

PROPOSED MIXED USE DEVELOPMENT
RAYNES AVE
PORTSMOUTH, NEW HAMPSHIRE

PIER CONCEPT SECTIONS
& DETAILS

DATE:	07/21/2021
FILE:	P0595-007-PIER-NAH.DWG
DRAWN BY:	JAK
CHECKED:	GM
APPROVED:	PMC

Tighe&Bond
Engineers | Environmental Specialists

Last Save Date: November 22, 2021 11:27 AM By: CKIZCUIK
Plot Date: Tuesday, November 23, 2021 Plotted By: Colter Krzcuk
T&B File Location: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P0595-007-PIER-NAH.dwg Layout Tab: SHEET 2

SIGNAGE

Memo

TO: Conservation Commission Members
FROM: Peter Britz, Environmental Planner
DATE: June 11, 2021
SUBJ: June 16, 2021 Conservation Commission Meeting

Raynes Ave and Maplewood Ave Mixed Use Project

This project includes removing three buildings and impervious surface in the wetland buffer to be replaced with two new buildings parking a public access waterfront trail and landscaping. Overall the project has reduced impervious surface impacts in the first fifty feet of the tidal wetland buffer by 3,787 square feet. Overall the net reduction amounts to 3,800 square feet of impervious surface removed from the 100 foot tidal wetland buffer.

According to *Article 10 Section 10.1017.50* the applicant must satisfy the following conditions for approval of this project.

1. *The land is reasonably suited to the use activity or alteration.* This project is located in an area along the North Mill Pond that is currently private and not open to the public. The current property is being improved to include a bicycle and pedestrian trail made of porous pavement and a new landscaping plan which enhances what is there today and provides public access along the water consistent with the North Mill Pond Greenway plan. The overall project reduces the amount of impervious surface. For these reasons the land is reasonably suited to the proposed alterations.

2. *There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.* The location of the property is primarily within the 100' wetland buffer. The applicant has removed the majority of the impacts from the first fifty feet of the wetland buffer. Given the small amount of developable area outside of the wetland buffer there is no alternative location that is reasonable for a project in this area.

3. *There will be no adverse impact on the wetland functional values of the site or surrounding properties.* The proposed development is significantly further from the edge of wetland and there is a reduction in impervious surface with this proposal. The proposal also seeks to improve the treatment of stormwater on the site with a treatment and detention system. The pedestrian trail that is proposed is planned for porous pavement. This project provides community space that will allow people to walk along the pond on a safe accessible trail and proposed a landscape plan which is an improvement over the existing pavement and small area of vegetation currently in the buffer.

4. *Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.* The proposed project has plans to remove a good deal of building and impervious surface from the buffer. The plans include a landscape plan which will provide adjacent wetand habitat and an amenity to the public using the greenway trail.

5. *The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.* This application propose to provide enhancements to the tidal buffer zone over what exists today. The project will provide enhanced landscaping over what exists today and will provide public access this portion of the North Mill pond where none exists today. Given these improvements and the reduction of impervious surface and treatment of stormwater on the site staff believes this project has worked to provide an application which reduces the overall impacts.

6. *Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.* The applicant provided a landscape plan which includes plantings around the proposed building and within the 100' tidal wetland buffer. The use of native plantings within the 100 foot buffer and removal of invasive species on this site will provide a benefit over the vegetation in buffer which exists today.

Recommendation: Staff believes this application represents a reduction in impacts to the tidal buffer zone and provides public access through a location that has been private. Since the last submittal the applicant has enhanced the wetland buffer plantings has provided additional detail on reconstruction of the pier and ram in-kind which will while currently private will provide additional public access to the water in this location. In addition the applicant has complied with section 10.1017.24 which requests the removal of impervious surface in the buffer to below what exists. Staff recommends approval of this application as presented.

3 Curriers Cove

This project is to construct a patio and small portion of a pool in the 100' inland wetland buffer. There is a freshwater wetland adjacent to the tidal buffer therefore while this project is well outside the 100' tidal buffer it still falls within 100' of the edge of a freshwater wetland. This project was previously approved but the approval has lapsed.

1. The land is reasonably suited to the use activity or alteration. This project is to install a patio and pool at the back side of the house furthest from the edge of the wetland immediately adjacent to the house. This is a reasonable location for this work.

2. There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration. Given the existing house is closer to the wetland this is the most reasonable location for the proposed patio and pool.

3. There will be no adverse impact on the wetland functional values of the site or surrounding properties. The construction of the patio and pool can be constructed to prevent any erosion and/or sedimentation to the area and wetland from which this buffer is defined.

4. Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals. The patio and pool are proposed in the developed portion of the property where there is not currently vegetation.

5. The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section. TGiven that the pool and patio are going where a pool previously existed and they are located on the opposite side of the house from the wetland this is the least impacting location for the pool and proposed patio.

6. Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible. The plan provides for the addition of nine new trees on the outside of the proposed fence.

Recommendation: Staff recommends approval of the project as presented.

0 Patricia Drive

This application was previously before the Commission in October of 2020 and proposed to restore a portion of an existing roadway including new stormwater treatment in the wetland buffer to access two new proposed home sites. The applicant is proposing to change the stormwater treatment from a detention area and vegetated overflow into the Prime Wetland buffer to a series of treatment catchbasins.

1. The land is reasonably suited to the use activity or alteration.
It is not clear from the design how the site grading will direct flow to the proposed new treatment units and where these units will be installed. The treatment units specified on the plans are for industrial application which this is not.

2. There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.
Given this was previously a paved roadway this is the most feasible and reasonable approach to the proposed home sites. However, more details are needed to better understand the stormwater treatment change proposed and how it will work to reduce impacts to the adjacent wetland.

3. There will be no adverse impact on the wetland functional values of the site or surrounding properties.
The applicant changed the stormwater design but has provided insufficient detail to understand how water will be adequately treated with the proposed change.

4. Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.
Impacts to natural vegetation in the 100' prime wetland buffer has been reduced with this application.

5. The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.
The proposed project has not provided sufficient details to know where the new treatment units will go, how the stormwater from the roadway will get to them and why these units will work in this environment when they are proposed as industrial treatment systems. Additionally, it is not clear how the longterm maintenance will be provided in these proposed units especially as this is a residential private roadway.

6. Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.
This applicant proposes a reduction in impact to the vegetated buffer as they have substituted surface treatment in the buffer for a subsurface catch basin system.

Recommendation: Staff recommends this application be postponed until the applicant can provide sufficient detail on how the proposed treatment units will work in this application, how the water will be directed to the proposed systems, how the system is suited to handle the volume of water from the site, and how the longterm maintenance of these units will be insured.

3400 Lafayette Road

This application is to construct a 50 unit multi family residential development. The majority of the proposed development falls outside of the wetland buffer however there is storwmater treatment area and site drainage proposed to go into the wetland area.

1. The land is reasonably suited to the use activity or alteration.
The size and scale of this development adjacent to what is intended to be a highly functioning wetland system does not appear to be appropriate. A portion of the stormwater treatment is within the wetland buffer which will require over 7000 square feet of disturbance in the wetland buffer. All of the runoff water will go into the adjacent wetland system. It is staff's understanding that this wetland system was constructed as mitigation for the Portsmouth Regional Hospital construction.

2. There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.
The applicant appears to have maximized the residential development on this site which could have longterm impact to the wetland area adjacent to it.

3. There will be no adverse impact on the wetland functional values of the site or surrounding properties.
While the stormwater from the site will be treated it is not clear how this treated water and new volume of water will impact the functioning wetland mitigation which was created to offset wetland impacts in a different part of the city. The longterm impact of stormwater in this wetland could have an adverse impact on the created wetland system.

4. Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.
The area proposed for development is currently being used as a wood processing area therefore a portion of the natural vegetation has been impacted. The introduction of 50 housing units in this area will require removal of all the natural vegetation outside of the buffer and some of the vegetation in the buffer at least as a temporary impact.

5. The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.
While the applicant has kept all of the proposed housing and roadways out of the wetland buffer the proposed impacts to the wetland buffer for stormwater treatment are not the least impacting alternative and the runoff from the development while proposed for treatment still will have longterm impacts to the adjacent wetland system.

6. Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.
The applicant is proposing temporary impacts in the wetland buffer but it is not clear how these will be restored when the project is complete.

Recommendation: This is an intensive development bordering a conservation area. Some of the stormwater treatment is proposed in a Natural Resource Protection zoning district and over 7,000 square feet of temporary impact is proposed in the wetland buffer. The longterm impact of all the stormwater from this site could have significant impacts to the adjacent wetland system. Staff recommends that the applicant redesign the project to be less intensive and treat all of the stormwater outside of the buffer and consider alternate locations other than the adjacent wetland as an outlet to protect the integrity of this mitigation area. The applicant should also provide the mitigation plans which were developed for the adjacent wetland area and demonstrate how this development is compatible with those plans.

RECEIVED
JUN 22 2021
By

CITY OF PORTSMOUTH NH

CONSERVATION COMMISSION

One Raynes Ave, LLC, 31 Raynes Ave, LLC, & 203 Maplewood Ave, LLC ("**Applicant**")

Owners of Property Shown at Assessor Map 123, Lots 10, 12, 13, 14 ("**Property**")

OBJECTION AND REQUEST FOR RECONSIDERATION

On June 16, 2021 the Conservation Commission, in a tie 3 to 3 vote, failed to recommend that the City of Portsmouth's Planning Board grant Applicant's Condition Use Permit for its development of a mixed-use project consisting of a residential building, a hotel, and appurtenant parking on the Property, four separate parcels of land containing a total of 2.53 acres located at the intersection of Raynes Ave. and Maplewood Ave. in Portsmouth's North End (the "Project").

The Project has been carefully designed to be in compliance with the provisions the City's Zoning Ordinance and the goals of the City's Master Plan. The Property currently consists of urban uplands which for centuries been subject to industrial use. The Property contains three vacant or under-utilized industrial buildings surrounded by paved surface and disturbed industrial fill currently draining untreated stormwater directly into North Mill Pond.

The Property is also the site of a major City drain which carries stormwater from the streets and sidewalks in the neighborhood and, without treatment, dumps it and the pollution that it carries into the North Mill Pond causing significant erosion to the Pond's banks.

Among the stated goals of the City's Master Plan, goals that have been incorporated into the Zoning Ordinance, are the following:

1.1.1 Support reinvestment in underutilized buildings and land.
1.1.2 Enhance the quality and connectivity of pedestrian facilities.
1.1.3 Promote the creation of open spaces, seating areas and other outdoor amenities.
1.1.5 Encourage new public spaces that can be used for both recreational and flood plain storage.

2.1 New development should complement its neighborhood character and size.
2.3.2 Actively protect, enhance and acquire public waterfront space.
5.1.3 Adjust site design standards to include sustainable stormwater measures, increase on-site infiltration, and reduce downstream erosion sedimentation, and flooding impacts.
5.2.2 Pursue open space acquisitions that create wildlife corridors and ecological connections.
5.3.1 Implement watershed restoration measures and plans to improve water quality and habitat values.
5.4.3 Strengthen site design standards to prioritize low impact stormwater treatment systems to protect water quality and habitat value.

The positive effects of the Project were recognized and applauded by members of the Commission at the June 16 meeting.

The Chair stated: *"I appreciate the efforts put into this especially with plantings."*

Jessica Blasko said: *"I appreciate the Applicant's efforts and applaud its reception to input ... This is very thoughtful and addresses lots of concerns about water quality and habitat."*

The Staff recommendation to the Commission was straight forward and clear:

"***Recommendation***: *Staff believes this application represents a reduction in impacts to the tidal buffer zone and provides public access through a location that has been private. Since the last submittal the applicant has enhances the wetland buffer plantings and has provided additional detail on reconstruction of the pier and ramp in-kind which while currently private will provide additional public access to the water in this location. In addition, the applicant has complied with Section 10.1017.24 which requires the removal of impervious surface in the buffer to below what exists. Staff recommends approval of this application as presented."*

Yet, three Commissioner's voted against making a positive recommendation to the Planning Board. To the extent that the Commissioners who voted against the recommendation gave any rationale for their votes, it was limited to factors outside of the regulatory scope of the Commission's authority: (i) the proposed density and scale of the Project, and (ii) "contamination on the site".

The major concern about the Project expressed by the Commissioners at the hearing related to size and density. During the Commission's deliberations Commissioner Blasto's major concern was the density of the Project. She said, *"I think that you very thoughtfully addressed a lot of concerns about water quality and habitability but ...**it feels like a very dense project.**"* Commissioner Jankowski made clear that one of his concerns was that *"These are **massive Buildings, a great displacement of this lot.**"*

Commissioner Jankowski also raised the only other significant concern expressed at the meeting when he said that he was, "***Very concerned about the contaminated site**. Concerned about what's closer to the waterfront.*"

Neither of these issues are within the purview of the Commission. As stated above, the Project fully complies with the Portsmouth Zoning Ordinance. The issue before the Commission is not the size of the Projects buildings or the 'density' of the development. Those are matters governed by the City's duly enacted Zoning Ordinance.

The 'contamination' issue arises out of the fact that over twenty (20) years ago contamination from a former gas station on the site was discovered. The NH Department of Environmental Services ("NH DES"), the authority which is charged with remediating and regulating contaminated sites, has been working with the various owners of the site over the last twenty years. The site continues to be monitored and regulated by NH DES, which has sole authority to deal with any remaining contamination. The Applicant has made clear that it has, and will continue to, comply with the regulations and orders of NH DES. The net effect of the

Project under DES rules and regulations will be reduction in the amount of contamination on the site.

The matter before the Commission, therefore, is not the (i) the proposed density and scale of the Project, or (ii) "contamination on the site". It is only whether the Project as presented complies with the below set forth criteria for a Conditional Use Permit.

Conditional Use Permit Criteria

The Wetland Protection Ordinance does not prohibit development within the wetland setbacks outright and does not override the permitted use and dimensional provisions of the Zoning Ordinance, or laws dealing with hazardous waste. Rather, the Ordinance employs a conditional use review to ensure that development within the wetland setbacks minimized adverse impacts within the jurisdictional wetlands and the wetland buffer areas. For sites such the Project, which have heavy existing impacts and no existing buffer features in their topography, the review focuses on whether and to what extent, if any, the proposed alterations will have an adverse impact on the buffer area; that is whether the proposed project will worsen the existing buffer impacts on the site. In plain English, an adverse impact is a change that is worse than the existing conditions on the site. The Project improvements, however, are making the buffer better, not worse than the existing conditions, and therefore meet the following six conditions for a Conditional Use Permit set forth in ARTICLE TEN SECTIONS TEN TEN-SEVENTEEN-FORTY and TEN TEN-SEVENTEEN-FIFTY for development within the wetland setbacks:

First, the land is reasonably suited to the use, activity or alteration; *The site is zoned for the proposed use. Further, one of the major goals as set forth in numerous City documents is the*

creation of the North Mill Pond Greenway, a bicycle and pedestrian path along North Mill Pond providing public access along the water which will provide open spaces, seating areas and other outdoor amenities, while creating wildlife corridors and ecological connections. The proposed Project will go a long way toward the City meeting goals 1.1.1, 1.1.2, 1.1.3, 1.1.5, 2.1, 2.3.2, 5.2.2, 5.3.1 and 5.4.3 of the City's Master Plan, while reducing the amount of impervious surface, invasive species, and untreated stormwater runoff now existing.

