P0595-007
March 22, 2021

Ms. Barbara McMillan, Chair
City of Portsmouth Conservation Commission
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Wetland Conditional Use Permit Application
Proposed Mixed-Use Development - 53 Green Street, Portsmouth, NH

Dear Barbara:

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 ten (10) sets of hard copies and one (1) set of digital copies (.pdf) of the following information to support a request for a Wetland Conditional Use Permit for the above referenced project:

- One (1) full size & nine (9) half size copies of the Site Plan Set, dated March 22, 2021;
- Drainage Analysis, dated March 22, 2021;
- Wetland and Buffer Report, dated January 6, 2020;
- Wetland Buffer Impervious Surface Exhibit, dated March 22, 2021;
- Community Space Exhibit, dated March 22, 2021;
- Colored Landscape Plan, dated March 18, 2021;
- Truck Turning Exhibit, dated March 22, 2021;
- Wetland CUP Application fee check in the amount of $1,000.00

To date the applicant has attending the following meetings with the local land-use boards related to the Site Plan:

- December 8, 2020 – Technical Advisory Committee Work Session
- December 9, 2020 – Conservation Commission Work Session
- December 17, 2020 – Planning Board Conceptual Consultation

The enclosed information which has been prepared to address comments and feedback received to date from these land-use boards.

PROJECT SUMMARY

Existing Conditions

The proposed project is located at 1 Raynes Avenue, 31 Raynes Avenue & 203 Maplewood Avenue on properties identified as Map 123 Lots 10, 12, 13 & 14 on the City of Portsmouth Tax Maps. 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 property includes 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.*"

The City's Zoning Ordinance was amended 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, and 60 upper floor residential units. The second is a hotel building with 128 rooms at the corner of Raynes Ave and Vaughan Street. The project includes associated site improvements that consist of a paved parking, pedestrian 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.

Open Space & Buffer Enhancement

The project is located in the North End incentive overlay district. The applicant will be providing 22,342 SF of Greenway Community Space which will be 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. This Greenway Community Space is 20.2% of the development parcel meeting the requirement of 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 25.3% 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	24,528
Total	28,327	24,595
Net Impervious Surface	**-3,732**	

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 3,732 SF reduction in impervious surface.

Conditional Use Permit

Jurisdictional wetland areas, including 425+/- linear feet of tidal wetlands and buffers along the North Mill Pond, were identified by Leonard A. Lord, PhD, CSS, CWS, Senior Environmental Scientist at Tighe & Bond, Inc. on October 29 and December 2, 2019. The results of the tidal wetland and buffer review and the assessment of the wetlands functions and values on the proposed project site in the enclosed "Wetland and Buffer" Report dated January 6, 2020.

Conditional Use Permit Criteria

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 would enhance the buffer, reduce overall impervious surface on the site 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 on the water side of the path.

Conclusion

We trust the above described and enclosed materials address the criteria to grant a 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.

As shown in the enclosed information, the latest proposed plan will reduce impervious surface within the buffer area, 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.

We respectfully request to be placed on the Conservation Committee meeting agenda as a for April 14, 2021. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com.

Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Senior Project Manager

Neil A. Hansen, PE
Project Engineer

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

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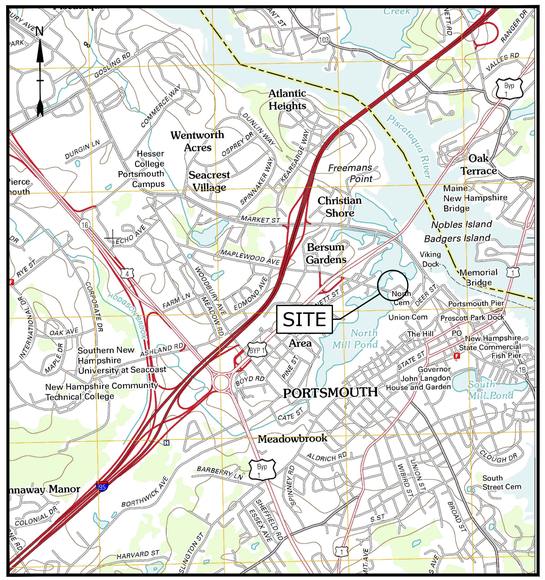
PROPOSED MIXED USE DEVELOPMENT

RAYNES AVENUE
PORTSMOUTH, NEW HAMPSHIRE

MARCH 22, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	3/22/2021
G-100	GENERAL NOTES AND LEGEND	3/22/2021
1 OF 3	EXISTING CONDITIONS PLAN	6/17/2020
2 OF 3	EXISTING CONDITIONS PLAN	6/17/2020
3 OF 3	EXISTING CONDITIONS PLAN	6/17/2020
C-101	DEMOLITION PLAN	3/22/2021
C-102	OVERALL SITE PLAN	3/22/2021
C-102.1	SITE PLAN	3/22/2021
C-103	GRADING, DRAINAGE AND EROSION CONTROL PLAN	3/22/2021
C-104	UTILITIES PLAN	3/22/2021
C-201	EASEMENT PLAN	3/22/2021
L-100	LANDSCAPE MATERIAL PLAN LEGEND AND NOTES	3/22/2021
L-101	LANDSCAPE PLANTING PLAN	3/22/2021
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	3/22/2021
C-502	DETAILS SHEET	3/22/2021
C-503	DETAILS SHEET	3/22/2021
C-504	DETAILS SHEET	3/22/2021
C-505	DETAILS SHEET	3/22/2021
C-506	DETAILS SHEET	3/22/2021
C-507	DETAILS SHEET	3/22/2021
A3.00	EXTERIOR ELEVATIONS	

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 - SHORELAND PERMIT		
NHDES - SEWER CONNECTION PERMIT		



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

BRADLEE MEZQUITA No. 08830
3/23-21

PATRICK CRIMMINS No. 12378
03/22/2021

TAC SUBMISSION
COMPLETE SET 21 SHEETS

T & B PROJECT NO: P-0595-007

Last Saved: 3/22/2021
Plotted On:Mar 22, 2021-1:48pm By: NAHansen
Tighe & Bond: J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007_C-COVER.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.

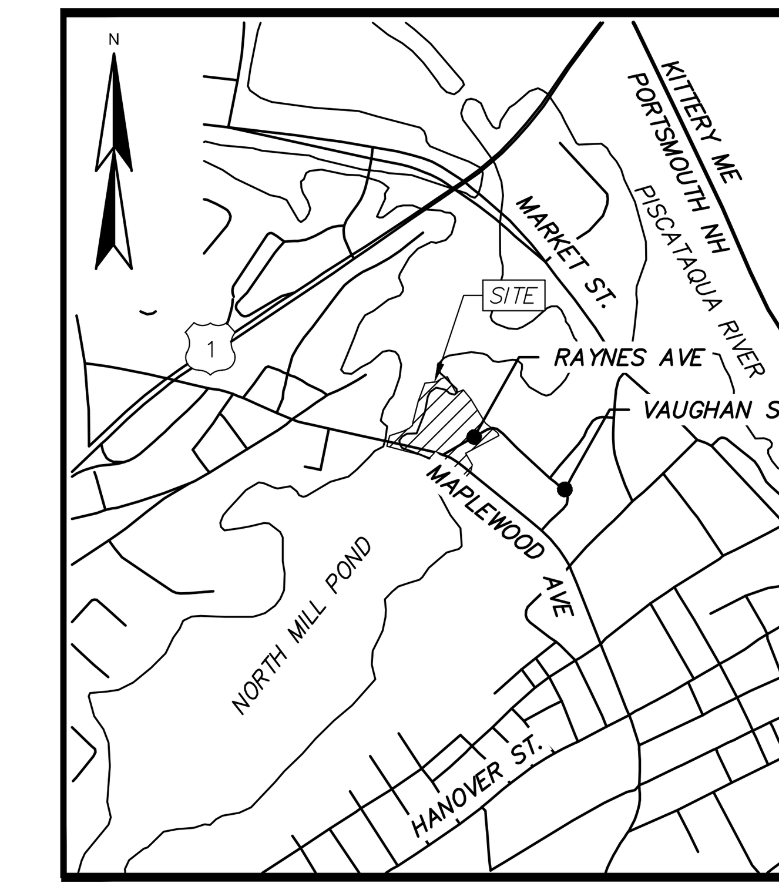
18. TAX MAP 123, LOTS 10, 12, 13 & 14 IS/ARE EITHER SUBJECT TO OR IN BENEFIT OF, BUT NOT LIMITED TO, THE FOLLOWING EASEMENTS/RIGHTS OF RECORD:
    A) 12' WIDE RIGHT OF WAY, SEE R.C.R.D. BOOK 4676, PAGE 657 AND REFERENCE PLAN #11.
    B) RIGHT OF WAY, SEE R.C.R.D. BOOK 4676, PAGE 657 & BOOK 5621, PAGE 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
- 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
- WV WATER GATE VALVE
- S WATER SHUTOFF VALVE
- GV GAS GATE VALVE
- T PAD MOUNTED TRANSFORMER
- AC AIR CONDITIONING UNIT
- CATCH BASIN
- D DRAIN MANHOLE
- M MANHOLE
- E ELECTRIC MANHOLE
- S SEWER MANHOLE
- HH 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



LOCATION MAP (n.t.s.)

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____________________ L.L.S. #989

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DRAINAGE STRUCTURES

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

SEWER STRUCTURES

SMH 4242 RIM ELEV.=13.4' (4276) 12" DIP INV.=5.1' (4830) 12" DIP INV.=5.1'	SMH 4831 RIM ELEV.=18.2' (A) 8" CLAY INV.=12.4' (B) 10" PVC INV.=10.2' (4271) 24" DIP INV.=2.7' (C) 24" DIP INV.=2.6'
SMH 4271 RIM ELEV.=13.2' (A) 12" CLAY TOP OF PIPE=7.2' (4411) 24" CLAY INV.=3.0' (4831) 24" CLAY INV.=3.0'	SMH 5419 RIM ELEV.=10.7' (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'	

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

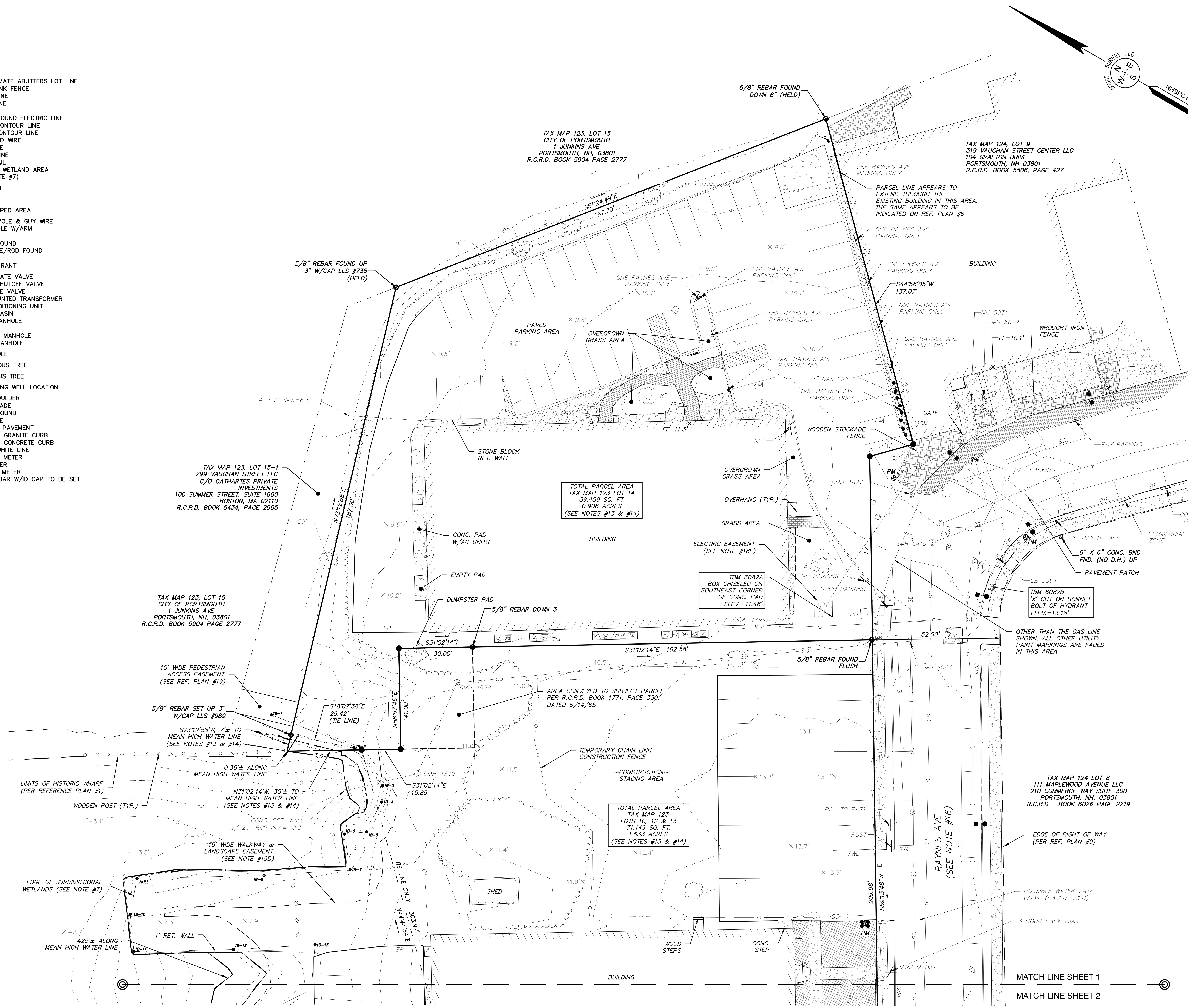
NO.	DATE	DESCRIPTION	BY

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

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



NHSPC (NAD83 / 2011)
DOUCET SURVEY, LLC
TAX MAP 123, LOT 15
CITY OF PORTSMOUTH
1 JUNKINS AVE
PORTSMOUTH, NH, 03801
R.C.R.D. BOOK 5904 PAGE 2777
TAX MAP 124, LOT 9
319 VAUGHAN STREET CENTER LLC
104 GRAFTON DRIVE
PORTSMOUTH NH 03801
R.C.R.D. BOOK 5506, PAGE 427
5/8" REBAR FOUND DOWN 6" (HELD)
5/8" REBAR FOUND UP 3" W/CAP LLS #738 (HELD)
S51°24'49"E 187.70'
S44°58'05"W 137.07'
N73°12'58"E 187.00'
PARCEL LINE APPEARS TO EXTEND THROUGH THE EXISTING BUILDING IN THIS AREA. THE SAME APPEARS TO BE INDICATED ON REF. PLAN #6
ONE RAYNES AVE PARKING ONLY
PAVED PARKING AREA
OVERGROWN GRASS AREA
BUILDING
WROUGHT IRON FENCE
FF=10.1'
FF=11.3'
WOODEN STOCKADE FENCE
GATE
PAY PARKING
STONE BLOCK RET. WALL
TAX MAP 123, LOT 15-1
299 VAUGHAN STREET LLC
C/O CATHARTES PRIVATE INVESTMENTS
100 SUMMER STREET, SUITE 1600
BOSTON, MA 02110
R.C.R.D. BOOK 5434, PAGE 2905
TOTAL PARCEL AREA
TAX MAP 123 LOT 14
39,459 SQ. FT.
0.906 ACRES
(SEE NOTES #13 & #14)
CONC. PAD W/AC UNITS
EMPTY PAD
DUMPSTER PAD
OVERGROWN GRASS AREA
OVERHANG (TYP.)
GRASS AREA
ELECTRIC EASEMENT (SEE NOTE #18E)
TBM 6082A BOX CHISELED ON SOUTHEAST CORNER OF CONC. PAD ELEV.=11.48'
NO PARKING
3 HOUR PARKING
COMMERCIAL LOADING ZONE
PAY BY APP
6" X 6" CONC. BND. FND. (NO D.H.) UP
PAVEMENT PATCH
TBM 6082B 'X' CUT ON BONNET BOLT OF HYDRANT ELEV.=13.18'
OTHER THAN THE GAS LINE SHOWN, ALL OTHER UTILITY PAINT MARKINGS ARE FADED IN THIS AREA
5/8" REBAR DOWN 3
S31°02'14"E 30.00'
S31°02'14"E 162.58'
52.00'
5/8" REBAR FOUND FLUSH