Second, there is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity, or alteration. *Much if the site lies within the 100' wetland buffer from the North Mill Pond, however, the Project will have* ***no buildings in the 100 foot buffer****, and will have a very positive effect on the wetland buffer. Locating the Project on this site will, however, advance the City's stated desire to create the North Mill Pond Greenway, a public/private enterprise that will not move forward without the significant contributions of property and improvements the applicant proposes.*

Third, there will be no adverse impact on the functional value of the site or surrounding properties. *In addition to the decrease in impervious coverage, the Project will provide a major stormwater collection and treatment system, both for the Project site and for the surrounding public streets, sidewalks and parking areas. The existing site stormwater runoff, which now runs untreated into the NMP, will be captured and treated. The City will be provided with an easement for a new stormwater drain carrying runoff from the surrounding neighborhood through a treatment system and deposit only treated water in the Pond..*

Fourth, alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals. *The Project includes dramatic benefits to the landscaping and health of the wetland buffer. The project removes existing invasive species dominating the existing buffer area and replaces them with carefully selected native vegetation.*

Temporary disturbances which will be restored following construction will allow for rebuilding of a City stormwater system which contributes to the impaired water quality in the North Mill Pond. Overall the project significantly enhances the area for public use and wetland habitat.

Fifth, the proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section. *The Project will significantly improve and enhance a site which for centuries has been abused by industrial uses, while eliminating ongoing pollution to North Mill Pond.*

Sixth, any area within the vegetated buffer strip will be returned to a natural state to the extent feasible (collectively, the "***CUP Criteria***"). *The applicant has worked closely with the City to design a landscape plan that meets or exceeds the City's reasonable expectations while conforming with the landscape plans for other properties over which the North Mill Pond Greenway will be built.*

The Applicant presented this Project to the Conservation Commission on four separate occasions for review and comment. It has listened to the Commissioners' concerns and suggestions and conscientiously worked to address them, as was recognized in the public comments of numerous Commissioners

The concerns expressed by Commissioners voting against the proposed recommendation to the Planning Board were, (i) the proposed density and scale of the Project, and (ii) "contamination on the site"; issues which lie under the jurisdiction of other City or State offices, and are not open to the consideration of the Commission when acting on a request for a recommendation for a Conditional Use Permit.

The Applicant thus requests that the Commission reconsider its June 16, 2021 vote and, after taking the above comments into consideration, vote once again on the issue at hand.

Dated: June 22, 2021

Respectfully submitted,
Applicant by its Attorneys,
Stebbins, Lazos & Van Der Beken PLLC

By: _____
Robert A. Previti, Esq.

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

PROJECT IMPACTS EXHIBIT

EXISTING CONDITIONS

TOTAL BUFFER IMPACTS = 28,327 SF

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

1 OF 5

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 17, 2021 4:07 PM By: CKRZCUIK
Plot Date: Thursday, November 18, 2021 Plotted by: Colter Krzcuik
TGS File Location: J:\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P-0595-007-C-COMPARISON.dwg Layout Tab: 1 OF 5

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

PROJECT IMPACTS EXHIBIT

PROPERTY LINE

25' VEGETATED BUFFER

50' VEGETATED BUFFER

100' VEGETATED BUFFER

TAC WORK SESSION SUBMISSION (12/2/20)

TOTAL BUFFER IMPACTS = 32,393 SF

NET BUFFER IMPACTS = **4,066 SF**

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

2 OF 5

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 17, 2021 4:07 PM By: CKRZCUIK
Plot Date: Thursday, November 18, 2021 Plotted By: Colter Krzcuik
TAC File Location: J:\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P-0595-007-C-COMPARISON.dwg Layout Tab: 2 OF 5

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

PROJECT IMPACTS EXHIBIT

TAC SUBMISSION (4/6/21)

TOTAL BUFFER IMPACTS = 24,595 SF

NET BUFFER IMPACTS = **(3,732) SF**

N

SCALE IN FEET

0 30' 60'

GRAPHIC SCALE

3 OF 5

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 17, 2021 4:07 PM By: CKRZCUIK
Plot Date: Thursday, November 18, 2021 Plotted By: Colter Krzcuik
T&B File Location: J:\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-C-COMPARISON.dwg Layout Tab: 3 OF 5

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

PROJECT IMPACTS EXHIBIT

TAC RESUBMISSION (11/2/21)

TOTAL BUFFER IMPACTS = 24,022 SF

NET BUFFER IMPACTS = **(4,305) SF**

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 17, 2021 4:07 PM By: CKRZCUIK
Plot Date: Thursday, November 18, 2021 Plotted By: Colter Krzcuik
TAC File Location: J:\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P-0595-007-C-COMPARISON.dwg Layout Tab: 4 OF 5

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

PROJECT IMPACTS EXHIBIT

CURRENT PB SUBMISSION (11/24/21)

TOTAL BUFFER IMPACTS = 21,257 SF

NET BUFFER IMPACTS = **(7,070) SF**[(2)]

[(2)] TOTAL NET REDUCTION INCLUDES IMPERVIOUS SURFACE FOR RESERVE PARKING SPACES IF CONSTRUCTED IN THE FUTURE.
IF RESERVE SPACES ARE NOT CONSTRUCTED, TOTAL IMPERVIOUS SURFACE WILL BE **(10,107) SF** FOR THE PROJECT.

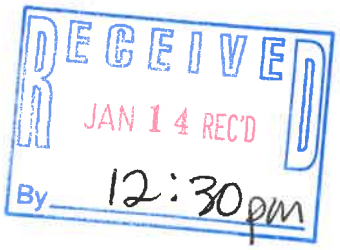
N

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

November 24, 2021
P-0595-007-C-DSGN.dwg

Last Save Date: November 19, 2021 2:09 PM By: CKRZCUIK
Plot Date: Tuesday, November 23, 2021 Plotted By: Colter Krzcuik
TGS File Location: J:\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings, Figures\AutoCAD\Sheet\P-0595-007-C-COMPARISON.dwg Layout Tab: 5 OF 5

THE STATE OF NEW HAMPSHIRE



PLANNING BOARD
OF THE CITY OF PORTSMOUTH

In re Application of North Mill Pond Holdings, LLC, One Raynes Ave, LLC, 31 Raynes Ave, LLC, and 203 Maplewood Ave, LLC, regarding the properties located at 1 Raynes Avenue, 203 Maplewood Avenue, and 31 Raynes Avenue, and known familiarly as

The Raynes Avenue Project

MOTION FOR REHEARING/RECONSIDERATION

James A. Beal, Fintan ("Finn") Connell, Joseph R. Famularo, Jr., Philippe Favet, Charlotte Gindele, Julia Gindele, Linda Griebsch, Catherine L. ("Kate") Harris, Roy W. Helsel, Elizabeth Jefferson, and Donna Pantelakos, all of whom are citizens, residents and/or property owners in the City of Portsmouth, respectfully move this Planning Board to reconsider its decision of December 16, 2021, in which it granted site plan approval to the applicants' project, granted a wetlands conditional use permit, and granted various other approvals to the project. The movants ask that the Planning Board reconsider its decision, vacate and reverse its grant of site plan approval and its grant of the wetlands conditional use permit, rehear the developers' application anew, and ultimately disapprove the applicants' site plan. As grounds in support of their motion, the movants state the following:

1. An ineligible member of the Planning Board, who was improperly appointed to that Board, participated in consideration of the applicants' site plan review and joined in the vote to

grant site plan approval. Therefore, under the teachings of the New Hampshire Supreme Court's decision in Winslow v. Town of Holderness Planning Bd., 125 N.H. 262, 480 A.2d 114 (1984), the Planning Board's decision granting site plan approval, issuing a wetlands conditional use permit, and granting other approvals is absolutely void. In the Winslow case, the court ruled that the participation of a single ineligible member in a land use board's decision invalidates the entire decision because "it [is] impossible to estimate the influence one member might have on his associates". 125 N.H. at 268, 480 A.2d at 117.

2. Planning Board member Raymond Pezzullo was and is ineligible to sit on the Planning Board because he was improperly appointed pursuant to a provision in Portsmouth's local Administrative Code which directly conflicts with a New Hampshire state statute. Therefore, the local Administrative Code provision is void.

3. More specifically, RSA 673: 2 provides that in cities having a city manager form of local government, the planning board is to consist of nine members, two of whom are to be ex officio members and the other seven of whom are to be appointed by the mayor and confirmed by the city council. Of the two ex officio members, one is to be the city manager or someone whom he or she appoints to serve in his or her place, and the other is to be a member of the city council, selected by the city council itself. By contrast, section 1.303 of Portsmouth's local Administrative Code, pursuant to which Mr. Pezzullo was ostensibly appointed, conflicts with this statutory scheme, in that it purports to authorize the city manager to appoint a third Planning Board member, selected from the City administrative staff, as an ex officio member, increasing the number of ex officio members from two to three and decreasing the number of Planning Board members appointed by the mayor and confirmed by the City Council from seven to six. RSA 673:2 neither provides for nor permits the appointment of a third ex officio member. Therefore, section 1.303

of the City's Administrative Code is in direct conflict with state law, and therefore void, and Mr. Pezzullo's appointment to the Planning Board was unlawful. (The conflict between state law and the local Administrative Code is explained more fully in a letter dated December 1, 2021 from Planning Board member Rick Chellman to City Attorney Robert P. Sullivan, a copy of which is appended hereto as Attachment A, and in a subsequent letter dated December 29, 2021 from the movants' undersigned counsel to former Planning Board Chairman Dexter Legg, a copy of which is appended hereto as Attachment B.)

4. Mr. Pezzullo's participation in the December 16, 2021 decision was especially egregious, for his lack of eligibility to sit on this Board was timely called to the Board's attention by another member of the Planning Board itself, Rick Chellman, at the start of the meeting. Mr. Chellman had previously written a letter to City Attorney Bob Sullivan on December 1, 2021, raising the issue and explaining why Mr. Pezzullo's appointment violated the state's statutory scheme (see Attachment A hereto), and he re-raised it verbally with the chairman and the other Planning Board members at the start of the December 16, 2021 meeting.

5. In addition to violating state law, Portsmouth's method of selecting a third ex officio member also creates an obvious conflict of interest on the part of the appointee. As noted above, section 1.303 of Portsmouth's Administrative Code provides that the third ex officio member is appointed by the city manager and selected from the City's administrative staff. As a member of the city administration, the appointee is a city employee and thus is beholden to the city manager for his job; she has the power of hiring and firing over the former. Under such circumstances, the appointee will be loath to publicly express an opinion that is contrary to the opinion, stance, or wishes of the city manager, and he is not likely to vote against an application or measure that she supports. Almost invariably, he will vote in favor of whatever she votes for, and he will vote

against whatever she votes against. In this situation, there is no chance that the appointee in question will ever exercise independent judgment. The practical effect of section 1.303 is that the city manager gets two votes on the Planning Board--her own, and the vote of the ex officio member whom she has appointed from the City's administrative staff--whereas the regular members appointed by the mayor and confirmed by the City Council get only one.

6. Finally, Mr. Pezzullo's purported membership on the Planning Board did not even comply with the Administrative Code itself, for as an ex officio member his term of office was to have expired at the time of the retirement of the appointing authority who had placed him in that office, which was former City Manager John Bohenko. Following City Manager Bohenko's retirement two years ago, Mr. Pezzullo was never reappointed by the current city manager nor confirmed by the City Council. (For further discussion, see Attachments A and B hereto.) Under any scenario, therefore, he has been sitting on the Planning Board unlawfully.

7. For all of the foregoing reasons, Mr. Pezzullo was ineligible to sit on the Planning Board; he was appointed to that Board unlawfully; and under the teachings of Winslow v. Town of Holderness Planning Bd., 125 N.H. 262, 480 A.2d 114 (1984), the Planning Board's decision of December 16, 2021 was absolutely void. For that reason, this Board should reconsider its decision and conduct a full rehearing on the developers' application.

8. Several of the members of the Planning Board who voted to grant site plan approval and, in particular, who voted to grant a wetlands conditional use permit employed palpably erroneous legal reasoning and committed clear legal error in applying section 10.1017.50 of the Zoning Ordinance, which sets forth the six criteria for the granting of wetlands conditional use permits. These six criteria are mandatory, yet four of the members of this Board, including its then-chairman, openly expressed the view that these six criteria were merely "factors" to be

weighed against one another and that the criteria were "negotiable"and subject to broad interpretation. The vice-chairwoman flatly--and totally erroneously--stated that an applicant does not necessarily have to meet all of the six criteria in order to qualify for a wetlands conditional use permit. The chairman at one point opined that the six criteria are "open to interpretation". Two other members of the Board made similar comments, evincing a very cavalier attitude toward the six criteria.

9. All of this constituted clear and obvious legal error. The criteria for granting a conditional use permit--allowing a developer to erect a building or install a paved roadway within the 100' wetlands buffer--are indeed mandatory, and the applicants' proposal did not satisfy at least two of these criteria. Section 10.1017.50 of the Zoning Ordinance sets forth the six criteria which must be met in order for a wetlands conditional use permit to be issued. They are:

> (1) The land is reasonably suited to the **use**, activity or **alteration**.
>
> (2) There is no alternative location outside the **wetland buffer** that is feasible and reasonable for the proposed **use**, activity or **alteration**.
>
> (3) There will be no adverse impact on the **wetland** functional values of the site or surrounding properties;
>
> (4) **Alteration** of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals; and
>
> (5) The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.
>
> (6) Any area within the **vegetated buffer strip** will be returned to a natural state to the extent feasible.

(Boldfacing in original.) Section 10.1017.41 of the Zoning Ordinance makes clear that these criteria are mandatory and that all six must be satisfied in order for a wetlands conditional use permit to be issued. That section states:

> The Planning Board shall grant a conditional use permit provided that it finds that all other restrictions of this Ordinance are met and that proposed **development** meets all the criteria set forth in section 10.1017.50 or 10.1017.60, as applicable.[1]

(Boldfacing in original; other emphasis added.)

10. The above-quoted sections of the Zoning Ordinance make clear that these criteria are not merely "factors" to be taken into consideration and to be weighed against one another in deciding whether to issue a permit, nor that an exceptionally strong showing of compliance with one of these criteria may be used to offset or excuse compliance with another. Four members of this Planning Board erred in so regarding them. There is no question but that the applicants' proposal fails to meet subsections (2) and (5) of section 10.1017.50: It would be "feasible and reasonable" for the developers to erect a building and paved driveway within the site yet outside the 100' wetlands buffer, simply by reducing the size of the proposed building, § 10.1017.50(2), and therefore the developers' proposal is not the alternative with "the least adverse impact to" the wetlands buffer, the North Mill Pond, and its surroundings. § 10.1017.50(5). Four members of this Board committed clear and obvious error by averring that these six criteria were "open to interpretation" and using like observations as the basis for voting to grant site plan approval and issue a wetlands conditional use permit.

---

1. Section 10.1017.60, mentioned in the quoted section above, is inapplicable here, inasmuch as it pertains to public and private utilities and rights-of-way in wetlands and wetlands buffers. There are no public or private utilities at issue here.

11. In addition to misinterpreting the criteria for the wetlands conditional use permit, this Board also made other, unrelated errors during the course of ultimately granting site plan approval. For one thing, the Board acted prematurely and committed error in refusing to wait until after the Historic District Commission had acted on the application that was before it, relating to the same project. The Planning Board should have waited to see what the developers' plan was going to look like after having been vetted by the HDC. More generally, there were many other unanswered questions which came to light during the December 16, 2021 hearing, and this Board should have waited until they were resolved. For example, it was never settled who was going to be responsible for paying for valet parking in perpetuity and who was going to be responsible for enforcing the stipulation that such valet parking be provided, as the existing on-site parking provided-for by the developers' plan was and is admittedly inadequate.

12. As part of his remarks in support of the project during the Board's deliberations, the chairman totally misquoted a member of the Conservation Law Foundation who had spoken before the Planning Board previously at its April 15, 2021 meeting, and he claimed that she had said that "this project [is] going to improve the quality of North Mill Pond water." In reality, she had said just the opposite. Attached hereto as Attachment C is a copy of a letter issued by the Conservation Law Foundation and dated December 23, 2021, in which the CLF, in reaction to the events which transpired at this Board's December 16, 2021 meeting, took issue with the chairman's misuse of its representative's words. While praising the developers' stormwater run-off treatment program, the CLF representative had condemned the project in general because of the intrusion into the wetlands buffer zone. (See Attachment C.)