10' WIDE PEDESTRIAN ACCESS EASEMENT (SEE REF. PLAN #19)
5/8" REBAR SET UP 3" W/CAP LLS #989
S73°12'58"W, 7'± TO MEAN HIGH WATER LINE (SEE NOTES #13 & #14)
S18°07'38"E 29.42' (TIE LINE)
N58°57'46"E 41.00'
AREA CONVEYED TO SUBJECT PARCEL PER R.C.R.D. BOOK 1771, PAGE 330, DATED 6/14/65
0.35'± ALONG MEAN HIGH WATER LINE
LIMITS OF HISTORIC WHARF (PER REFERENCE PLAN #1)
WOODEN POST (TYP.)
N31°02'14"W, 30'± TO MEAN HIGH WATER LINE (SEE NOTES #13 & #14)
S31°02'14"E 15.85'
TEMPORARY CHAIN LINK CONSTRUCTION FENCE
~CONSTRUCTION~ STAGING AREA
TOTAL PARCEL AREA
TAX MAP 123
LOTS 10, 12 & 13
71,149 SQ. FT.
1.633 ACRES
(SEE NOTES #13 & #14)
CONC. RET. WALL W/ 24" RCP INV.=-0.3'
15' WIDE WALKWAY & LANDSCAPE EASEMENT (SEE NOTE #19D)
EDGE OF JURISDICTIONAL WETLANDS (SEE NOTE #7)
TIE LINE ONLY
N44°14'54"E 303.97'
SHED
425'± ALONG MEAN HIGH WATER LINE
1' RET. WALL
WOOD STEPS
CONC. STEP
PAY TO PARK
RAYNES AVE (SEE NOTE #16)
S59°13'48"W 209.98'
TAX MAP 124 LOT 8
111 MAPLEWOOD AVENUE LLC
210 COMMERCE WAY SUITE 300
PORTSMOUTH, NH, 03801
R.C.R.D. BOOK 6026 PAGE 2219
EDGE OF RIGHT OF WAY (PER REF. PLAN #9)
POSSIBLE WATER GATE VALVE (PAVED OVER)
3 HOUR PARK LIMIT
PARK MOBILE
BUILDING
MATCH LINE SHEET 1
MATCH LINE SHEET 2

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LINE TABLE

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

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

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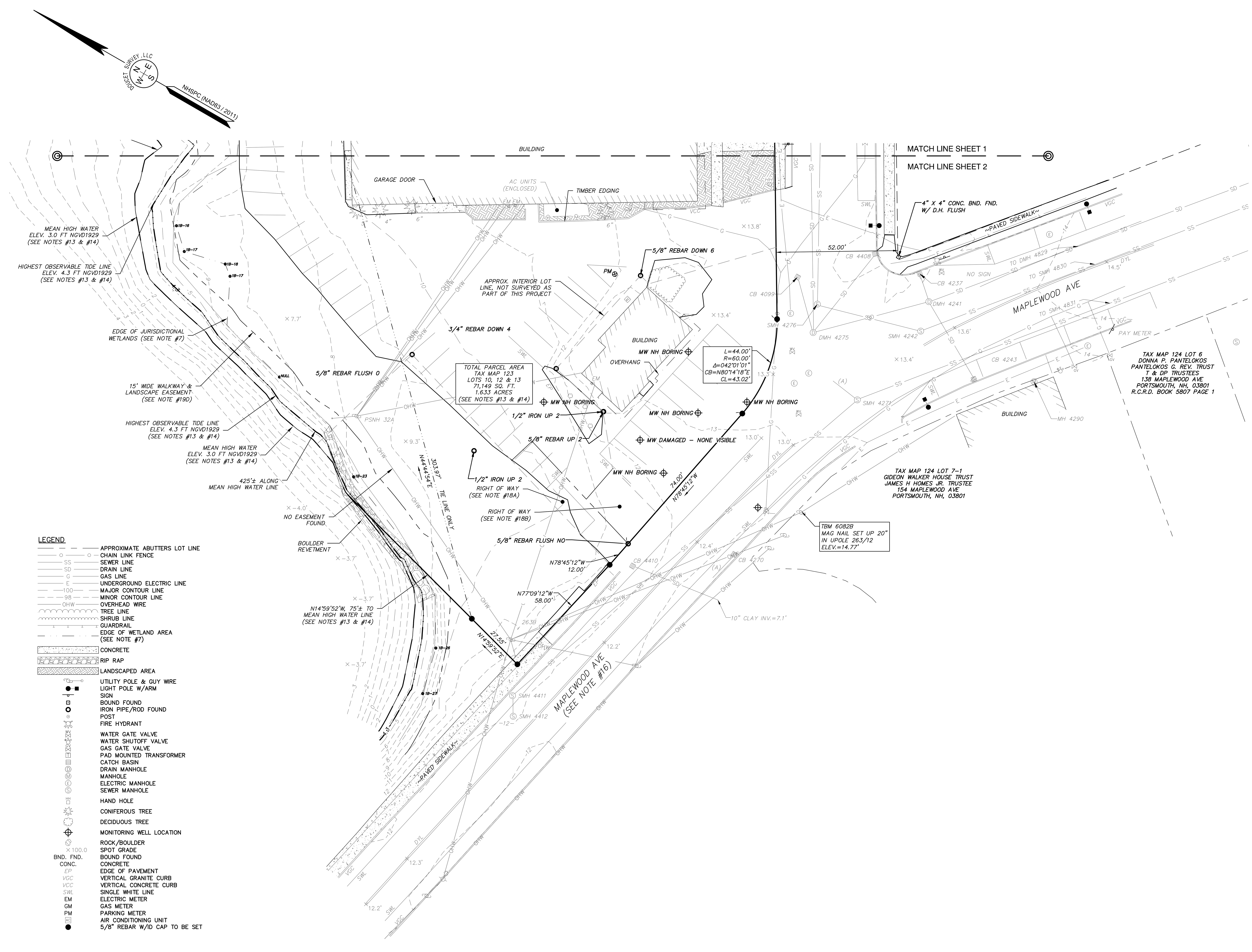

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PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

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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.

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. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY/TOWN OF _____ 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.

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 SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH AND SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.

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.

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	PROPOSED CURB RADIUS
VGC	PROPOSED VERTICAL GRANITE CURB
SGC	PROPOSED SLOPED 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 (DGCB)
- 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

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

03/22/2021

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

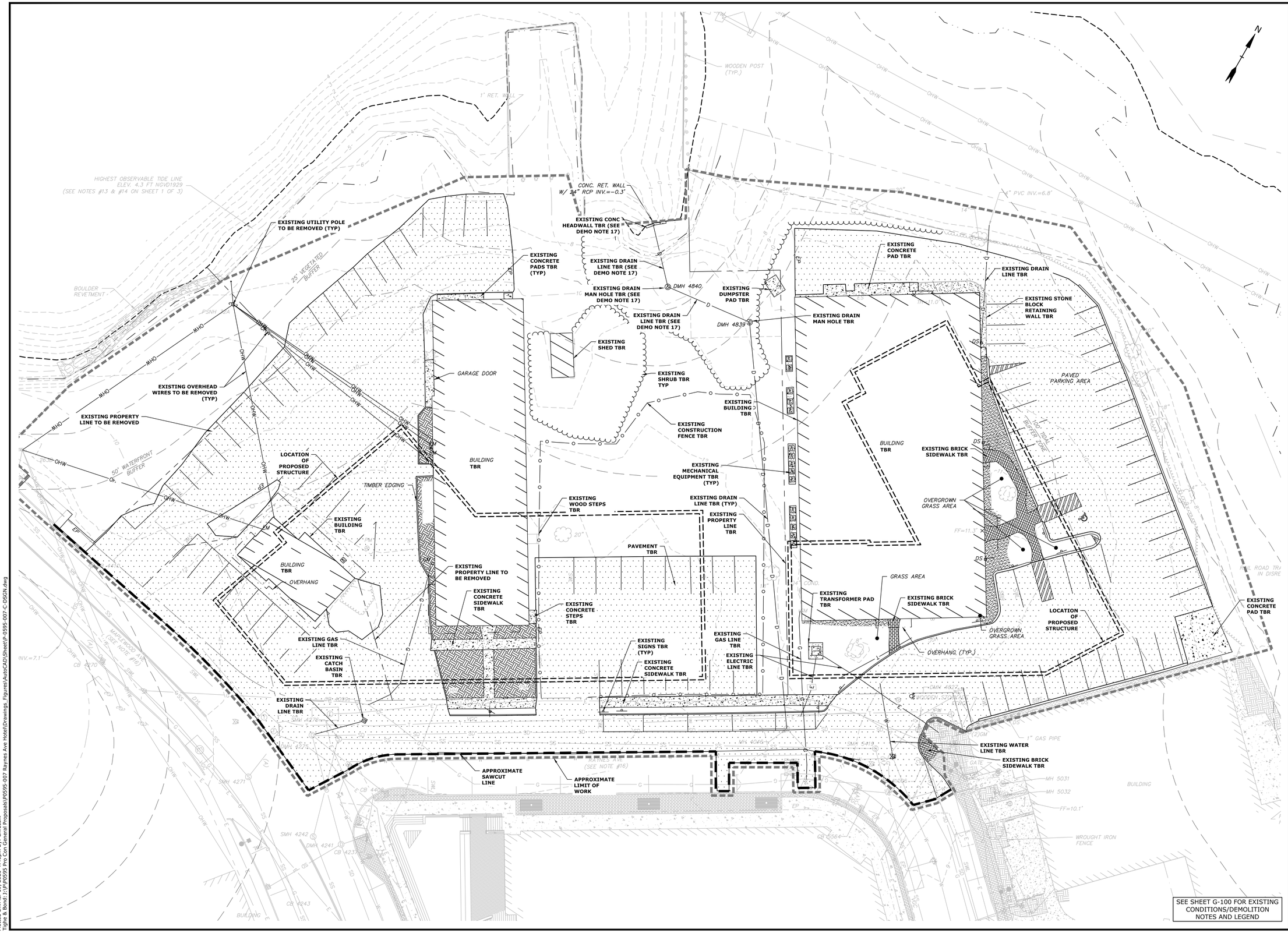
MARK	DATE	DESCRIPTION
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

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



Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08839 LICENSED PROFESSIONAL ENGINEER — 03/22/21

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 03/22/2021

0 20' 40'
GRAPHIC SCALE

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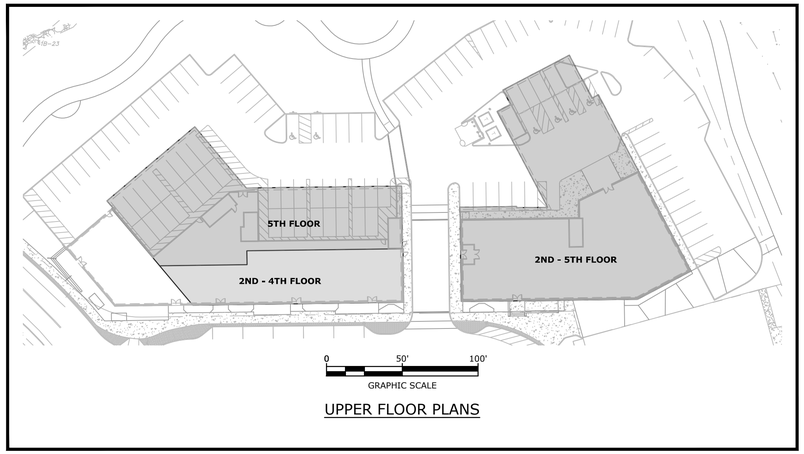
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DEMOLITION PLAN

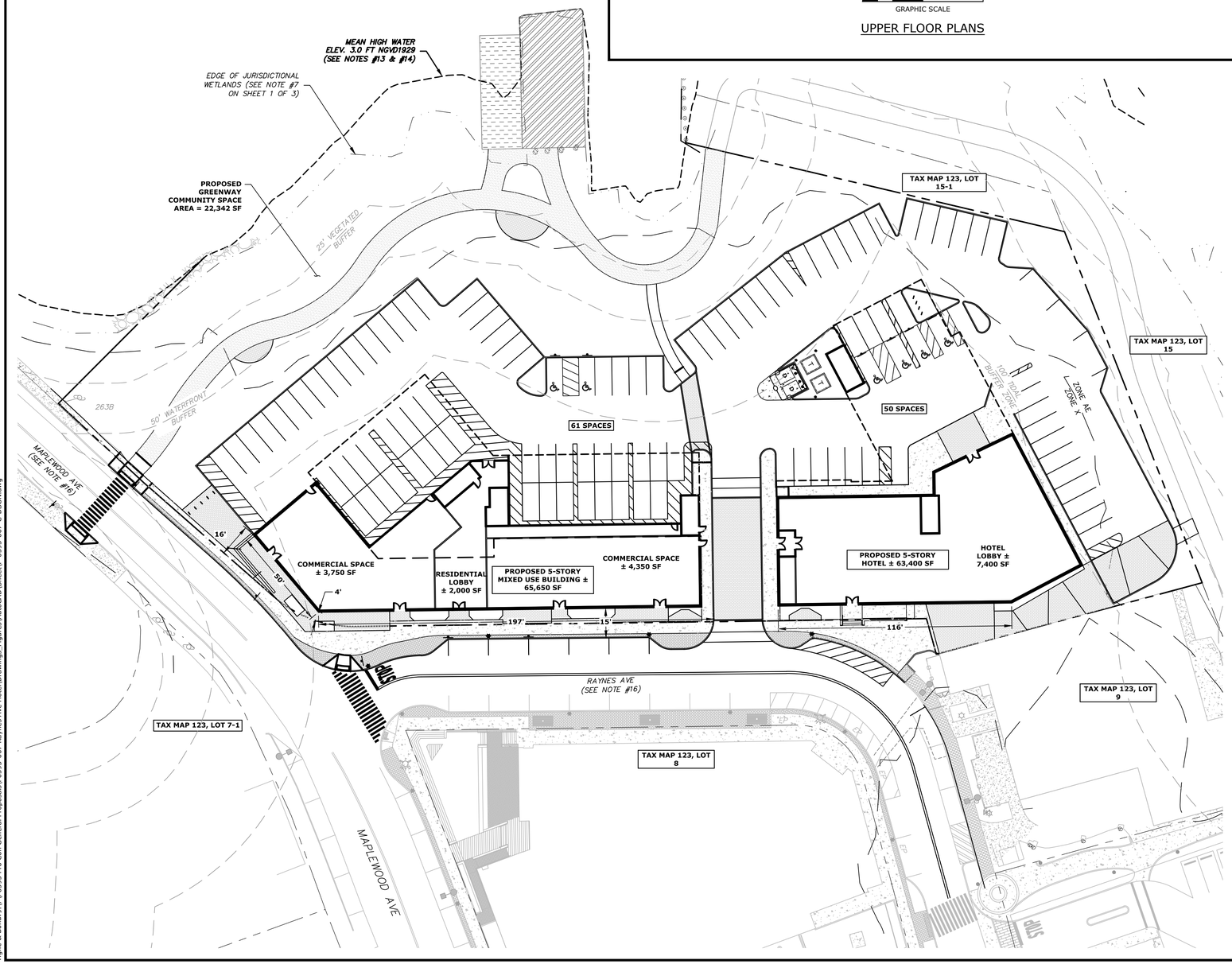
SCALE: AS SHOWN

C-101

Last Saved: 3/19/2021
Plotted On: Mar 19, 2021 - 4:40pm 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