13. Finally, the Planning Board erred in failing to adopt the recommendation of the Conservation Commission, which had disapproved the project in question. At the proceedings before the Planning Board, the developers boasted that they had worked closely with the Conservation Commission and that they had had five meetings with the latter in which they had modified their project in order to respond to the comments, criticisms, and feedback which the Commission had given. Yet, after five meetings the Conservation Commission was still dissatisfied with the applicants' project and issued a negative recommendation concerning same. The Planning Board should have heeded the Conservation Commission's recommendation and denied site plan approval.

For all of the foregoing reasons, the Planning Board should reconsider, vacate, and reverse its decision of December 16, 2021 granting site plan approval, a wetlands conditional use permit, and other approvals to the above-referenced project, and the Board should conduct a de novo rehearing of the developers' application without the participation of ineligible Planning Board member Raymond Pezzullo.

Duncan J. MacCallum
NHBA #1576
536 State Street
Portsmouth, New Hampshire 03801
(603) 431-1230
madbarrister@aol.com
Attorney for Moving Parties

CERTIFICATE OF SERVICE

The undersigned, Duncan J. MacCallum, Attorney for Movants in the within proceeding, hereby certifies that on this 14th day of January, 2022, true and correct copies of the foregoing Motion for Rehearing/Reconsideration were served upon the applicants both via e-mail and by first class mail, postage prepaid, to each of the following counsel of record:

Michael D. Ramsdell, Esquire
Brian J. Bouchard, Esquire
Sheehan Phinney Bass & Green, P.A.
1000 Elm Street, 17th Floor
Manchester, New Hampshire 03101

Robert A. Previti, Esquire
Stebbins, Lazos & Van Der Beken, LLC
889 Elm Street, 6th Floor
Manchester, New Hampshire 03101

Duncan J. MacCallum

ATTACHMENT A

TND

TND ENGINEERING

TRAFFIC, TND, TRANSPORTATION AND CONSULTING

224 State Street
PORTSMOUTH, NH 03801
p. 603.479-7195
Email: Cheilman@TNDEngineering.com

Mr. Robert P. Sullivan, Esq.
City Attorney, City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

December 1, 2021

Re: Planning Board Members

Dear Bob:

As we discussed recently in your office, and I briefly reviewed with Trevor by telephone last week, it has recently come to my attention that the current makeup of the Planning Board, which includes an ex-officio member appointed by the City Manager, is apparently not in conformance with the enabling statutes.

You asked that I reduce some of my thoughts about, and research into, this matter to writing and in compliance with that request, I offer this letter.

Beginning with the City's Code, Section 1.303 A contains the relevant City guidance:[1]

Section 1.303: PLANNING BOARD

A. Membership: The Planning Board of the City shall consist of nine (9) members and two (2) alternate members, specifically; (Adopted 1/23/95)

1. The City Manager, or the designee of the City Manager with the approval of the City Council, who shall be an ex-officio member;
2. An administrative official of the City selected by the City Manager who shall be an ex-officio member;
3. A member of the City Council selected by the Mayor with the approval of the Council, who shall be an ex-officio member;
4. Six residents of the City appointed by the Mayor with the approval of the City Council.
5. Two (2) alternates who shall be residents of the City appointed by the Mayor with the approval of the City Council. (Adopted 1/23/95)

Figure 1: Section 1.303 of City Code

[1] Rather than retyping reference materials, I will use image-copy inserts in this letter to reduce the likelihood of typographical errors.

Based on a review of City Minutes, the previous City Manager appointed a City employee to an ex-officio position on the Planning Board in September, 2018. While not cited in the Council minutes, since it was an informational item only, I assume this appointment was in accordance with 1.303 A: 2, above.

While you obviously have all of the statutes readily at hand, to make this letter stand-alone in case you find yourself reviewing it away from your desk, the relevant statute is 673:2 (I grayed out the section not used in Portsmouth):

Appointment and Terms of Local Land Use Board Members

Section 673:2

673:2 Planning Board.–

I. (a) In cities, the planning board shall consist of 9 members:

(b) Alternatively, the local legislative body in a city with a city council-city manager form of government may establish a planning board with membership as provided in paragraph I-a.

I-a. In cities with a city council-city manager form of government, the planning board may consist of the following 9 members:

(a) The city manager, or with the approval of the local legislative body the city manager's designee, who shall be an ex officio member;

(b) A member of the city council selected by the council, who shall be an ex officio member; and

(c) Seven persons appointed by the mayor, if the mayor is an elected official, or such other method of appointment or election as shall be provided for by the local legislative body or municipal charter.

Figure 2: NH RSA 673:2

It is immediately apparent that while the current statute provides for only two ex-officio members on the Planning Board, the Manager and a Councilor, the City's Code adds another appointed by the Manager.

I have not researched the origin of 1.303 of the City's Code as I think that is not particularly relevant to our current discussion. In fact, I think it likely that 1.303 was in conformance with earlier statutes or at least accepted practices in or about 1980. My reason for this thinking is gleaned in part from the City of Concord's past history with this specific topic, and its Ordinance #1396, bearing a date of 7/14/80 that contains almost the same language as Portsmouth's Code's Section 1.303. Concord's Ordinance #1396, superseded more than once since 1980 follows on the next page.

CITY OF CONCORD

In the year of our Lord one thousand nine hundred and

AN ORDINANCE Amending Section 32.6 of the Administrative Code, relative to Planning Boards.

The City of Concord ordains as follows:

Section One: Amend Section 32.6 of the Municipal Code of Ordinances, Administrative Code, Planning Board by striking the whole thereof and substituting in its place the following new section:

32.6 Planning Board. The Planning Board shall consist of nine members, namely, the City Manager, one of the administrative officials of the city who shall be selected by the manager, and a member of the council who shall be selected by it, as members ex officio, and six (6) persons to be appointed by the Mayor, subject to confirmation by the City Council. The Mayor shall also appoint, subject to confirmation by the City Council, three (3) alternate members. Whenever a regular member shall be absent the chairman shall designate an alternate if an alternate is present to act in the absent member's place.

The Planning Board shall perform all functions provided for by Chapter 36 of the New Hampshire Revised Statutes as amended and be subject to all provisions of said chapter.

Section Two: This ordinance shall take effect upon its passage.

Figure 3 City of Concord Ordinance #1396 from 1980

Concord revised its Ordnance #1396 in 1986, 2001 and again most recently earlier this year with its current version being Ordinance No. 3084, that is attached for reference.

Concord's current Ordnance tracks the current statutory provisions of RSA 673:2 by providing for two ex-officio members, and seven members appointed by the Mayor and confirmed by the Council.

Like you, I am more focused on the statutory provisions than what other cities may or may not have enacted, but I found Concord's example to be informative.[2]

I am of course more focused on the provisions of land use regulations themselves than I am with enabling legislation, so when you were away on vacation last week, I took the opportunity to review this topic with two private

[2] The Cities of Manchester and Rochester have provisions similar to Concord's but neither provides for a Manager appointment of an ex-officio member.

attorneys I work with and also with the NH Municipal Association Counsel.[3]

In each instance, it was quickly apparent to these attorneys that Portsmouth's current Code is out of date and not in conformance with the current statutory scheme.

I would like to note with specific emphasis that my concerns are not in any way personal or related to the specific individuals currently or recently involved with this matter. My concerns are that this topic relates to the basic makeup of a Planning Board on which I serve myself and I strive to ensure compliance with pertinent requirements- I feel the City and the applicants before the Board deserve no less.

That thinking led me to consider the possible ramifications of not correcting what I believe was originally common practice but has now been revealed to be an outdated mistake that has only very recently been discovered by these discussions with you and others.

The Planning Board has many functions, but for this discussion we need to focus on its quasi-judicial functions, where interested parties are furnished notice, public hearings are held, and evidence is considered before a decision is reached. These quasi-judicial functions at least include the Board's review of subdivisions, site plans, and conditional use permits. These sorts of reviews occur very regularly, sometimes many times each month.

From my own review of this, it appears that at about the time of the enactment of Concord's Ordinance #1396, above, and possibly of Portsmouth's 1.303 (which may very well pre-date the Concord Ordinance), even the NH Supreme Court had a different opinion on the possible effects of one member's participation in a Board decision where that member may later be found to be disqualified.

In ***Totty V. Grantham Planning Board***, 120 NH 390 (1980), the Court reviewed a case where two of the five voting members on a subdivision application were abutters, and the Court held that those two members where therefore disqualified. However, the Court also held that since the other three members voting in the unanimous Board decision were "concededly qualified" and that since there "was no indication" the disqualified members participation determined the outcome of the vote, the vote was held to be valid.

Just four years later the Court demonstrated that we all can make mistakes, in ***Winslow v. Holderness Planning Board*** 125 NH 262 (1984), the Court stated that with respect to ***Totty*** that "[w]e now believe this to be a misstatement of the

[3] Mr. Natch Greyes, Esq.

law".[4]

In the ***Winslow*** case, the matter of a member's disqualification and the implications of a Planning Board member are discussed at some length. Noting that when Boards act in a quasi-judicial manner, the Court cited as relevant the NH Constitution which "demands" that all judges be "as impartial as the law of humanity will admit".

Under the current makeup of the Portsmouth Planning Board, one member (the "extra ex-officio member discussed above) is appointed by, and reports to another member who is that member's employer or supervisor (the Manager).

I think it impossible to contemplate and satisfactorily reconcile all of the possible problems such a situation can present under the current regulatory frameworks.

The pressure on the employee to agree with their employer/supervisor is one obvious possibility. However, what if -for example- the employee happens to speak first during deliberations, could that result in an undue influence on the Manager simply because of the employer/employee relationship that exists outside the Board?

The Court in ***Winslow*** also noted it would "reach the same result" in applying the test for members of zoning boards of adjustment to meet the standards required of jurors.

Here, and as you agreed in your office earlier this week, we have a situation where the City's Code does not conform with the current statute. I submit it also does not conform with current policy and best practices as enumerated in case law and followed by other cities. There can be no valid argument for allowing the manager or anyone else to appoint an "extra" ex-officio member without that falling int the realm of an ultra vires action.

I now turn to a sense of urgency in this matter as we have a Planning Board meeting scheduled for later this month. If I, the NH Municipal Association's counsel and others I have reviewed this matter with are all correct, then this "extra" member is not qualified as a Board member.

Finally, and again in the Winslow case, the NH Court stated (citing the Rollins Court) that "mere participation by one disqualified member was sufficient to invalidate the tribunal's decision because it was **impossible to estimate the influence one member might have on his associates** (emphasis added)".

---

[4] This case also cites a much earlier case, ***Rollins v. Connor*** 74 NH 456 (1908) which also held that the participation in a "judicial action by a tribunal" by a disqualified member is voidable.

Again, please understand that this is not a matter focused on any individual person, but in a framework that has created a Planning Board membership scheme that does not conform to current Statutes.

If I am correct, then every quasi-judicial decision the Board reaches with such a member's participation runs the risk of being declared invalid. If I am incorrect, then the only risk is one less administrative official on the Board and the City's administrative officials have ample other opportunities to provide input to the planning processes in the City.

If you would care to discuss this further, I am at your service in that regard.

Respectfully Submitted,

Chester "Rick" C hellman, P.E., L.L.S.

Email only copies to:
Synthia Ravell (to print for Bob)
Trevoir McCourt, Esq.

ATTACHMENT B

DUNCAN J. MACCALLUM
ATTORNEY AT LAW

536 STATE STREET
PORTSMOUTH, NEW HAMPSHIRE 03801-4327
(603) 431-1230
TELECOPIER: (603) 431-1308

ALSO ADMITTED IN NY, PA, OHIO & MA

December 29, 2021

Dexter Legg, Chairman
Portsmouth Planning Board
City of Portsmouth
One Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Ineligibility of Raymond Pezzullo

Dear Mr. Legg:

This will constitute my formal request that Raymond Pezzullo be disqualified from sitting on the Planning Board at its upcoming December 30, 2021 meeting and that he in any event refrain from participating in the consideration of, or voting on, any of the applications that are to be entertained at that meeting.

The basis for my request is that Mr. Pezzullo is ineligible to sit on the Planning Board and was unlawfully appointed thereto, for in a city manager form of local government New Hampshire state law allows for the appointment of only two ex officio members to a planning board: the city manger (or his or her designee) and a member of the City Council. RSA 673:2. All other members of the planning board are to be appointed by the mayor and confirmed by the City Council. Id.

Mr. Pezzullo was neither designated by the city manager to sit on the Planning Board in her place nor chosen by the City Council to be its delegate to that Board (inasmuch as he is not a member of the City Council in the first place). Rather, he was purportedly appointed to the Planning Board as an additional ex officio member by the city manger, acting under color of section 1.303 of the City's Administrative Code. Section 1.303, however, clashes with the above-cited New Hampshire state statute and is therefore invalid. Ergo, Mr. Pezzullo is ineligible to sit on the Planning Board (or, at least, he is ineligible to sit as an ex officio member; he theoretically could still be appointed by the mayor and confirmed by the City Council), and he is presently holding his seat unlawfully.

You, of course, already have quite a bit of familiarity with this issue, inasmuch as it was publicly raised by Planning Board member Rick Chellman at the Planning Board's December 16,

2021 meeting and was the subject of some discussion between Mr. Chellman and yourself at that time. Further, at that meeting you also indicated that you were already aware of Mr. Chellman's letter of December 1, 2021 to City Attorney Bob Sullivan and that in fact you had already discussed it with the latter, even if you had not yet been provided with a copy. (In case you still have not received one, I enclose a copy of the letter herewith, as well as copies of its attachments.) To my knowledge, the December 16, 2021 meeting marked the first public disclosure of the fact that Mr. Pezzullo's eligibility to serve on the Planning Board was in question. But in any event, it seems clear that you yourself were already well aware of the issue.

As I'm also quite sure you're aware, the root of the reason why that issue has arisen is that there is a conflict between the relevant New Hampshire state statute, RSA 673:2, and one of the provisions of the City's Administrative Code, § 1.303. I deem it to be a proposition so obvious as to require no citation to legal authority, that if there is a conflict between a state statute and a local ordinance, the state statute prevails and the conflicting provisions of the local ordinance must yield.

RSA 673:2 establishes the framework for the planning board and prescribes the composition of its membership. In cities with a city manager form of government, there are to be nine regular members and, as already noted above, two of those members are to be ex officio members, consisting of (a) the city manager or his/her designee, and (b) a member of the City Council, chosen by the latter body. (There may also be alternates. See RSA 673:6.) The remaining seven regular members are to be appointed by the mayor and confirmed by the City Council. There is no provision in the statute for a third ex officio member.

RSA 673:2 states in pertinent part:

> I. (a) In cities, the planning board shall consist of 9 members:
>
> (1) The mayor of the city, or with the approval of the local legislative body the mayor's designee, who shall be an ex officio member;
>
> (2) An administrative official of the city selected by the mayor, who shall be an ex officio member;
>
> (3) A member of the city council selected by the council, who shall be an ex officio member; and

> (4) Six persons appointed by the mayor, if the mayor is an elected official, or such other method of appointment or election as shall be provided for by the local legislative body or municipal charter.
>
> (b) Alternatively, the local legislative body in a city with a city council-city manager form of government may establish a planning board with membership as provided in paragraph I-a.
>
> I-a. In cities with a city council-city manager form of government, the planning board may consist of the following 9 members:
>
> (a) The city manager, or with the approval of the local legislative body the city manager's designee, who shall be an ex officio member;
>
> (b) A member of the city council selected by the council, who shall be an ex officio member; and
>
> (c) Seven persons appointed by the mayor, if the mayor is an elected official, or such other method of appointment or election as shall be provided for by the local legislative body or municipal charter.