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
MAXIMUM PRINCIPAL FRONT YARD:	15 FT	±16 FT (1)
MAXIMUM SECONDARY FRONT YARD:	12 FT	±5 FT
SIDE YARD:	NR	NR
MINIMUM REAR YARD:	5 FT	N/A
MINIMUM FRONT LOT LINE BUILDOUT:	50%	±68.8%

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

BUILDING AND LOT OCCUPATION:	REQUIRED	PROPOSED
MAXIMUM BUILDING BLOCK LENGTH:	200 FT	197 FT
MAXIMUM FACADE MODULATION LENGTH:	80 FT	<80 FT
MAXIMUM ENTRANCE SPACING:	50 FT	<50 FT
MAXIMUM BUILDING COVERAGE:	90%	±47.0%
MAXIMUM BUILDING FOOTPRINT:	30,000 SF (2)	17,565 SF 13,815 SF
MINIMUM LOT AREA:	NR	
MINIMUM LOT AREA PER DWELLING UNIT:	NR	
MINIMUM OPEN SPACE:	10%	25.3%
MAXIMUM GROUND FLOOR GFA PER USE:	15,000 SF	8,100 SF

(2) - INCREASE ABOVE 15,000 SF ALLOWED PER 10.5A43.43

BUILDING FORM (PRINCIPAL BUILDING):	REQUIRED	PROVIDED
BUILDING HEIGHT:	5 STORY (3) 60 FT	5 STORY <60 FT
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE:	36 IN	<36"
MINIMUM GROUND STORY HEIGHT:	12 FT	12 FT
MINIMUM SECOND STORY HEIGHT:	10 FT	10 FT
FACADE GLAZING:		
SHOP FRONT FACADE TYPE	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.

COMMUNITY SPACE:	21,274 SF 20%	22,342 SF 20.2%

OFF-STREET PARKING REQUIREMENTS

PARKING SPACES REQUIRED:		
DWELLING UNITS:		
0 SF TO 500 SF, 0.5 SPACES PER UNIT	17 UNITS	8.5 SPACES
500 SF TO 750 SF, 1.0 SPACES PER UNIT	33 UNITS	33 SPACES
OVER 750 SF, 1.3 SPACES PER UNIT	10 UNITS	13 SPACES
TOTAL MINIMUM RESIDENTIAL SPACES REQUIRED =		55 SPACES
VISITORS:		
1 SPACES PER 5 DWELLING UNITS	60 UNITS	12 SPACES
HOTEL:		
0.75 SPACES PER GUEST ROOM	128 ROOMS	96 SPACES
DOWNTOWN OVERLAY DISTRICT		- 4 SPACES
TOTAL MINIMUM PARKING SPACES REQUIRED =		159 SPACES
TOTAL PARKING SPACES PROVIDED:		
RESERVE SPACES, LIFT SYSTEM (4) =		23 SPACES
SHARED PARKING ON SEPARATE LOT (4) =		25 SPACES
SURFACE PARKING SPACES =		111 SPACES
TOTAL PARKING SPACES PROVIDED =		159 SPACES

SIX (6) ADA ACCESSIBLE SPACES REQUIRED

(4) - CONDITIONAL USE PERMIT REQUIRED FOR REDUCTION IN SPACES AND SHARED PARKING ON SEPARATE LOT.

	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	16 SPACES	16 SPACES

PROPOSED MIXED USE GROSS FLOOR AREA				
FLOOR	COMMERCIAL (SF)	LOBBY (SF)	UNITS	TOTAL FLOOR AREA (SF)
FIRST	8,100	2,000	0	10,100
SECOND	0	0	17	15,200
THIRD	0	0	17	15,200
FOURTH	0	0	17	15,200
FIFTH	0	0	9	9,950
TOTAL	8,100	2,000	60	65,650

PROPOSED HOTEL GROSS FLOOR AREA			
FLOOR	LOBBY (SF)	UNITS	TOTAL FLOOR AREA (SF)
FIRST	7,400	0	7,400
SECOND	0	32	14,000
THIRD	0	32	14,000
FOURTH	0	32	14,000
FIFTH	0	32	14,000
TOTAL	7,400	128	63,400

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

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

03/22/2021

0 30' 60'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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

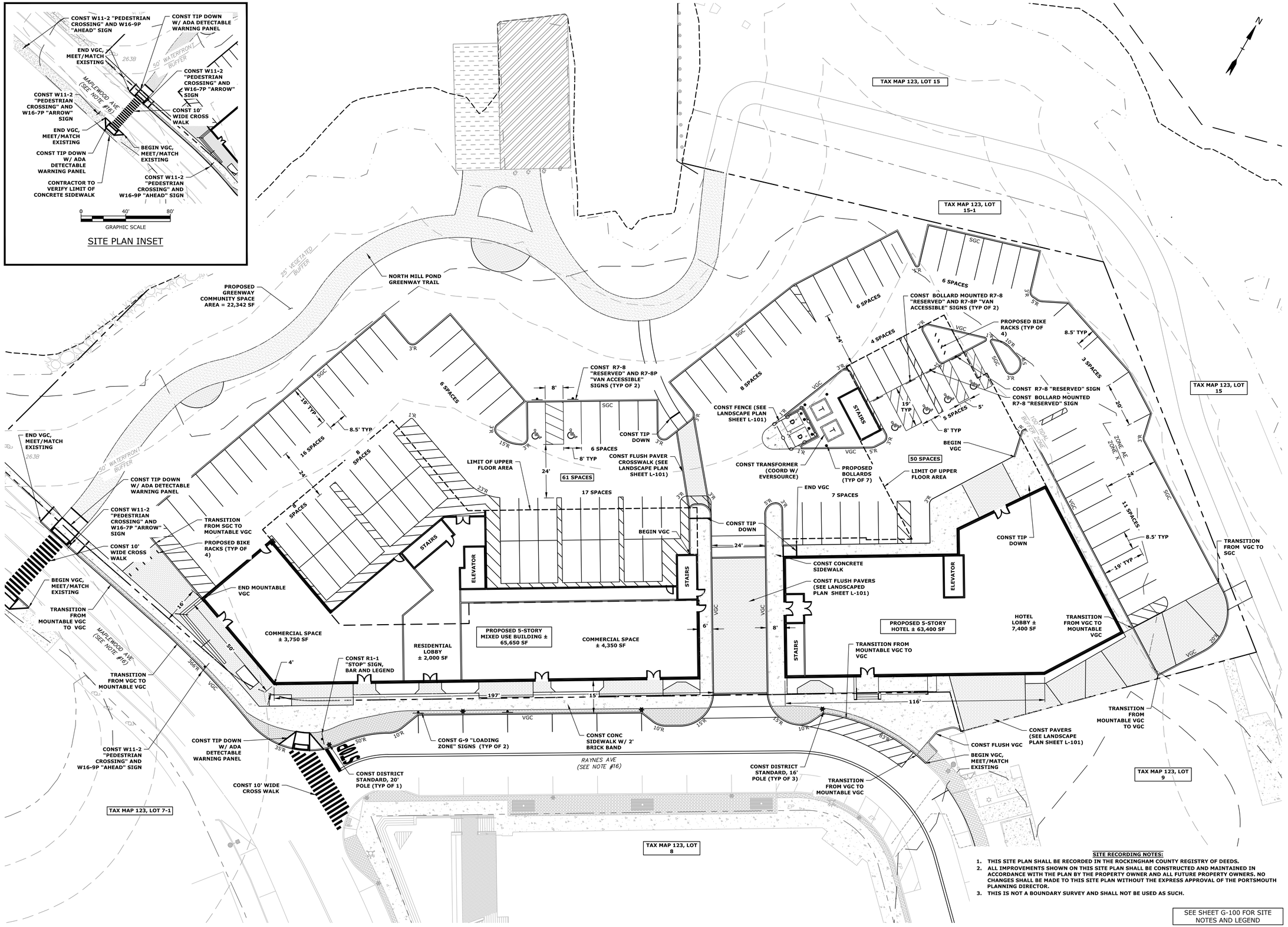
SITE PLAN

SCALE: AS SHOWN

C-102

Last Saved: 3/22/2021
Plotted: Mar 22, 2021 - 12:39pm 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

SITE PLAN INSET



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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. 08839 LICENSED PROFESSIONAL ENGINEER — 3/22/21

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0 20' 40'
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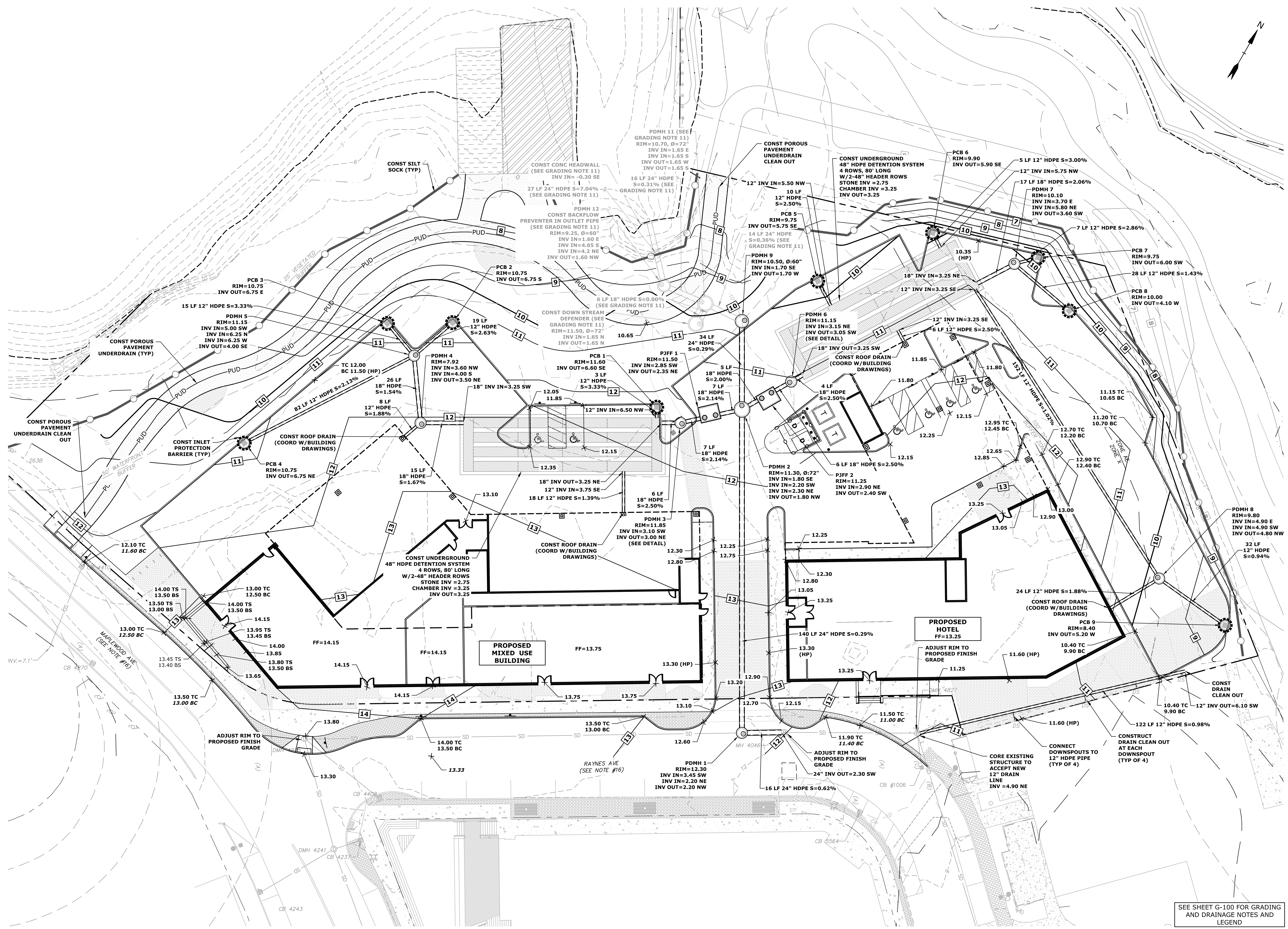
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.1

Last Saved: 3/22/2021
Printed On: Mar 22, 2021-12:41pm 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


CONST SILT SOCK (TYP)
CONST CONC HEADWALL (SEE GRADING NOTE 11) INV IN= -0.30 SE
27 LF 24" HDPE S=7.04% (SEE GRADING NOTE 11)
PDMH 11 (SEE GRADING NOTE 11) RIM=10.70, Ø=72" INV IN=1.65 E INV IN=1.65 S INV OUT=1.65 W INV OUT=1.65 S
16 LF 24" HDPE S=0.31% (SEE GRADING NOTE 11)
PDMH 12 CONST BACKFLOW PREVENTER IN OUTLET PIPE (SEE GRADING NOTE 11) RIM=9.25, Ø=60" INV IN=1.60 E INV IN=4.65 S INV IN=4.2 NE INV OUT=1.60 NW
14 LF 24" HDPE S=0.36% (SEE GRADING NOTE 11)
6 LF 18" HDPE S=0.00% (SEE GRADING NOTE 11)
CONST DOWN STREAM DEFENDER (SEE GRADING NOTE 11) RIM=11.50, Ø=72" INV IN=1.65 N INV OUT=1.65 N
CONST POROUS PAVEMENT UNDERDRAIN CLEAN OUT
CONST UNDERGROUND 48" HDPE DETENTION SYSTEM 4 ROWS, 80' LONG W/2-48" HEADER ROWS STONE INV =2.75 CHAMBER INV =3.25 INV OUT=3.25
PCB 6 RIM=9.90 INV OUT=5.90 SE
5 LF 12" HDPE S=3.00%
12" INV IN=5.75 NW
17 LF 18" HDPE S=2.06%
PDMH 7 RIM=10.10 INV IN=3.70 E INV IN=5.80 NE INV OUT=3.60 SW
7 LF 12" HDPE S=2.86%
PCB 7 RIM=9.75 INV OUT=6.00 SW
28 LF 12" HDPE S=1.43%
PCB 8 RIM=10.00 INV OUT=4.10 W
12" INV IN=5.50 NW
10 LF 12" HDPE S=2.50%
PCB 5 RIM=9.75 INV OUT=5.75 SE
PDMH 9 RIM=10.50, Ø:60" INV IN=1.70 SE INV OUT=1.70 W
PCB 3 RIM=10.75 INV OUT=6.75 E
15 LF 12" HDPE S=3.33%
PDMH 5 RIM=11.15 INV IN=5.00 SW INV IN=6.25 N INV IN=6.25 W INV OUT=4.00 SE
CONST POROUS PAVEMENT UNDERDRAIN (TYP)
PCB 2 RIM=10.75 INV OUT=6.75 S
19 LF 12" HDPE S=2.63%
PDMH 4 RIM=7.92 INV IN=3.60 NW INV IN=4.00 S INV OUT=3.50 NE
TC 12.00 BC 11.50 (HP)
82 LF 12" HDPE S=2.13%
26 LF 18" HDPE S=1.54%
8 LF 12" HDPE S=1.88%
18" INV IN=3.25 SW
PCB 1 RIM=11.60 INV OUT=6.60 SE
3 LF 12" HDPE S=3.33%
12" INV IN=6.50 NW
PJFF 1 RIM=11.50 INV IN=2.85 SW INV OUT=2.35 NE
34 LF 24" HDPE S=0.29%
5 LF 18" HDPE S=2.00%
7 LF 18" HDPE S=2.14%
PDMH 6 RIM=11.15 INV IN=3.15 NE INV OUT=3.05 SW (SEE DETAIL)
18" INV OUT=3.25 SW
CONST ROOF DRAIN (COORD W/BUILDING DRAWINGS)
4 LF 18" HDPE S=2.50%
18" INV IN=3.25 NE
12" INV IN=3.25 SE
12" INV IN=3.25 SE
6 LF 12" HDPE S=2.50%
152 LF 12" HDPE S=1.02%
CONST POROUS PAVEMENT UNDERDRAIN CLEAN OUT
CONST INLET PROTECTION BARRIER (TYP)
PCB 4 RIM=10.75 INV OUT=6.75 NE
CONST ROOF DRAIN (COORD W/BUILDING DRAWINGS)
15 LF 18" HDPE S=1.67%
18" INV OUT=3.25 SE
12" INV IN=3.75 SE
18 LF 12" HDPE S=1.39%
6 LF 18" HDPE S=2.50%
PDMH 3 RIM=11.85 INV IN=3.10 SW INV OUT=3.00 NE (SEE DETAIL)
PDMH 2 RIM=11.30, Ø:72" INV IN=1.80 SE INV IN=2.20 SW INV IN=2.30 NE INV OUT=1.80 NW
PJFF 2 RIM=11.25 INV IN=2.90 NE INV OUT=2.40 SW
6 LF 18" HDPE S=2.50%
CONST ROOF DRAIN (COORD W/BUILDING DRAWINGS)
CONST UNDERGROUND 48" HDPE DETENTION SYSTEM 4 ROWS, 80' LONG W/2-48" HEADER ROWS STONE INV =2.75 CHAMBER INV =3.25 INV OUT=3.25
PROPOSED MIXED USE BUILDING
FF=14.15
FF=13.75
PROPOSED HOTEL FF=13.25
140 LF 24" HDPE S=0.29%
ADJUST RIM TO PROPOSED FINISH GRADE
24 LF 12" HDPE S=1.88%
CONST ROOF DRAIN (COORD W/BUILDING DRAWINGS)
PCB 9 RIM=8.40 INV OUT=5.20 W
PDMH 8 RIM=9.80 INV IN=4.90 E INV IN=4.90 SW INV OUT=4.80 NW
32 LF 12" HDPE S=0.94%
CONST DRAIN CLEAN OUT
12" INV OUT=6.10 SW
122 LF 12" HDPE S=0.98%
CONSTRUCT DRAIN CLEAN OUT AT EACH DOWNSPOUT (TYP OF 4)
CONNECT DOWNSPOUTS TO 12" HDPE PIPE (TYP OF 4)
CORE EXISTING STRUCTURE TO ACCEPT NEW 12" DRAIN LINE INV =4.90 NE
ADJUST RIM TO PROPOSED FINISH GRADE
24" INV OUT=2.30 SW
16 LF 24" HDPE S=0.62%
PDMH 1 RIM=12.30 INV IN=3.45 SW INV IN=2.20 NE INV OUT=2.20 NW
ADJUST RIM TO PROPOSED FINISH GRADE
MAPLEWOOD AVE (SEE NOTE #16)
RAYNES AVE (SEE NOTE #16)
25' VEGETATED BUFFER
50' WATERFRONT BUFFER
PUD
N