In neither RSA 673:2, I nor I-a is there any provision for a third ex officio member on the planning board. The portion of the statute providing for the number of planning board members is expressed in the mandatory term "shall": "In cities, the planning board shall consist of 9 members[.]" RSA 673:2, I(a) (quoted above) (emphasis added). Subsection I-a(c) of the statute provides that by charter or by local legislative action, the municipality may alter the method of appointment of the non-ex officio members, but the subsection does not augment the total number of members who may be appointed, either regular or ex officio.

Section 1.303 of the Portsmouth Administrative Code is both internally inconsistent and in conflict with this statutory scheme, and therefore that section is void to the extent of the conflict. Section 1.303 provides:

> A. Membership: The Planning Board of the City shall consist of nine (9) members and two (2) alternate members, specifically;

1. The City Manager, or the designee of the City Manager with the approval of the City Council, who shall be an ex-officio member;

2. An administrative official of the City selected by the City Manager who shall be an ex-officio member;

3. A member of the City Council selected by the Mayor with the approval of the Council, who shall be an ex-officio member;

4. Six residents of the City appointed by the Mayor with the approval of the City Council.

5. Two (2) alternates who shall be residents of the City appointed by the Mayor with the approval of the City Council.

B. Term: All Planning Board members shall serve as such without compensation and the appointed members shall hold no other municipal office except ward official, election official and check-list supervisors. The term of each appointed member shall be three (3) years. The Mayor shall apportion appointments so that no more than three appointments occur annually.

Section 1.303 unlawfully provides for a planning board which includes three ex officio members, rather than two, contrary to the statutory scheme laid out in RSA 673:2. It also reduces the number of citizen board members appointed by the mayor to six members, rather than seven. Conversely, it increases the number of members who may be appointed by the city manager (including herself) from one to two. It also purports to authorize the city manger to appoint a member who holds another municipal office other than ward official, election official, or check-list supervisor, contrary to Section 1.303's own provisions.

Finally, it throws the terms of office of ex officio members into a state of confusion. According to what Mr. Chellman says in his letter to City Attorney Sullivan--and I have no reason to doubt it--Mr. Pezzullo was appointed to the Planning Board as an ex officio member by then-City Manager John Bohenko, acting under color of the above-quoted section 1.303 of the Administrative Code. Was Mr. Pezzullo appointed to a three-year term? As an ex officio

member, one would have expected his term of office to have expired with the expiration of the term of the official or other authority that appointed him, and former City Manager Bohenko retired two years ago. Was Mr. Pezzullo reappointed by our current city manager, Karen Conard, within these past two years since the time that she took office? If so, I doubt very much that he was confirmed by our current City Council, headed by Mayor Rick Becksted.

Absent some evidence that Mr. Pezzullo, an ex officio member, was reappointed by City Manager Conard and his reappointment confirmed by the City Council, it is clear that he is presently sitting on the Planning Board unlawfully, even under the terms of the City's own Administrative Code.

Finally, as Planning Board member Rick Chellman has ably pointed out in his letter of December 1, 2021 to City Attorney Bob Sullivan, the system laid out in section 1.303 of the Administrative Code, wherein the city manager appoints a Planning Board member selected from the City administrative staff, creates a situation of obvious conflict of interest on the part of the appointee (in this case Mr. Pezzullo). As a member of the city administration, the appointee is a city employee and thus is beholden to the city manager for his job; she has the power of hiring and firing over the former. The appointee is going to be loath to publicly express an opinion that is contrary to the opinion, stance, or wishes of the city manager, and he is not likely to vote against an application or measure that she supports. Almost invariably, he will vote in favor of whatever she votes for, and he will vote against whatever she votes against.

In practical effect, under this arrangement the city manager gets two votes: her own, and the vote of the ex officio member whom she has separately appointed from City administrative staff pursuant to section 1.303(A)(2). Any notion of independence of thought or action on the part of the appointee is a pipe dream, and in any event the arrangement does violence to the statutory scheme established by RSA 673:2, I and I-a.

For all of the foregoing reasons, I ask that Mr. Pezzullo be disqualified from sitting as a Planning Board member at the upcoming December 30, 2021 meeting and at all future meetings.

Very truly yours

Duncan J. MacCallum

DJM/eap
Enclosures
cc. Robert P. Sullivan, Esquire (w/o enclosures)
Karen Conard, City Manager
Rick Becksted, Mayor
Rick Chellman (w/o enclosures)

HAND DELIVERED

ATTACHMENT C

clf
conservation law foundation

For a thriving New England

CLF New Hampshire
27 North Main Street
Concord, NH 03301
P: 603.225.3060
F: 603.225.3059
www.clf.org

December 23, 2021

Chairman Dexter Legg and Planning Board Members
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth NH 03801

Re: 1&31 Raynes Avenue Project, Conditional Use Permit Hearing

Dear Chairman Legg and Planning Board Members,

We write to you with concerns about comments made at the Planning Board meeting on December 16, 2021 in which the Board considered a conditional use permit (CUP) to allow the proposed 1&31 Raynes Avenue project to build within the 100 foot wetlands buffer. At that meeting, Chairman Legg referred to comments made by CLF's Great Bay-Piscataqua Waterkeeper, Melissa Paly, at an April 15, 2021 hearing on a different project as justification to support and approve a CUP.

At the April 15 hearing referenced by Chairman Legg, Ms. Paly provided comments regarding a project at 105 Bartlett Street, which was also seeking a variance from the 100-foot buffer. The first part of those comments commended elements of the project related to stormwater management that would enhance water quality in North Mill Pond. However, the second part of Ms. Paly's comments addressed the importance of buffers and concerns about reducing the 100-foot wetlands buffer.[1] During deliberations, several Planning Board members focused solely on the first part of Ms. Paly's comments related to stormwater management yet overlooked her concerns about encroachment on the wetland buffer.

[1] In her April 15 comments, Ms. Paly brought to the Board's attention a recent report called *Buffer Options on the Bay*, released by a consortium including the NH Department of Environmental Services, The Nature Conservancy, the Great Bay National Estuarine Research Reserve and others, that includes recommendations on buffer width to meet different objectives. Ms Paly stated:

> One of the recommendations to really reduce runoff and stabilize banks is a minimum of 164 feet recommended in this report.... I'd like you to consider that a 100-foot buffer is a *minimum* to protect habitat, water quality and other things, so certainly granting a waiver will compromise the benefits that it's intended to produce.... There will be impacts as you chip away at that buffer.

clf

conservation law foundation

At the December 16 hearing on the 1&31 Raynes Avenue project, Chairman Legg referred to Ms. Paly's April 15 comments, again focusing on her statements about stormwater management while ignoring those related to the importance of wetland buffers.[2] We want to clarify that (1) we have provided no public comment on the Raynes Avenue project, (2) any comments we provide on one project – which will always be based on site-specific characteristics – cannot fairly be invoked for, and applied to, *other* projects, and (3) the Chairman's comments ignored a critical element of the Waterkeeper's April 15 testimony about the dual importance of both stormwater management *and* buffers to improving water quality.

We respectfully request that any comments provided by CLF and/or its Waterkeeper program in one context not be applied to other projects for which they were not intended. Furthermore, we request that the Waterkeeper's comments be viewed fully rather than parsed to justify encroachments into critically important wetland buffers. Finally, we request that this letter be shared with both current and incoming members of the Planning Board who will, no doubt, continue deliberations on the Raynes Avenue project.

Sincerely,

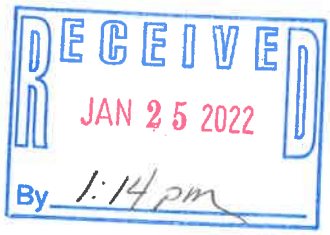
/s Melissa Paly
Melissa Paly
Great Bay-Piscataqua Waterkeeper

/s Tom Irwin
Tom Irwin
CLF Vice President for New Hampshire

[2] https://www.cityofportsmouth.com/planportsmouth/planning-board
December 16, 2021 at 4:17

THE STATE OF NEW HAMPSHIRE

PLANNING BOARD
OF THE CITY OF PORTSMOUTH



In re Application of North Mill Pond Holdings, LLC, One Raynes Ave, LLC, 31 Raynes Ave, LLC, and 203 Maplewood Ave, LLC, regarding the properties located at 1 Raynes Avenue, 203 Maplewood Avenue, and 31 Raynes Avenue, and known familiarly as

The Raynes Avenue Project

OBJECTION TO INTERVENORS' MOTION FOR RECONSIDERATION/REHEARING

Applicants North Mill Pond Holdings, LLC, One Raynes Ave, LLC, 31 Raynes Ave, LLC, and 203 Maplewood Ave, LLC (collectively "One Raynes") respectfully submit this Objection to Intervenors' Motion for Reconsideration/Rehearing.

A. The ZBA Appeal Terminated the Planning Board's Jurisdiction Over This Matter.

On January 14, 2022, Intervenors filed both a Motion for Reconsideration/Rehearing with the Planning Board and an appeal to the City of Portsmouth's Zoning Board of the Adjustment ("ZBA"). The appeal to the ZBA divested the Planning Board of jurisdiction on this matter.

RSA 676:6 addresses appeals to the ZBA and is entitled "**Effect of Appeal to the Board**." The first sentence states: "[t]he effect of an appeal to the board shall be to maintain the status quo." Thereafter, the statute states: "[a]n appeal of any order or other enforcement action ***shall stay all proceedings under the action appealed*** from unless the officer from whom the appeal is taken certifies to the board of adjustment, after notice of appeal shall have been filed with such officer, that, by reason of facts stated in the certificate, a stay would, in the officer's opinion, cause imminent peril to life, health, safety, property, or the environment."

Staying all proceedings is necessary to maintain the status quo. To preserve the status quo, the statute also enjoins One Raynes from starting construction or altering the property while the ZBA appeal is pending. Accordingly, it cannot be argued that allowing the appeals process

to proceed will cause imminent peril to life, health, safety, property or the environment. The properties at issue will remain in their extant state and as they have been for years.

RSA 676:6 is consistent with the court process in New Hampshire. An appeal to the New Hampshire Supreme Court divests the superior court or agency tribunal of jurisdiction. *Rautenberg v. Munnis*, 107 N.H. 446, 447 (1966) ("As a general rule the perfection of an appeal divests the Trial Court of jurisdiction of the cause and transfers it to the appellate court."). As embodied in RSA 676:6, an appeal from the Planning Board to the ZBA is no different.

Finally, unless timely appealed, a planning board's decision is final and unmodifiable after thirty-days. *See Route 12 Books & Video v. Town of Troy*, 149 N.H. 569, 574 (2003) (holding that a planning board's decision was final after thirty-days even though petitioner requested rehearing from the planning board); RSA 677:15; RSA 674:39. The Planning Board had until January 15, 2022 to decide whether it would reconsider the matter. The Planning Board did not act on reconsideration by that deadline. Accordingly, unless this matter is remanded by the ZBA or superior court, the Planning Board cannot reconsider the grants of approval to One Raynes.

The Intervenors must seek redress from an appellate body, which they have done through their appeal to the ZBA. One Raynes respectfully requests that the Planning Board deny the Intervenors' Motion for Rehearing/Reconsideration.

B. James Hewitt Must Disqualify Himself from Consideration of This Matter.

New Planning Board member James Hewitt has a known bias against development along North Mill Pond, is partial to the Intervenors' attorney, and has joined lawsuits, as both a party and alleged expert, seeking to overturn the Planning Board's prior grants of approval at 105 Bartlett St. and 53 Green St. One of the lawsuits involves at least one of the same developers as

the developers for this project, which means that Mr. Hewitt is in active litigation against One Raynes. Participation by Mr. Hewitt will infect the Board's decision and render it voidable.

The New Hampshire Constitution Part I, Article 35 standard that all judges be "as impartial as the lot of humanity will admit[,]" applies to planning board members. *Winslow v. Town of Holderness*, 125 N.H. 262, 267 (1984). In furtherance of that goal, RSA 673:14, I, states that:

> No member of a zoning board of adjustment, building code board of appeals, planning board, heritage commission, or historic district commission shall participate in deciding or shall sit upon the hearing of any question which the board is to decide in a judicial capacity if that member has a direct personal or pecuniary interest in the outcome which differs from the interest of other citizens, or if that member would be disqualified for any cause to act as a juror upon the trial of the same matter in any action at law. Reasons for disqualification do not include exemption from service as a juror or knowledge of the facts involved gained in the performance of the member's official duties.

The statutory standard for disqualification of a juror, RSA 500-A:12, requires disqualification where the person:

> (a) Expects to gain or lose upon the disposition of the case;
>
> (b) Is related to either party;
>
> (c) ***Has advised or assisted either party;***
>
> ***(d) Has directly or indirectly given his opinion or has formed an opinion;***
>
> (e) Is employed by or employs any party in the case;
>
> (f) Is prejudiced to any degree regarding the case; or
>
> (g) ***Employs any of the counsel appearing in the case in any action then pending in the court.***

Id. (emphasis added).

In sum, when the Planning Board acts in a quasi-judicial capacity (as opposed to its legislative capacity), a member, like a juror, is disqualified from participation if (s)he is "not indifferent" to the outcome of the proceeding.

Mr. Hewitt is not indifferent to the outcome of the proceedings here. He advised and assisted many of the same Intervenors on substantially related litigation on the 105 Bartlett St. matter 53 Green St. matters. On both of those cases, which are still in litigation and very much active, Mr. Hewitt is a party and an alleged expert. Mr. Hewitt's connection to the 105 Bartlett St. litigation is particularly troubling. One of the developers for 105 Bartlett St. also is a developer for this project. 105 Bartlett also involves the development of residential housing along North Mill Pond that, through the grant of a Wetlands CUP, encroaches on the 100-foot wetlands buffer. Mr. Hewitt submitted sketches to the Planning Board, the ZBA, and the Housing Appeals Board purportedly showing how the 105 Bartlett St. project did not comply with the Wetlands CUP. This means that Mr. Hewitt is actively embroiled in an ongoing litigation against one of the same developers for the One Raynes project and in a case that involves materially similar, if not identical, questions of the application of the Wetlands CUP and appropriateness of a large housing project for the area.

With respect to 53 Green St., Mr. Hewitt, who is not an abutter to the development, has claimed that he will be adversely affected by the development at 53 Green St. because of his house's proximity to North Mill Pond. In that case, Mr. Hewitt has argued, again as both a party and as a so-called expert, that the developer's encroachment on the wetlands buffer will harm him—yet for reasons that he has failed to articulate—and that the proposed development failed to satisfy the criteria for the Wetlands CUP. It is inconceivable that Mr. Hewitt could now impartially evaluate this matter, which also involves encroachment on the 100-foot wetlands

buffer on North Mill Pond, when by joining the 53 Green St. matter, he has claimed that any encroachment on the 100-foot wetlands buffer will personally harm him.

Finally, counsel for the Intervenors, Attorney MacCallum, is Mr. Hewitt's counsel in the 105 Bartlett St. and 53 Green St. litigations. Mr. Hewitt works closely with Attorney MacCallum on those cases, acting as both a principal party and an alleged expert. He has made arguments against the One Raynes developer before the Planning Board and the ZBA.

Mr. Hewitt must disqualify himself from any consideration of the One Raynes project.

WHEREFORE, North Mill Pond Holdings, LLC, One Raynes Ave, LLC, 31 Raynes Ave, LLC, and 203 Maplewood Ave, LLC respectfully request that the Planning Board deny Intervenors' Request for Rehearing.

Respectfully submitted,

NORTH MILL POND HOLDINGS LLC,
ONE RAYNES AVE, LLC,
31 RAYNES AVE, LLC, and
203 MAPLEWOOD AVE, LLC

By their counsel,

Dated: January 25, 2022

By /s/ Michael D. Ramsdell
Michael D. Ramsdell (Bar No. 2096)
Brian J. Bouchard (Bar No. 20913)
Sheehan Phinney Bass & Green, P.A.
1000 Elm Street, P.O. Box 3701
Manchester, NH 03105-3701
(603) 627-8117; (603) 627-8118
mramsdell@sheehan.com
bbouchard@sheehan.com

CERTIFICATE OF SERVICE

On January 25, 2022, this Objection to Intervenors' Motion for Reconsideration/ Rehearing was forwarded via email to Portsmouth City Attorney Robert P. Sullivan and Duncan J. MacCallum, Esq.

By: /s/ Michael D. Ramsdell
Michael D. Ramsdell

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

PLANNING BOARD

December 20, 2021

Eben Tormey
One Raynes Ave LLC
1359 Hooksett Rd
Hooksett, NH 03106

RE: Conditional Use Permit Application for Property Located at 1 Raynes Ave, 31 Raynes Ave, 203 Maplewood Ave (LU-21-54)

Dear Mr. Tormey:

The Planning Board, at its regularly scheduled meeting of Thursday, December 16, 2021, considered your application for Conditional Use Permit as permitted by Section 10.1112.62 of the Zoning Ordinance and according to the requirements of Section 10.1112.14 to allow 113 off-street parking spaces including 18 reserved spaces to be provided on-site and 25 spaces to be provided on a separate lot where a total of 138 are required . Said property is shown on Assessor Map 123 Lot 14, Map 123 Lot 13, Map 123 Lot 12, Map 123 Lot 10 and lies within the Character District 4 (CD4) District, Downtown Overlay District (DOD), Historic District, and the North End Incentive Overlay District. As a result of said consideration, the Board voted grant the Conditional Use permit with the following stipulation:

1. Construction of reserve parking will be subject to usage reports submitted to the City demonstrating additional parking is needed only after alternative options to construction of reserve spaces have been considered and reviewed by the City . If City staff determines further review is needed applicant will be referred to Planning board for further review.

The Board's decision may be appealed up to thirty (30) days after the vote. Any action taken by the applicant pursuant to the Board's decision during this appeal period shall be at the applicant's risk. Please contact the Planning Department for more details about the appeals process.

Unless otherwise indicated above, applicant is responsible for applying for and securing a building permit from the Inspection Department prior to starting any project work. All stipulations of approval must be completed prior to issuance of a building permit unless otherwise indicated above.

This approval shall expire unless a building permit is obtained within a period of one year from the date granted, unless otherwise stated in the conditions of approval. The Planning Board may, for good cause shown, extend such period by as much as one year if such extension is requested and acted upon prior to the expiration date. No other extensions may be requested.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Dexter R. Legg, Chairman of the Planning Board

cc: Paul Garand, Interim Chief Building Inspector
Rosann Maurice-Lentz, City Assessor

31 Raynes Ave, LLC
203 Maplewood Ave, LLC
Patrick Crimmins, Tighe & Bond

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

PLANNING BOARD

December 20, 2021

Eben Tormey
One Raynes Ave LLC
1359 Hooksett Rd
Hooksett, NH 03106

RE: Site Plan Review Approval for Property Located at 1 Raynes Ave, 31 Raynes Ave, 203 Maplewood Ave (LU-21-54)

Dear Mr. Tormey:

The Planning Board, at its regularly scheduled meeting of **Thursday, December 16, 2021**, considered your application for Site Plan Review approval for the demolition of three existing buildings and construction of the following: 1) a 5-story mixed use building with 66,676 gross floor area and 16,629 sq. ft. building footprint including 7,720 sq. ft. of commercial use on the ground story and 32 residential units on the upper stories; 2) a 5-story 124-room hotel with 65,980 gross floor area and 14,622 sq. ft. of building footprint; 3) 34,427 sq. ft. of community space as well as associated paving, lighting, utilities, landscaping and other site improvements Said property is shown on Assessor Map 123 Lot 14, Map 123 Lot 13, Map 123 Lot 12, Map 123 Lot 10 and lies within the Character District 4 (CD4) District, Downtown Overlay District (DOD), Historic District, and the North End Incentive Overlay District. As a result of said consideration, the Board voted grant Site Plan approval with the following stipulations:

Conditions Precedent
1. The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.
2. The applicant shall record a notice of voluntary lot merger.
3. Any easement plans and deeds for which the City is a grantor or grantee shall be reviewed and approved by the Planning and Legal Departments prior to acceptance by City Council.
4. The applicant shall prepare a Construction Management and Mitigation Plan (CMMP) for review and approval by the City's Legal and Planning Departments.
5. The applicant shall agree to pay for the services of an oversight engineer, to be selected by the City, to monitor the demolition and construction of improvements within the public rights-of-way and on site.
6. Owner shall provide an access easement to the City for water valve access and leak detection. The easement shall be reviewed and approved by the Planning and Legal Departments prior to acceptance by the City Council.
7. The Applicant or its engineer shall submit a copy of a completed Land Use Development Tracking Form using the Pollutant Tracking and Accounting Program (PTAP) online portal currently managed by the UNH Stormwater Center or similar form approved by the City.
8. Grease traps will be designed to meet code requirements.
9. Sewer connection permit will be obtained from DES.
10. Applicant and City will enter into a Community Space Agreement which will specify the

owner as the responsible party to maintain all the greenway/community space.
11. Fertilizing within the buffer zone will follow City guidance and Northeast Organic Farming Association (NOFA) standards.
12. Exposed parking shall be screened from view.
Conditions Subsequent:
13. The Engineer of Record shall submit a written report (with photographs and engineer stamp) certifying that the stormwater infrastructure was constructed to the approved plans and specifications and will meet the design performance.
14. A stormwater inspection and maintenance report shall be completed annually and copies shall be submitted to the City's Planning and Public Works Departments.

The Board's decision may be appealed up to thirty (30) days after the vote. Any action taken by the applicant pursuant to the Board's decision during this appeal period shall be at the applicant's risk. Please contact the Planning Department for more details about the appeals process.

This site plan approval shall not be effective until a site plan agreement has been signed satisfying the requirements of Section 2.12 of the City's Site Review Approval Regulations.

Unless otherwise indicated above, applicant is responsible for applying for and securing a building permit from the Inspection Department prior to starting any project work.

The Planning Director must certify that all stipulations of approval have been completed prior to issuance of a building permit unless otherwise indicated above.

This site plan approval shall expire unless a building permit is issued within a period of one (1) year from the date granted by the Planning Board unless an extension is granted by the Planning Board in accordance with Section 2.14 of the Site Review Regulations.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Dexter R. Legg, Chairman of the Planning Board

cc: Paul Garand, Interim Chief Building Inspector
Rosann Maurice-Lentz, City Assessor

Peter H. Rice, Director of Public Works

31 Raynes Ave, LLC
203 Maplewood Ave, LLC
Patrick Crimmins, Tighe & Bond

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

PLANNING BOARD

December 20, 2021

Eben Tormey
One Raynes Ave LLC
1359 Hooksett Rd
Hooksett, NH 03106

RE: Wetland Conditional Use Permit Application for Property Located at 1 Raynes Ave, 31 Raynes Ave, 203 Maplewood Ave (LU-21-54)

Dear Mr. Tormey:

The Planning Board, at its regularly scheduled meeting of **Thursday, December 16, 2021**, considered your application for Wetland Conditional Use Permit under section 10.1017 to construct two buildings 1) a 5 story mixed use commercial and residential building and 2) a five story hotel building with 124 rooms. The project has removed all of the impervious surface from the 25' tidal buffer, proposes 67 square feet of impervious surface in the 25-50' tidal buffer and 21,190 square feet of impervious in the 50-100' tidal buffer. Overall the project is able to demonstrate a reduction of 7,070 square feet of impervious surface in the tidal wetland buffer from the existing condition or a reduction of 10,107 square feet if the reserve parking is not constructed. Said property is shown on Assessor Map 123 Lot 14, Map 123 Lot 13, Map 123 Lot 12, Map 123 Lot 10 and lies within the Character District 4 (CD4) District, Downtown Overlay District (DOD), Historic District, and the North End Incentive Overlay District. As a result of said consideration, the Board voted grant the Wetland Conditional Use permit as presented.

The Board's decision may be appealed up to thirty (30) days after the vote. Any action taken by the applicant pursuant to the Board's decision during this appeal period shall be at the applicant's risk. Please contact the Planning Department for more details about the appeals process.

Unless otherwise indicated, applicant is responsible for applying for and securing a building permit from the Inspection Department prior to starting any project work. All stipulations of approval must be completed prior to issuance of a building permit unless otherwise indicated.

This approval shall expire one year after the date of approval by the Planning Board unless a building permit is issued prior to that date. The Planning Board may grant a one-year extension of a conditional use permit if the applicant submits a written request to the Planning Board prior to the expiration date.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Dexter R. Legg, Chairman of the Planning Board

cc: Paul Garand, Interim Chief Building Inspector
Rosann Maurice-Lentz, City Assessor

31 Raynes Ave, LLC
203 Maplewood Ave, LLC
Patrick Crimmins, Tighe & Bond

SHEEHAN PHINNEY

Michael D. Ramsdell, Esq.
Direct Dial: 603-627-8117
mramsdell@sheehan.com

Reply to: Manchester Office
1000 Elm Street, PO Box 3701
Manchester, NH 03105-3701

February 9, 2022
Via Email and U.S. Mail

Beverly M. Zendt
Planning Director
City of Portsmouth
One Junkins Avenue
Portsmouth, NH 03801
bmzendt@cityofportsmouth.com

Re: 1 Raynes Avenue, 31 Raynes Avenue, and 203 Maplewood Avenue

Dear Ms. Zendt:

This letter is provided to you on behalf of North Mill Pond Holdings LLC and One Raynes Ave LLC (collectively "One Raynes") regarding the rehearing scheduled before the Planning Board on February 17, 2022. For purposes of the rehearing, One Raynes incorporates by reference the following pleadings which have been filed with the Planning Board and which address all the issues on rehearing:

- the complete package of materials submitted by Tighe & Bond dated November 24, 2021;
- the presentation made to the Planning Board on December 16, 2021; and
- One Raynes' Objection to Intervenors' Motion for Reconsideration/Rehearing.

One Raynes reserves the right to supplement this letter should the Intervenors file materials, which if accepted by the Planning Board, raise new arguments or new information for rehearing.

One Raynes also seeks to draw the Planning Board's attention to Attorney MacCallum's letters to the ZBA Chair and you dated January 29, 2022 and to Principal Planner Peter Stith dated February 4, 2022. Attorney MacCallum's letter acknowledges that his appeal to the ZBA of the Planning Board's original decision in this matter remains pending before the ZBA. Attorney MacCallum states in the February 4 letter that he "cannot voluntarily dismiss or withdraw" the appeal to the ZBA. In fact, it appears that after receipt of Attorney MacCallum's letters requesting that the ZBA postpone its consideration of the ZBA appeal until after the Planning Board's scheduled rehearing on February 17, the ZBA scheduled its consideration of

Attorney MacCallum's request to postpone for February 23, 2022. Therefore, the appeal remains pending before the ZBA.

As One Raynes explained in its Objection to Intervenors' Motion for Reconsideration/Rehearing, when the Intervenors filed an appeal with the ZBA the Planning Board was divested of jurisdiction in this matter. RSA 676:6, entitled "**Effect of Appeal to the Board [of Adjustment]**," states: "[t]he effect of an appeal to the board shall be to maintain the status quo." Thereafter, the statute states: "[a]n appeal of any order or other enforcement action ***shall stay all proceedings under the action appealed*** from unless the officer from whom the appeal is taken certifies to the board of adjustment, after notice of appeal shall have been filed with such officer, that, by reason of facts stated in the certificate, a stay would, in the officer's opinion, cause imminent peril to life, health, safety, property, or the environment." The statute is consistent with the impact of filing an appeal in other contexts.

The Planning Board's grant of a rehearing was unlawful for other reasons. The reasons include at least one obvious factual error, the Planning Board incorrectly believed it was acting within 30 days of its original decision because it believed the decision was made on December 30, 2021. Instead, the decision was made on December 16, 2021, more than 30 days before the January 27, 2022 grant of a rehearing. The legal errors were almost as obvious. The rehearing was granted without a finding of error in the original proceeding. One new Planning Board member, who employs Attorney MacCallum in opposition to a similar North Mill Pond development project and has served as an expert witness in opposition to that project, participated in the rehearing decision. Other new Planning Board members participated in the decision without having familiarized themselves with the record of the first hearing.

This letter also is a professional courtesy to the Planning Department that One Raynes intends to file an action in the Rockingham County Superior Court this week. The action is an appeal of the Planning Board's decision on the motion for rehearing and reconsideration, and a declaratory judgment action seeking reversal of the Planning Board's decisions that inarguably are in violation of established law. As explained above, the rehearing decision was not within the Planning Board's jurisdiction both because of the ZBA appeal and the timing of the decision. Moreover, the Planning Board cannot rehear a prior decision without a finding of error, and the participation of a biased member and others who demonstrate their unfamiliarity with the record of the prior proceeding violates due process.

One Raynes considers it unfortunate that filing an action is necessary. One Raynes' principals have enjoyed a positive relationship with Planning Staff and other City departments and committees on this and other projects. However, the newly constituted Planning Board has ignored the law at One Raynes' expense. Additionally, the Planning Board ignored One Raynes' submission raising the jurisdictional and bias issues.

We respectfully request that the Board members carefully read One Raynes' submissions prior to the rehearing per their ethical obligation as quasi-judicial officials. One Raynes further requests that the City Attorney attend the rehearing to answer questions of the Planning Board members, in executive session if necessary.

The Planning Board also should be aware that the Housing Appeals Board ("HAB") recently reversed the ZBA's decisions in the 105 Bartlett Street. In its decision, the HAB found that the ZBA's reversal of the Planning Board's decision without identifying an actual error was unlawful and unreasonable. One Raynes brings the decision to the Planning Board's attention because that is what the Planning Board did when it granted the Intervenors' motion for reconsideration/rehearing.

Lastly, One Raynes states again that it wants nothing more than a positive relationship with the Planning Department, Planning Staff, and other City departments and committees. One Raynes does not want action necessary the correct new Planning Board's errors to jeopardize those relationships and undermine developments that are beneficial to the City, fulfill the aspirations of the Master Plan, and have been in the works for years. Instead, One Raynes looks forward to continuing to work cooperatively with City Staff and offices.

Please do not hesitate to contact me if you have any questions about this letter.

Sincerely,

/s/ Michael D. Ramsdell

Michael D. Ramsdell

Cc: Duncan MacCallum, Esquire (via email)
Robert Sullivan, City Attorney (via email)
Peter M. Stith, City Principal Planner (via email)

THE STATE OF NEW HAMPSHIRE
HOUSING APPEALS BOARD
Governor Hugh J. Gallen State Office Park

Johnson Hall, Room 201
107 Pleasant Street
Concord, NH 03301
Telephone: (603) 271-1198
TDD Access: Relay NH 1-800-735-2964
Email: clerk@hab.nh.gov
Visit us at https://hab.nh.gov

CASE NAME: Iron Horse Properties, LLC v. City of Portsmouth
CASE No.: ZBA-2021-21

ORDER

The matter under review by the Housing Appeals Board is an appeal by Iron Horse Properties, LLC (the "Applicant") of a decision by the City of Portsmouth (the "City") Zoning Board of Adjustment ("ZBA") reversing the Applicant's Planning Board approval of its development plan for Bartlett Street in Portsmouth, New Hampshire.