SEE SHEET G-100 FOR GRADING AND DRAINAGE NOTES AND LEGEND

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Tighe&Bond

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

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 — LICENSED PROFESSIONAL ENGINEER
03/22/2021

0 20' 40'
GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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

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)

PSMH 4
RIM=12.40
INV IN=7.10 NE
INV IN=7.10 SE
INV OUT=7.00 SW

CONST 5 LF
4" PVC SDR 35
S = 0.011

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

CONST 46 LF
8" PVC SDR 35
S = 0.010

CONST GREASE TRAP 1
RIM=12.80
INV IN=8.45 S
INV OUT=7.95 E

CONST 6 LF
4" PVC SDR 35
S = 0.010

CONST GREASE WASTE LINE
80 LF 4" SDR-35 PVC
S = 0.011, INV. = 9.30 N
(COORD W/ BUILDING
DRAWINGS

PSMH 3
RIM=12.95
INV IN=7.85 W
INV IN=7.85 S
INV OUT=7.75 NE

CONST 114 LF
8" PVC SDR 35
S = 0.011

CONST GREASE WASTE LINE
30 LF 4" 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 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 WYE
INTO SEWER
LINE (TRP)

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

CONST UPPER FLOORS
SEWER CONNECTION (TYP)

CONST 111 LF
8" PVC SDR 35
S = 0.016

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

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

PSMH 1
RIM=12.30
INV IN=4.60 NW
INV IN=4.60 SW
INV OUT=4.50 NE

CONST TAPPING SLEEVE AND
VALVE (COORD. W/CITY OF
PORTSMOUTH DPW)

TIE INTO EXISTING GAS
LINE (COORD W/ UNITIL)

MAPLEWOOD AVE
(SEE NOTE #16)

RAYNES AVE
(SEE NOTE #16)

1" GAS PIPE

SEE SHEET G-100 FOR UTILITY
NOTES AND LEGEND

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08839
LICENSED
PROFESSIONAL ENGINEER
3/23/21

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
03/22/2021

0 20' 40'
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Portsmouth,
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UTILITIES PLAN

SCALE: AS SHOWN

C-104

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LEGEND

- PROPOSED DRAINAGE EASEMENT
- PROPOSED UTILITY EASEMENT
- PROPOSED COMMUNITY SPACE EASEMENT
- PROPOSED TEMPORARY GRADING EASEMENT

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

PROPOSED TEMPORARY GRADING EASEMENT ON TAX MAP 123, LOT 15

TAX MAP 123, LOT 15

DEVELOPMENT LOT

PROPOSED 20' WIDE DRAINAGE EASEMENT ON DEVELOPMENT LOT TO BENEFIT THE CITY OF PORTSMOUTH

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

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

TAX MAP 123, LOT 9

TAX MAP 123, LOT 7-1

TAX MAP 123, LOT 8

MAPLEWOOD AVE (SEE NOTE #16)

RAYNES AVE (SEE NOTE #16)

Tighe&Bond

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BRADLEE MEZQUITA
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3/23/21

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03/22/2021

0 20' 40'
GRAPHIC SCALE

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EASEMENT PLAN

SCALE: AS SHOWN

C-201

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PLANT SCHEDULE

Symbol	Quantity	*Botanical Name*	Common Name	Size	Spacing	Notes
TREES						
AC RU	5	*Acer rubrum*	Red Maple	4-5" Cal.		B&B; matched
AC KA	2	*Acer rubrum 'Karpick'*	Karpick Maple	4-5" Cal.		Single-stem, matched
BE AL	3	*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	4	*Chionanthus virginicus*	Fringe Tree	4-5" Cal.		Multi-stem, matched
HA VE	6	*Hamamelis vernalis*	Vernal Witch Hazel	6-8' Ht, B&B		Multi-stem, matched
JU VI	8	*Juniperus virginiana*	Eastern Red Cedar	8-10' Ht, B&B		B&B; matched
QU BI	2	*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.	
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.	
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						
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.	

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

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 PARKING LOT SPACES	111
TOTAL REQUIRED PARKING LOT TREES	16
TOTAL PARKING LOT TREES PROPOSED	22
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

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Portsmouth, New Hampshire

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CHECKED BY:	RU/PMC
APPROVED BY:	BLM

LANDSCAPE MATERIAL PLAN LEGEND AND NOTES

SCALE: AS SHOWN

L-100

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

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

0 20' 40'
GRAPHIC SCALE

Tighe&Bond

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LANDSCAPE PLANTING PLAN

SCALE: AS SHOWN

L-101

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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 128 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:

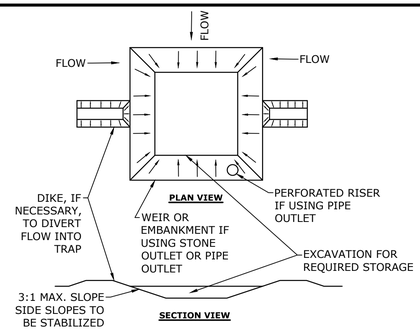
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING 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

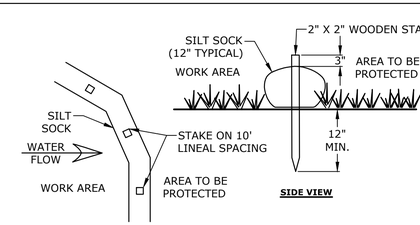
1. THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.
2. THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES 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.