FACTS:

The Applicant owns a parcel of real property known as Map 164, Lot 4-2, located at 105 Bartlett Street in Portsmouth, New Hampshire. On 15 April 2021, the City of Portsmouth Planning Board granted the Applicant approvals for:

1) A wetland Conditional Use Permit ("CUP");
2) A CUP for shared parking on separate lots;
3) Site plan approval for the demolition and relocation of existing structures for the construction of 152 units in three (3) buildings; and
4) Subdivision approval for a lot line relocation.

On 14 May 2021, the Intervenors filed an administrative appeal with the ZBA requesting review of the following Planning Board decisions in conjunction with the Applicant's site plan approval:

1) The site plan approval was not in compliance with the City Zoning Ordinance, Section 10.5A41.10B which limits the maximum allowable building length to 200 feet;
2) The Planning Board improperly granted a CUP that allows the Applicant to block the Dover Street view corridor;
3) The Planning Board's site plan approval contradicts a prior decision of the ZBA issued at a meeting on 22 January 2020;
4) The Planning Board erred in granting a wetlands CUP because the application did not meet the second and fifth criteria in the City Zoning Ordinance, Section 10.1017.50;
5) The Planning Board erred in granting the CUP for shared parking, claiming "There were less intrusive designs…which could have avoided encroachment into the 100' wetland buffer;"
6) The Conservation Commission never "considered or made specific findings concerning the six criteria delineated in 10.1017.50…;"
7) The approved site plan violates the 50-foot height limit in Sections 10.5A43.31 and 10.5A46.10 of the City Zoning Ordinance;
8) The site was unlawfully spot-zoned for the purpose of approving the Applicant's project;
9) The CUPs granted by the Planning Board were not related to innovative land use controls and therefore were not authorized by the enabling statute RSA 674:21.

At the 20 July 2021 meeting, the ZBA voted to grant the appeal of the Intervenors. On 28 July 2021, the Applicants filed a motion for rehearing with the ZBA. On 17 August 2021, the ZBA denied the Applicant's motion. On 15 September 2021, the Applicant filed this appeal with the Housing Appeals Board.

LEGAL STANDARDS:

The Housing Appeals Board review of any Zoning Board of Adjustment decision is limited. It will consider the Zoning Board's factual findings prima facie, lawful, and reasonable. Those findings will not be set aside unless, by a balance of the probabilities upon the evidence

before it, the Housing Appeals Board finds that the Zoning Board decision was unlawful or unreasonable. *See,* RSA 679:9. *See also, Lone Pine Hunters Club v. Town of Hollis*, 149 N.H. 668 (2003) and *Saturley v. Town of Hollis Zoning Board of Adjustment*, 129 N.H. 757 (1987). The party seeking to set aside a Zoning Board decision bears the burden of proof to show that the order or decision was unlawful or unreasonable. RSA 677:6.

DISCUSSION:

As the "Facts" reveal, on 15 April 2021, the City of Portsmouth Planning Board granted site plan approval for the Applicant's residential development located at 105 Bartlett Street. As part of that approval, two (2) CUPs were granted by the Planning Board in conjunction with the Applicant's proposal. Specifically, one was a wetlands CUP (Count 4 of the Intervenors' appeal) and the second was a shared parking CUP (Count 5 of the Intervenors' appeal).

The Housing Appeals Board will first address the issue of the validity of an appeal of a Planning Board's CUP decisions to the City of Portsmouth Zoning Board of Adjustment, since any appeal of an innovative land use control decision made by the Planning Board must be filed directly with the Superior Court or the Housing Appeals Board under RSA 676:5, III.[1]

Specifically, if the RSA 676:5, III, procedure had been followed, both CUPs would have been appealed directly to the Superior Court or the Housing Appeals Board, and, in that instance, the burden of proof would have rested with the Intervenors. Including the CUP issues within the Intervenors' 9-count zoning board administrative appeal, thus placing the burden of proof upon the Applicant on all nine (9) counts, may not be reasonable nor consistent with the statutory framework previously referenced.

Depending on the state of the evidence, this may be important since RSA 677:6 entitled "Burden of Proof" places the burden "…upon the party seeking to set aside any order or decision of the zoning board of adjustment or any decision of the local legislative body to show

[1] The language is specific in RSA 676:5, III. It states: "…the planning board's decision made pursuant to that delegation cannot be appealed to the board of adjustment, but may be appealed to the superior court as provided by RSA 677:15." That statute contains the procedure for appeal to the Superior Court or the Housing Appeals Board.

that the order or decision is unlawful or unreasonable."[2] Because the Applicant believes the burden of proof on Counts 4 and 5 would be unfairly shifted by including those in the Intervenors' appeal, the Applicant has requested the Housing Appeals Board place the burden of proof on the Intervenors as to the CUP determinations.[3]

The underpinning of the CUP burden of proof issue (Intervenors' zoning appeal, Counts 4 & 5) has its genesis under RSA 674:21, the "Innovative Land Use Controls" statute.[4] Under Section I, a list of these "controls" is provided, but the list is not inclusive; it clearly states:

> I. Innovative land use controls may include, but are not limited to:
> (a) Timing incentives.
> (b) Phased development.
> (c) Intensity and use incentive.
> (d) Transfer of density and development rights.
> (e) Planned unit development.
> (f) Cluster development.
> (g) Impact zoning.
> (h) Performance standards.
> (i) Flexible and discretionary zoning.
> (j) Environmental characteristics zoning.
> (k) Inclusionary zoning.
> (l) Impact fees.
> (m) Village plan alternative subdivision.
> (n) Integrated land development permit option. *Id.*

[2] Both parties acknowledge that the CUP dispute could have ended up before either the Superior Court or the Housing Appeals Board by: 1) a direct appeal filed after the Planning Board's grant of either or both CUPs; or 2) an indirect appeal of the Planning Board's grant of either or both CUPs by filing a petition with the ZBA and an appeal to the Superior Court or Housing Appeals Board at the conclusion of any ZBA action. As noted, in either case it could have ended up before the Housing Appeals Board.

[3] To shift the burden of proof to the Applicant after a finding that proper procedure was not followed by the Intervenors is inconsistent with the statutory framework. The Housing Appeals Board notes that neither party has requested that the matter be dismissed without prejudice so that a direct appeal can be filed with either the Housing Appeals Board or the Superior Court.

[4] The second request for relief in the Intervenors' administrative appeal (Count 2) states that the Planning Board improperly granted a CUP allowing the Applicant to "block the Dover Street view corridor." This is factually incorrect. As a condition of site plan approval, the Planning Board imposed a condition requiring the Applicant to conform to Section 10.5A42.40 of the Zoning Ordinance, in order to: "…provide a public view from Dover Street with a terminal vista of the North Mill Pond…." (CR at Vol. 1, Tab 9, Condition 11). Based on the foregoing, Count 2 is dismissed. Likewise, Count 3 of the appeal is not supported. The purpose of the prior variance request was not to interfere or block the Dover Street view corridor. After variance denial, (CR at Tab 22), the Applicant complied with the decision. A review of the site plan shows no realignment of the referenced view corridor. Because of the foregoing, Count 3 of the appeal is dismissed.

When RSA 674:21 controls are adopted and placed in the zoning ordinance (*see,* RSA 675:1, II) they are administered as provided in the ordinance. In this case, Section 10.1017, wetlands CUP, and Section 10.1112.14, shared parking CUP, can be waived by the Planning Board if the stated CUP requirements are met. This allowance was approved by the local legislative body and became part of the Portsmouth zoning scheme.[5] *See,* RSA 675:2.

The Intervenors argue that both the wetlands and shared parking CUPs are not "innovative land use controls," thus, they do not require a direct appeal from the Planning Board's decisions. Because RSA 674:21, I is not limited, and since innovative land use controls are Planning related, the wetlands and shared parking CUPs fall squarely within the statutory guidance of RSA 674:21, I, as evidenced by the allowed Planning Board waiver procedure contained in the Zoning Ordinance.[6] Planning Board intrusion into zoning provisions is not to be taken lightly, since, apart from this limited power, only the ZBA is granted that right.[7]

Turning to the specific complaints made by the Intervenors, the Housing Appeals Board turns first to the wetlands CUP. The Certified Record contains the specific factors evaluated by the Planning Board in making its wetland buffer CUP decision. It also gained input from the

---

[5] The Zoning Ordinance in Section 10.242.10 clearly grants the Planning Board the power to issue CUPs for the two granted CUPs. It states:

> The Planning Board…may grant a conditional use permit if the application is found to be in compliance with the general approval criteria in Section 10.243 or, if applicable, the specific standards or criteria as set forth in this Ordinance for the particular use or activity. The Planning Board…shall make findings of fact, based on the evidence presented by the applicant, City staff, and the public, respecting whether conditional use is or is not in compliance with the approval criteria of Section 10.243.

[6] The Housing Appeals Board agrees with the Applicant that there is no clear statutory provision in New Hampshire Law allowing a Planning Board to waive zoning provisions by granting CUPs except as an "innovative land use control." This concept is encapsulated in advice provided by the New Hampshire Municipal Association. It advises its members that a CUP is a device to implement "innovative land use controls." Continuing with that advice, the New Hampshire Municipal Association published *Look Before You Leap: Understanding Conditional Use Permits*, which expressly cites: "Conditional use permits might be used appropriately in connection with: construction or filling in wetlands, wetland buffers, or aquifer protection district…." C. Christine Fillmore, Esq., *Look Before You Leap: Understanding Conditional Use Permits* (Jan. 2006).

[7] Review of the Planning Board's CUP decisions by the City of Portsmouth Zoning Board of Adjustment will be decided by the Housing Appeals Board "as if it were a direct appeal of the Planning Board's grant of the conditional use permits."

City's environmental planner, Peter Britz, as well as the City's Conservation Commission.[8] All recommended approval of the CUP. While the Intervenors suggest that there was an alternative location for the proposed development with less adverse impact, based upon the final design of the project including underground parking and relocating the footprint of any structures away from North Mill Pond, the final design is not unreasonable based on the facts considered by the Planning Board.

The Intervenors would like the Housing Appeals Board to focus on the idea that a smaller project could be built as a basis for reversal of the Planning Board's approval of the wetlands buffer and shared parking CUPs. The Certified Record reflects adjustments made by the Applicant to the plan, but, more importantly, this "desire" by the ZBA does not mandate a wholesale reduction in project size. *See, Malachy Glen Associates, Inc. v. Town of Chichester*, 155 N.H. 102 (2007). The Housing Appeals Board does not believe that the Planning Board acted illegally or unreasonably in making its wetlands CUP decision, thus, the ZBA decision reversing the Planning Board's grant of the wetland buffer CUP was unreasonable.[9]

The other CUP referenced in Count 5 of the Intervenors' appeal is approval of shared parking. Again, the Intervenors allege that there could have been less intrusive designs or other changes to the plan. In this instance, the Housing Appeals Board believes that the Planning Board properly and fairly reviewed the CUP criteria in granting the shared parking CUP in this location. As a result, the ZBA's reversal of the Planning Board's granting of the shared parking CUP was unreasonable.[10]

---

[8] The sixth item of the Intervenors' ZBA appeal (Count 6) suggests that the Conservation Commission never "…considered or made specific findings concerning the six CUP criteria referenced in Section 10.1017.59…" of the ordinance. The Conservation Commission provides review and/or comment and, in this case, did so. There is no ordinance provision requiring a review of the six wetland buffer CUP criteria by the Conservation Commission. The Certified Record demonstrates a full review by the Conservation Commission with an approval recommendation to the Planning Board. (CR at Vol. II, Tab 5).

[9] To the extent further comment is needed regarding the City of Portsmouth Zoning Board of Adjustment decision regarding the CUP determinations made by that board, the Housing Appeals Board finds that the Zoning Board of Adjustment was confused by the advice given to it by planning staff. (CR at Vol. I, Tabs 17 and 18). Essentially, the ZBA expected a court appeal and acted as if their decisions were inconsequential since the matter would be decided by a court or the Housing Appeals Board.

[10] Review of the Certified Record discloses that the City Zoning Board of Adjustment spent little time reviewing this particular matter. Like Count 4 of the Intervenors' appeal, the ZBA felt other designs could have been considered. (CR at Vol. I, Tab 22).

Count 1 of the Intervenors' administrative appeal of the referenced Planning Board decision states that the Applicant's site plan included a structure more than 200 feet in length which is in violation of Section 10.5A41.10B of the ordinance.

At the outset, the Certified Record does not show that the Intervenors' presented this argument to the Planning Board allowing the Planning Board to consider the possible zoning violation.[11] That said, a review of the Certified Record shows that the longest building façade is 185 feet—well short of the 200-foot maximum. (*See,* Building B on the site plan C-102.2 and Section 10.1530A, Figure 10.5A41.10B of the Zoning Ordinance.) (CR at Vol. II, Tab 2). Based upon the facts before the Planning Board, the reversal of the Planning Board's decision by the ZBA regarding "building length" was unreasonable.[12]

We next turn to Count 7 of the Intervenors' appeal. It alleges that the Planning Board acted illegally in interpreting the ordinance height restriction in the CD-W Zoning District. Specifically, Map 10.5A21B, Section 10.5A43.30, defines building height as: "…the height measured from the grade plane to the top of the proposed building." While the actual height of the building is not in significant dispute, the Intervenor claims that the Applicant should have used the original grade plane that existed when taking the measurement.

If that had been the case, there may have been a building height violation. However, the measurement used by the Applicant and the Planning Board was measured from the regraded

[11] A party must raise any issue to be litigated before a tribunal in order to have the issue heard on appeal. *See, Blagbrough Family Realty Trust v. Town of Wilton*, 153 N.H. 234 (2006). However, it is always presumed the tribunal will follow the law—in this case, the duly enacted City of Portsmouth Zoning Ordinance. Therefore, the issue will be considered by the Housing Appeals Board.

[12] The Planning Board and its staff reviewed the Applicant's plans in detail. It is clear from the record that each side conducted their own review of the ordinance. What is revealing is the comment of ZBA member Ms. Beth Margeson:

> …she remarked that there were two ways of calculating building length in the ordinance, the regular zoning ordinance and the character-based zoning, and that was the maximum building block length. Because the way the definition was worked in the character-based zoning, she thought it would seem to be the appropriate calculation for the building. (CR at Vol. I, Tab 22).

There was little other ZBA discussion regarding Count 1 of the Intervenors' appeal. *See,* Zoning Ordinance Section 10.1530A and Figure 10.5A41.10B.

surface, bringing it within the 50-foot limitation.[13] The Certified Record and information provided by the Parties shows that this appears to be the methodology previously used by the City of Portsmouth in determining building height. The Applicant points out in its materials that the property at 145 Brewery Lane and another at 77 Hanover Street included regrading the property to raise the grade plane elevation.[14] Apparently, no abutters or interested parties raised concerns over that methodology in regard to these properties. The Housing Appeals Board finds that, to the extent that there is any confusion, "administrative gloss" will be applied to this particular issue. Specifically in interpreting the building height ordinance, the City has used the average grade plane and not the original grade. This will be the standard applied to the Applicant's application.[15]

Based upon the foregoing, the Housing Appeal Board finds that the City of Portsmouth Zoning Board of Adjustment was unreasonable in reversing the Planning Board's height decision in conjunction with the Applicant's planning approval.

In Count 8 of the Intervenors' appeal, a challenge is being made to alleged "spot zoning" of the Applicant's property. (CR at Vol. I, Tab 2, Page 10). The Housing Appeals Board notes that on 20 August 2018, the City Council of the City of Portsmouth rezoned the subject property and made additional changes to the CD4-W District. Under RSA 677:2, the

---

[13] The CD4-W zoning district imposes a 50-foot building height limit. Map 10.5A21.B, Section 10.5A43.30. This is measured from the "grade plane" to the top of the building. *See,* Zoning Ordinance at Section 10.1530. While the Applicant proposed some regrading to accommodate parking under the structure, the "grade plane" exhibit (*see,* Applicant's Ex. D, Page 6), shows the building within the height limits. *See,* Ex. I. Importantly, building height is measured from the "average grade plane"—not from the original grade. *See,* Section 10.1530 of the Zoning Ordinance.

[14] *See,* ¶ 116 of Applicant's *Appeal from Decision of the Portsmouth Zoning Board of Adjustment Pursuant to RSA 679:5*.

[15] To the extent there is any vagueness in interpreting this ordinance provision, "administrative gloss" controls. In *Harborside Assoc., L.P. v. City of Portsmouth*, 163 N.H. 439 (2012), the Supreme Court stated:

> As a rule of statutory construction, an administrative gloss is placed upon an ambiguous clause when those responsible for its implementation interpret the clause in a consistent manner and apply it to similarly situated applicants over a period of years without legislative interference.

The Supreme Court in *Hansel v. City of Keene*, 138 N.H. 99, 104 (1993) further stated on this matter: "…the municipality may not change such a de facto policy, in the absence of legislative action, because to do so would presumably violate legislative intent."

Intervenors had 30 days from the City Council's 2018 decision to request a rehearing on this issue. RSA 677:2 states:

> Within 30 days after any order or decision of the zoning board of adjustment, or any decision of the local legislative body or a board of appeals in regard to its zoning, the selectmen, any party to the action or proceedings, or any person directly affected thereby may apply for a rehearing in respect to any matter determined in the action or proceeding, or covered or included in the order, specifying in the motion for rehearing the ground therefor; and the board of adjustment, a board of appeals, or the local legislative body, may grant such rehearing if in its opinion good reason therefor is stated in the motion.[16]

Based upon the time that has passed since the zoning decision was made, the Housing Appeals Board does not find that this issue has merit. Thus, Count 8 is dismissed.

Turning to Count 9 of the Intervenors' appeal; it suggests that the City's CUPs are facially invalid because they are not authorized by RSA 674:21. As previously discussed, the City's Zoning Ordinance provides for CUPs regarding wetlands and the shared parking. However, the appropriate agency to administer and provide the actual permit is the Planning Board. The only mechanism under current New Hampshire law to allow the waiver of a zoning ordinance by the Planning Board is when the subject of the ordinance falls under the Innovative Land Use Controls authorized under RSA 674:21.[17]

[16] RSA 672:8 states: "'Local legislative body' means one of the following basic forms of government utilized by a municipality: I. Council, whether city or town…." *See also, Portsmouth Advocates, Inc. v. City of Portsmouth*, 133 N.H. 876 (1991), which outlines the process for challenging a decision of a city council.

[17] A CUP review by a Planning Board can only occur if the area in question is under an Innovative Land Use Control. This procedure was adopted and confirmed by the local legislative body when the Portsmouth City Zoning Ordinance was approved. Ordinarily, the only body authorized to waive the provisions of the Zoning Ordinance is the Zoning Board of Adjustment; however, as noted, if the provision is part of an Innovative Land Use Control, then the local legislative body can authorize the Planning Board to act as the waiver authority. This is the case with the two CUPs issued in the matter before the Housing Appeals Board. *See,* Peter Loughlin, *New Hampshire Practice Series: Land Use Planning and Zoning*, Vol. 15, Section 15.07 (2020).

Based upon the foregoing, the findings of the City of Portsmouth ZBA as to Counts 1, 4, 5, 6, 7, and 9 are REVERSED; Counts 2, 3, and 8 are DISMISSED.[18,19]

HOUSING APPEALS BOARD
ALL MEMBERS CONCURRED
SO ORDERED:

Elizabeth Menard

Date: January 26, 2022

Elizabeth Menard, Clerk

[18] In reviewing the Certified Record, in particular: Tab 22, the ZBA summarily reversed the Planning Board's decisions (Counts 1-9) without significant discussion. Likely, this resulted, in part, from some bias toward the Applicant's project unrelated to the appeal requests. At the 20 July 2021 ZBA hearing, Mr. David MacDonald opined:

> …he would support the appeal, noting that the City in the last decade had gone through a surge of developing buildings that the City didn't really need and that consumed services and generated costs for the citizens. He asked how much better off Portsmouth would be if the proposal was approved. He said there were enough places to live for residents that people who didn't live in Portsmouth but wanted to saw [sic] a shortage of housing. He said there was a shortage of natural waterfront and wild species and that the City didn't have to approve giant residential buildings or corrupt shorelines and estuaries to make the planet a better place to live." (CR at Vol., I, Tab 22).

In addition, Mr. James Lee said: "…the Board should just consider the totality of the appeal and say yes or no." (CR at Vol. I, Tab 22). The Housing Appeals Board finds this method of deciding the numerous appeal counts to be suspect, since the focus of the ZBA was on the project itself and not each individual appeal request.

[19] After a full review of the Certified Record, the Housing Appeals Board has found, by a balance of the probabilities, that the ZBA erred in its findings and that the Planning Board's decisions, including the CUPs, were appropriate. (*See,* RSA 679:9). This is so regardless of which side had the "burden of proof" on Counts 4 and 5 of the zoning petition discussed at Pages 5-8, *supra.* Thus, though the "burden of proof" issue was raised at the request of the Applicant, the Housing Appeals Board finds, in this case, that issue to be moot.

From: Ryan Baker
To: Planning Info
Subject: Raynes Ave Project- Support
Date: Tuesday, December 14, 2021 9:11:51 AM

Dear Planning Dept, my name is Ryan Baker and I live at 137 Wibird Street in Portsmouth. I have lived in Portsmouth for over 20 years with my wife and two children.

The Raynes Ave Project is something that I've been following for a few months now. As we all know, this area of Portsmouth has been underwhelming for many years and I'm excited for this new addition to the city. The developers have put a lot of thought into their proposal and I think the latest changes are exactly what were needed to move forward.

On a personal note, I run through this area of Portsmouth several days a week and would love to see it further developed and used more efficiently. Currently, the buildings are an eye sore and don't add any value to the general public. The Raynes Avenue project is exactly what is needed and will be a tremendous addition to the city. We are lucky to have developers who still want to invest in Portsmouth. This development team continues to put careful thought into all the final details to help preserve Portsmouth's historic charm.

Again, I support this project and hope you'll approve it to move forward.

Regards,

Ryan Baker

Re: Planning Board
Raynes Ave Development Proposal
Dec 16, 2021 meeting

Dear Chairman & Members of the board

I am writing in opposition to the attempt for buildings to be built within the 100 ft water front setback on the property at Raynes Avenue due to multiple reasons.

So, the city will receive community space along the waterfront that will be the first to be damaged, and destroyed by the advancing sea levels while the developer is rewarded with an extra story of building height. How can this be explained to the current residents and future ones. Future costs likely will off set public benefits.

The 100' setback is to insure a healthy eco system, and as the Master Plan states to provide a walkable, livable scaled urban area. A green space that is overshadowed by block style buildings is not acceptable.

The conversation commission has denied the developer twice proposal of building within the 100'. At what point will this council LISTEN TO and act for the BETTER GOOD of all residents, not the corporations who attempt to squeeze the most out of the square footage of a parcel.

The reasons for attempts to build within the zone do not meet the criteria of hardship, no lot configurations as these were all known factors prior to the purchase of the lot.

Please show us the residents that open, green space have value for multiple generations to come. This should be the criteria to follow the Portsmouth Masterplan 2025. Financial hardship does not fall into any of the 5 criteria needed for this.

Sincerely;
James Beal
286 Cabot St.
Portsmouth, NH
resident for 22 years

RE: 1&31 Raynes, 203 Maplewood
Meeting: Planning Board 12-16-21
Site Plan Review

Dear Members of the Planning Board, 12-10-21

Please separate each request presented by this development and review them individually.

1&31 Raynes/203 Maplewood Ave is asking for Determination of Completeness of their Site Plan Review. It seems they have missed some critical requirements provided in the zoning and Site Plan Review Regulations.

Section 4.1 of the Site Plan Review states they must meet the off-street parking standards in the ordinance, however they are before you asking for a Conditional Use Permit for parking because they are exceeding the parking ordinances found in Chapter 11 by wanting to use over 158 municipal spaces and asking for a CUP on an incentive overlay district.

The North End Vision Plan is not reflected by the majority of this development. There currently are 68,457 sf (3) buildings on all three lots. These are being replaced by 132,656sf (2) buildings on one lot. There will be NO affordable housing provided. The only "stepping down" provided is on the Maplewood Ave side. However the Vision Plan specifically states: "The massing strategy of the vision plan is to respond to the surrounding context and viewsheds **by stepping down building heights and densities towards the waterfront and existing historic structures"**

Approvals do include the recommendation of boards and committees and their stipulations. The Conservation Commission seemed to have serious concerns about digging into known contaminated soils and the effects on groundwater and the North Mill Pond as well as future residents. They also had concerns regarding the NHDES requiring impervious surface being used for the parking lot due to the known contamination, pervious was not allowed. The former dry cleaners, auto repair shop and auto painting shop have left these lots with years of contamination. There are some clean up efforts proposed which are an improvement but they do NOT have the approval of the Conservation Commission.

A game of *pushing the Historic District Commission under the rug* has been happening for months now. Most meetings were postponed by the development team and at the recent December 1 meeting ONLY the residential building was presented. These discussions talked about the excessive massing, 100' buffer, lack of complementing the water side, step downs and others.

It seems this development may still need to make changes to the actual buildings which may impact TAC as well as this board. Please do NOT approve this Determination of Completeness until the Historic District Commission has provided its final approval as well as this development receiving its NHDES approvals for all of the proposed community space most of which is in the wetland buffer.

Respectfully,

Elizabeth Bratter
159 McDonough St
Property Owner

RE: 1&31 Raynes/203 Maplewood Ave
Meeting: Planning Board 12-16-21
Wetlands Conditional Use Permit

Dear Members of the Planning Board, December 12, 2021

The Conservation Commission is a group of highly intelligent people who critically review the environmental aspects of a development. After many meetings and changes to the initial plan the original issues were not resolved. The application was denied and was not re-considered. Here are the minutes (pg 1-6) from the meeting where the proposed application was denied.
http://files.cityofportsmouth.com/agendas/2021/conservation/06-16-21_CC_minutes.pdf

The massing seemed to be a big issue because it is the massing which creates environmental issues. The amount of impervious parking in the 50' to 100' buffer, which per NHDES, can NOT be pervious due to the contamination in the land. The level of land contamination, the depth of the piling led to concerns about the long term impacts on groundwater as well as the North Mill Pond at previous meetings. The intensity of use will make the wetlands more vulnerable even with good landscaping.

1. The land is not suited. The massing is doubling the amount of building on the property, going from about 68,000sf (3 buildings) to 133,000sf (2 buildings). This use increases the impact by having 124 hotel rooms which have no loyalty to the land and 8000 sf of commercial space which will encourage many people to occupy the 50' buffer, *especially in light of no one monitoring its use daily.*
2. No alternatives were presented. The massing could be as was suggested by the North End Vision Plan which it IS NOT, nor does it match the Master Plan. Most of the buildings themselves are out of the 100' buffer, but the parking and restaurant space are not.
3. This massive development WILL impact the wetlands functional values, including too many people living and visiting this wetland buffer. There will be over 312 people staying overnight on this property, much less those who will visit it to go bike riding, kayaking, walking and running. The wetland buffer is NOT protected and its functional values will quickly be diminished.
4. N/A
5. No alternatives have been presented. As a matter of fact the HDC meetings have pretty much been postponed for months. No plans for the hotel have been presented to HDC at this time and the second work session for the mixed use building took place Dec 1st.
6. They are attempting to return it to a better vegetative state but are only going to monitor it for 1 year. It takes a minimum of 3 to 5 years for a garden *on land* to mature. Wetlands take even longer.

Please deny this Wetland Conditional Use Permit. The massing, the uses and the amount of people will have serious negative impacts on the wetland. Smaller structures would provide an appropriate balance to the proposed wetland improvements.

Respectfully,

Elizabeth Bratter
159 McDonough St
Property Owner

RE: <u>Parking CUP</u> 1& 31 Raynes/203 Maplewood
Meeting: Planning Board 12/16/21

Dear Members of the Planning Board, December 12, 2021

The basics; this application does NOT seem to have a *Parking Demand Analysis* as required by 10.1112.141. There do not seem to be ANY reports from the city regarding current and future availability of municipal parking in this area to off-set the requested CUP, much less any listing of the amount of parking reductions received by utilizing the Downtown Overlay Incentive District(DOD)

A real litmus test for development is whether MINIMUM parking requirements can be met. 1&31 Raynes Ave/203 Maplewood is r*equesting a CUP above what they are receiving by using Downtown Overlay Incentive District. This is essentially a bonus on a bonus.*

The CUP requested is to reduce the DOD minimum parking requirements of 138 parking spaces to 70 spaces on site, 25 shared spaces(95) and *18 reserved spaces.* Some of the proposed reserved spaces have been removed from the wetland buffer zone and the number reduced. Reserved spaces should NOT be counted in the amount of spaces being provided since they do NOT exist! *Ironically, in this case, reserved spaces lets the Planning Board the developer already knows they are NOT providing enough spaces for units and rooms presented.* **The parking CUP is for a reduction of 43 spaces before considering the reserved spaces and the DOD reduction they are choosing to use.**

This development <u>without the DOD</u> must provide a **minimum of 253 spaces.** 49 residential spaces (1.3 X 32 + 1 guest space per 5 units), 155 hotel spaces (1.25 X 124), 35 spaces for the proposed restaurant (1 per 100sf) and 14 spaces for retail (1 per 300sf). **They can choose to use the DOD to reduce this number.** *When a development team **chooses** to use an incentive overlay district for the addition of an extra story they must comply with the ordinance and in most cases they do NOT receive an extra two stories because that would be a bonus on a bonus. This is exactly the same thing.*

This development falls within the Downtown Overlay Incentive District (DOD) which provides <u>a significant reduction</u> in parking, *<u>if the developer chooses to use it.</u>* **With the DOD incentive** this development must ONLY provide 49 residential spaces [(1.3 X 32) + 7 guest spaces] and 93 hotel spaces (124 X .75) for **a total of 142 spaces.** *The developer does **NOT** have to provide **ANY spaces for commercial** use and **receives a 4 space reduction for being in the DOD**. The final MINIMUM amount is 138 spaces for this development.* **The amount of reduction in parking the DOD has provided for this development is a reduction of <u>115 spaces</u> (253-138) BEFORE asking for the additional space reduction for the CUP.**

Parking CUPs are a numbers game having significant impacts on neighborhoods and availability of parking for potential customers, guests and residents throughout the city but especially in the North End, South End, Islington Creek and Downtown. No one is keeping track of CUPs and documented reports from the City are NOT asked for nor provided in Parking Demand Analysis.

Parking was plentiful in Portsmouth, those days are gone and getting worse. *Just basic thinking says they will need at least 156 spaces*, one for each unit and room. No one is taking a train, bus or uber to Portsmouth to stay in a hotel, much less to live here. **PLEASE do NOT grant a parking CUP it is essentially reducing the municipal supply by 158 spaces, that's with 25 shared spaces and is a bonus on a bonus.**

Respectfully,

Elizabeth Bratter
159 McDonough St
Portsmouth Property Owner

From: Tyler Goodwin
To: Planning Info
Subject: Raynes Ave Project
Date: Thursday, December 16, 2021 11:46:50 AM
Attachments: image001.png
Importance: High

Planning Board—

My name is Tyler Goodwin, and I have lived in Portsmouth since 2013. It has been great to watch the Vaughn St area grow into what it has become today. I'm encouraged to see that the Raynes Ave area is being considered for significant improvements as well. The building plans being presented are far superior to the eye sores that currently occupy that space. It appears that the building plans are also in compliance with Portsmouth Zoning Ordinances, and in line with the City's stated desire to revitalize that area. Finally, I appreciate the developers focus and investment into environmental improvements that will make the pond, and access points better for Portsmouth and its citizen's long term.

I am very much looking forward to seeing this project come to fruition. Thank you for seeing it through.

Best,

Tyler Goodwin
Goodwin Family Management
COO
603-491-1220

Goodwin Family Management

Written Comment Submission re: 12.16.21 Planning Board Meeting

As a longtime resident of the South End, I would like to make the following comments:

With respect to both the Raynes Avenue and North Mill projects proposed – the overdevelopment of Portsmouth is one of the reasons many long-time residents are leaving. These projects have undermined the character of Portsmouth to such an extent our city has, or soon will become a slightly less congested version of Boston. To what end? Property owning residents are sacked with taxes, while sweetheart deals to corporate entities lure in the wolf and local businesses suffer. That in mind, the Pleasant Street project, while well intended, is simply in the wrong place. Again, no parking, added congestion, historic encroachment. Look across the street at the old Statey perhaps? Where apartments formerly existed? It shouldn't be so difficult to see the value in maintaining the Soul of this city. Greed and political/corporate two-steps will hurt Portsmouth for years to come. I say no.

Sandra LM Gosser, 260 Marcy Street, Portsmouth, NH 03801

From:	Catherine Harris
To:	Planning Info
Cc:	Peter L. Britz
Subject:	Raynes Ave,
Date:	Monday, December 13, 2021 3:55:52 PM

To Members of the Planning Board,
I am writing to you about the Raynes Avenue project and the request by the developer of that
property for a Conditional Use Permit to build in the 100' Buffer zone.

Over the course of this past summer, in TWO separate meetings, the Conservation Commission
denied that request. It doesn't get much clearer than that. The Commission responded exactly as they
should to a request that will harm the North Mill Pond and the habitats it supports. I applaud
their defense of this critical and very fragile tidal waterway.

And yet developers, with sights set on the banks of Pond, continue to hammer away at city boards to
have their profit driven behemoths approved regardless of the environmental damage they will inevitably cause.
I find that level of greed deplorable. And if not held in check with the common sense measures and protections
our boards have in place, will result in irreparable consequences.

Portsmouth's North Mill Pond is an incredibly valuable natural resource that demands our help to keep it
vibrant, healthy and supportive of wildlife habitats. To do otherwise is a recipe for disaster.

I urge your board to uphold the decision(s) of the Conservation Commission with regard to the 100' Tidal Setback
in the Wetlands Buffer Zone and deny the CUP.

Respectfully,
Catherine(Kate) Harris
166 Clinton Street, Portsmouth

RE: 1&31 Raynes, 203 Maplewood Meeting:

Planning Board 12-16-21 Site Plan Review

Dear Members of the Planning Board,

I do not support the proposed plans for Raynes Avenue. Density, building height, lack of parking and nothing that remotely ties in with the historic character of the city seem to be the common theme from developers along with yet another request for a Conditional use permit, which should be eliminated completely. The last thing the city needs is another hotel. The look of the North end rivals something more like downtown Boston vs a historic seaport, which is what draws visitors here to begin with. The city becoming more and more difficult to navigate with the non-stop, never-ending construction. Seems that every parking lot and single-story building is a target for developers and the city boards have been very accommodating. These large-scale projects in the city need to end. Please do not approve this project for the reasons I have stated.

Respectfully,

Judy Hiller

18 Manning Street

From: Cate Jones
To: Planning Info
Subject: North End Development
Date: Sunday, December 12, 2021 11:22:00 AM

To Whom,
I am a home owner and long time resident of Portsmouth. I moved to the seacoast area in 1983 because of the proximity to the ocean, the colonial architecture, and the history of this beautiful city. I'm witnessing the architecture morphing into character-less buildings of enormous size and height. This ruins the historic aspect of our city by blocking the view of buildings of reasonable heights and scale. I feel no need nor desire to allow greedy developers to get their way by allowing these behemoths to be built. This is NOT downtown Manhattan, nor do we want it to be. My business of researching real estate titles affords me access to our history, and deepens my appreciation of structures which are lovely to look at, and small in scale. I beg you to stop any further development of any large scale projects within city limits. Have them build out at Pease if necessary. That won't affect the character of downtown Portsmouth.
Thank you for your consideration.
Sincerely,
Cate Jones
40 Dodge Avenue
Portsmouth, NH
catej@comcast.net

From: Tom
To: Planning Info
Subject: Reynard Avenue Project
Date: Thursday, December 16, 2021 3:57:23 PM

Hello in reviewing this application it appears to me that the developers followed the submission process; listened to input and suggestions for improvement; addressed all of the compliance and environmental concerns and are prepared to deliver a quality improvement to the city.

Any parking issues could be addressed by requiring parking in the newest city parking garage.

Thank you
Tom Lonnquist
370 Richards Ave.
603-436-0954

Sent from my iPhone

From: Jillian Mirandi
To: Planning Info
Subject: North Mill Pond Improvement Project
Date: Wednesday, December 15, 2021 5:00:45 PM

Good evening, I have lived in Portsmouth's West End for 5+ years in two different houses. I love the North Mill Pond area, and have always thought that it was underutilized. Not only would this project help environmentally, but it would also help build a better sense of community in this area of Portsmouth.

With more people moving it, it's critical to protect our outdoor, green space. as well as the overall West End development.

Best Regards,
Jillian

Dear Members of the Planning Board,

I have been the General Manager at the AC Hotel since the opening in December 2019. Throughout these two years our guests have been able to explore all parts of this beautiful city. We have noticed, along with many others, that the outdoor areas of our city have become more utilized since Covid began and the trend will remain for the foreseeable future.

I am writing in support of the Raynes Ave Development near the AC Hotel. As I mentioned in my previous support of the 53 Green Street application, the public safety and waterfront access are very positive changes to this area and very much needed. The City owned park will be a welcomed addition for our guests and the many people who visit Portsmouth. The improvements on the existing site will give everyone easy and safe access to our neighborhood and the North Mill Pond Greenway while enhancing the quality of the area. We are excited for the future of Portsmouth and the revitalization of the North End.

Thank you for your consideration and I hope you approve this project.

Chris Moulton
GENERAL MANAGER
cmoulton@colwenhotels.com
C. 561.573.9644

AC Hotel by Marriott Portsmouth Downtown/Waterfront
The Envio & Rooftop at The Envio
299 Vaughan Street
Portsmouth, NH 03801

From: Poldrack, Kimery G
To: Planning Info
Subject: North Mill Pond Project on the 12/16 Planning Board Agenda
Date: Wednesday, December 15, 2021 9:27:33 AM
Attachments: image001.png

I've had the opportunity to review the proposed improvements in this plan for the North Mill Pond area from the Procon group. After reviewing, I can't imagine not moving this forward. What a beautifully thought out way to enhance both the environment and existing charm of Portsmouth! I recently worked with the Procon group to build our new facility at 145 Maplewood. They are top notch individuals who bring honesty and integrity to the construction/development arena. I know that they have the best interests of the City of Portsmouth at the heart of their plan for the proposed development and hope that the plans can be approved and implemented. What a potential boon for the City!

Sincerely,

Kimery Poldrack
VP Real Estate & Facilities

Houghton Mifflin Harcourt
2700 La Frontera Blvd.
Suite 100
Round Rock, TX 78681
Office: 512.721.7777
Mobile: 512.789.7119
hmhco.com

From:	Jonathan Sandberg
To:	Planning Info
Subject:	In support of TherequestofNorthMillPondHoldingsLLC(Applicant),andOneRaynes Ave LLC, 31 Raynes Ave LLC, and 203 Maplewood Ave LLC (Owners) for property located at 31 Raynes Avenue, 203 Maplewood Avenue, and 1 Raynes Avenue
Date:	Wednesday, December 15, 2021 3:02:06 PM

Dear Planning Board,

I live along the North Mill Pond and am writing to urge you to approve the CUP request of North Mill Pond Holdings LLC, One Raynes Ave LLC, 31 Raynes Ave LLC, and 203 Maplewood Ave LLC. I believe this project will provide important ecological and recreational improvements to the North Mill Pond area.
This will remove a significant amount of impervious surface which is currently encroaching on the shoreline. It will replace invasive species with native ones and will repair erosion. It will also provide important opportunities for the public to enjoy the waterfront with the installation of benches, paths, and walkways.
It will be a marked improvement for the entire city and will expand the tax base.

Thank you,

Jonathan Sandberg
160 Bartlett Street

Sent from my iPad

From: Laura Stoll
To: Planning Info
Cc: Brad Stoll
Subject: Fwd: planning board letter
Date: Wednesday, December 15, 2021 12:22:31 PM

Dear Members of the Planning Board,

We am writing in support of the project located at 1 Raynes Avenue, 31 Raynes Avenue & 203 Maplewood Avenue. In terms of the environmental impact the project will have, the developer is making significant improvements to the area including stabilizing the deteriorating bank, installing stormwater treatment units, and removing invasive plants and replacing them with native grass and plants. Currently there are impervious surfaces within the 100 foot tidal buffer zone. This project will result in a net loss of impervious surface, and completely eliminate the impervious surfaces in the 0-25 foot buffer where currently there is 848 SF.

This project is in full compliance with zoning ordinances and supports the city's Master Plan and vision for the North End. Currently the area consists of vacant buildings and is not very pedestrian friendly. The project provides more than 30% of open space where only 20% is required. The North Mill Pond Greenway and Community Park will create an amazing outdoor space and path for both pedestrians and bicyclists. This project provides for the construction of a 1/2 acre of the Greenway and multi use path in a key area that connects the North End with downtown.

As residents of Portsmouth's West End, we have seen what well thought out development can do for the city. Where once there were contaminated sites and dilapidated buildings, there is now vitality. This project would be a wonderful improvement to the North Mill Pond area. It gives the public access to the waterfront area, makes several environmental improvements, and brings much needed business and housing to a growing community. Aesthetically, environmentally, and functionally, this project is a major win for the city.

Sincerely,
Brad and Laura Stoll
55 Lovell Street

From: Dylan Thomas
To: Planning Info
Subject: Letter
Date: Tuesday, December 14, 2021 9:11:48 PM

To the Planning Department:

I read this week about Dover's plans for public waterfront access and a small boat launch at their new development downtown. I wish Portsmouth could do something similar and I realized that there is already a plan underway for just that on Raynes Avenue along North Mill Pond. I am writing as a Portsmouth citizen to wholeheartedly support that project and the benefits it will bring to our vibrant downtown and greater community.

As I was learning more about the Raynes Avenue project, I was impressed with the environmental benefits that the developers would bring to the table. I can't believe that the existing stormwater runs directly off onto the pond and therefore into the river and Great Bay. Adding a stormwater treatment system would absolutely benefit the entire ecosystem.

Portsmouth's downtown is so special, but it doesn't need an old derelict dry cleaning store to keep it that way. I love the vitality and vibrancy that this new project would bring to the North End, and the fact that it would also bring an incredible public waterfront park makes this a homerun for me. I'm already looking forward to biking with my daughters along the path and bringing them out on our kayaks to appreciate their hometown in a whole new way.

Thank you,
Dylan

Dear Chairman Legg and City of Portsmouth Planning Board,

I fully support the North Mill Pond Project!!! It is a total win for our beautiful city of Portsmouth and in my opinion, it is way overdue. Thank you for the Islington Street corridor improvement, as it truly makes a welcoming statement as you enter from the West End!

Thank you for giving this beneficial North Mill Pond Project the consideration that it deserves.

Sincerely,

Janet Thompson

There are many reasons that I support the North Mill Pond Project and they are listed below.
* Construction of 1/2 acre of greenway and multi use path along NMP connecting Maplewood Ave to the city

* Key piece of North Mill Pond Greenway as contemplated in the North End Vision Plan and City's Master Pla
Hospital

* The total open space for the project is over 30% where 20% is required by Zoning

* Achieving additional goals in the City's Master Plan, including:
* Reinvesting in underutilized buildings and land
* Enhancing the quality and connectivity with the North Mill Pond Greenway
* Promoting Open Spaces and Encouraging access to waterfront area
* Protecting view corridors and access to the North Mill Pond

* Additional residential units in a market with no vacancy and skyrocketing prices, will help to ensure our city

North Mill Pond and Environmental Benefits

* The Net Buffer Improvement by over 7,000sf

* Installation of StormWa Treatment system(s) (where none currently exist)

* Buffer enhancement by removing invasive species and replacement with native plantings

* Treatment of storm water from neighboring city streets before discharge into NMP

From: Steve Thompson
To: Planning Info
Subject: North Mill Pond Gateway w Raynes Ave Project Support
Date: Wednesday, December 15, 2021 3:29:28 PM

Dear City Planning Board,

I live in the West End on Woodbury Ave. I am a definite supporter of the proposed Raynes Ave Project. It appears to include significant and badly needed improvements to the North Mill Pond area. I believe it would be a huge bonus for our neighborhood and the West End to be able to walk into the downtown area via a beautiful greenway path along North Mill Pond. Right now the old railroad tracks that parallel NMP prohibit any real use of that valuable land and space.

Thank you for considering my opinion.

Steve Thompson
19 Woodbury Ave, Portsmouth, NH 03801

From: Janet Thompson
To: Planning Info
Subject: North Mill Pond Project
Date: Wednesday, December 15, 2021 10:57:44 AM

Dear Chairman Legg and City of Portsmouth Planning Board,

I fully support the North Mill Pond Project!!! It is a total win for our beautiful city of Portsmouth and in my opinion, it is way overdue. Thank you for the Islington Street corridor improvement, as it truly makes a welcoming statement as you enter from the West End!

Thank you for giving this beneficial North Mill Pond Project the consideration that it deserves.

Sincerely,

Janet Thompson

There are many reasons that I support the North Mill Pond Project and they are listed below.

* Construction of 1/2 acre of greenway and multi use path along NMP connecting Maplewood Ave to the city

* Key piece of North Mill Pond Greenway as contemplated in the North End Vision Plan and City's Master Plan and will connect out through West End Yards on to Portsmouth Regional Hospital

* The total open space for the project is over 30% where 20% is required by Zoning

* Achieving additional goals in the City's Master Plan, including:
  * Reinvesting in underutilized buildings and land
  * Enhancing the quality and connectivity with the North Mill Pond Greenway
  * Promoting Open Spaces and Encouraging access to waterfront area
  * Protecting view corridors and access to the North Mill Pond

* Additional residential units in a market with no vacancy and skyrocketing prices, will help to ensure our city grows and keeps improving

North Mill Pond and Environmental Benefits

* The Net Buffer Improvement by over 7,000sf

* Installation of StormWa Treatment system(s) (where none currently exist)

* Buffer enhancement by removing invasive species and replacement with native plantings

* Treatment of storm water from neighboring city streets before discharge into NMP

From: April Weeks
To: Planning Info
Subject: December 16 meeting
Date: Tuesday, December 14, 2021 4:23:26 PM

Gentlemen and gentle women of the planning board,

I write to you about the Raynes Ave (DiLorenzo) plan to build yet another wetlands-buffer violator on the North Mill Pond.

How many times is this protection of our native habitat going to be challenged? Perhaps the message needs to be clearer to future developers: don't mess with our wetlands! Respect the buffer zone!

And while you're at it, how about refreshing your memories about the 2014 North End Preliminary Vision Plan, which was beautiful and doesn't look much like today's North End.

One more request, in the interests of trust between the board and Portsmouth's citizens. Don't schedule a huge modification of existing regulations in the week before Christmas, when everyone is too busy to adequately protest such a maneuver. It wouldn't seem like you were trying to sneak something by when vox populi were otherwise involved if you avoided such slight of hand in the future.

Thank you for your consideration in this matter. Assume that significant pushback will occur for this request for a wetlands buffer violation Conditional Use Permit.

April Weeks
Sent from my iPhone