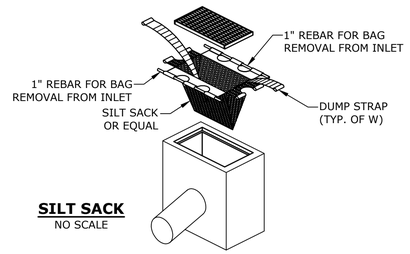
SEDIMENT TRAP
NO SCALE



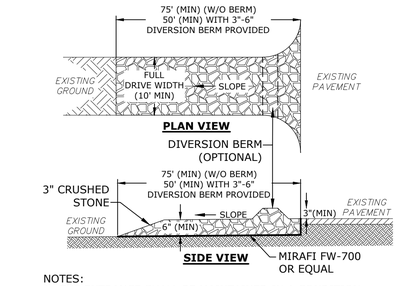
NOTES:

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. 08830 — LICENSED PROFESSIONAL ENGINEER
03/22/2021

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 — LICENSED PROFESSIONAL ENGINEER
03/22/2021

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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

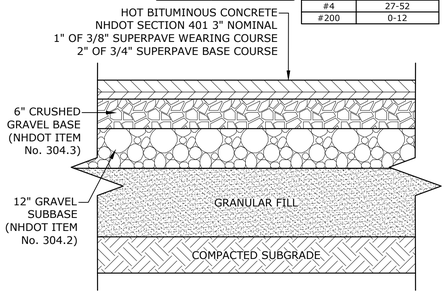
EROSION CONTROL NOTES AND DETAILS SHEET

SCALE: AS SHOWN

C-501

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



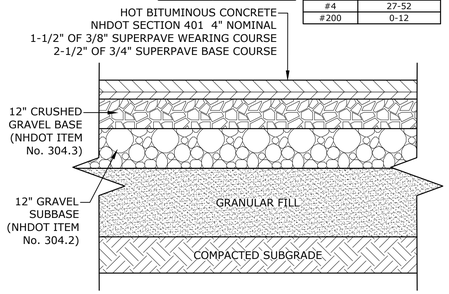
NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.

ON-SITE PAVEMENT SECTION

NO SCALE

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

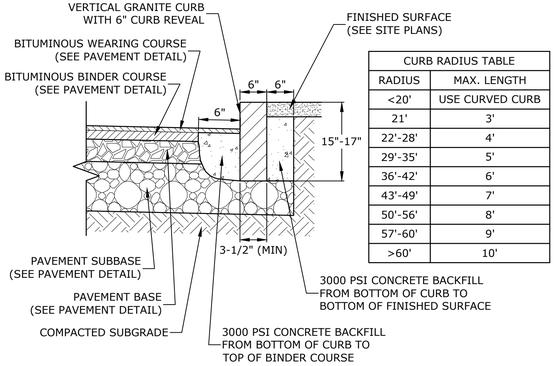
NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



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

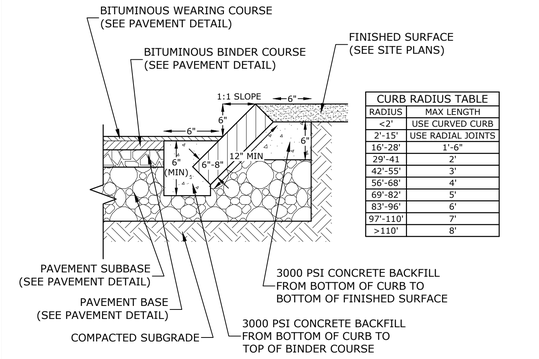


CURB RADIUS TABLE	
RADIUS	MAX. LENGTH
	USE CURVED CURB
<20'	3'
21'	4'
22'-28'	5'
29'-35'	6'
36'-42'	7'
43'-49'	8'
50'-56'	9'
57'-60'	10'
>60'	

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

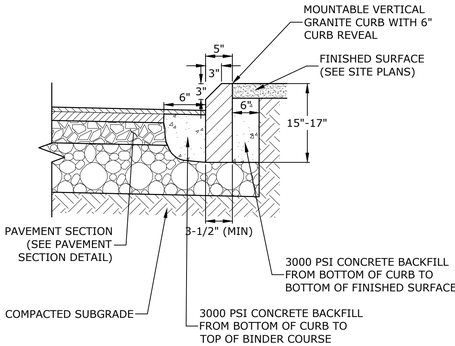


CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

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

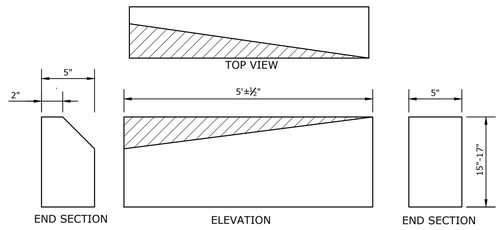
NO SCALE



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

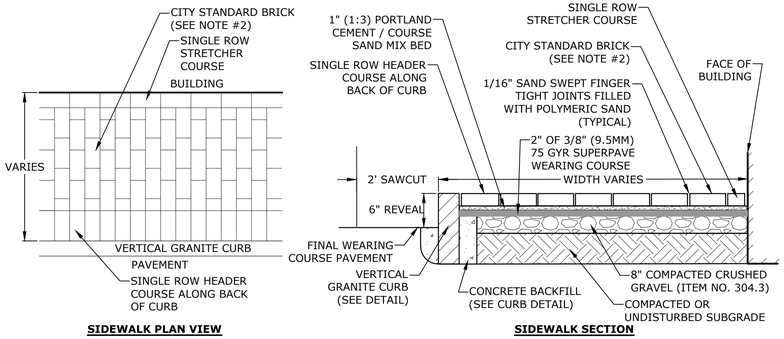


MOUNTABLE VERTICAL GRANITE CURB TO VERTICAL GRANITE CURB

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

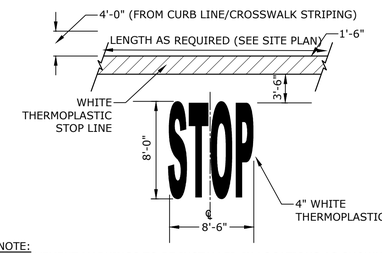


SIDEWALK PLAN VIEW **SIDEWALK SECTION**

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. 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

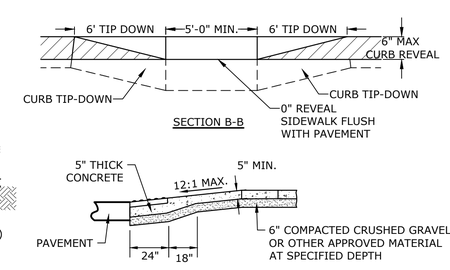


NOTE:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

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 WHEELCHAIR ACCESSIBLE RAMP

NO SCALE

Tighe&Bond

03/22/2021

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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: 3/19/2021
Plotted On: Mar 19, 2021 5:05pm 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

R1-1
30"X30"
WHITE ON RED

W11-2
30"X30"
BLACK ON YELLOW

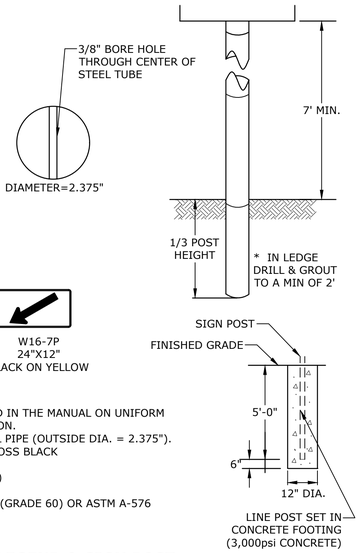
12" X 18"
RED ON WHITE

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

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

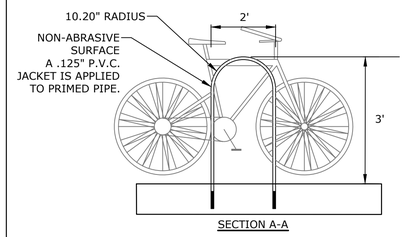
W16-9P
24"X12"
BLACK ON YELLOW

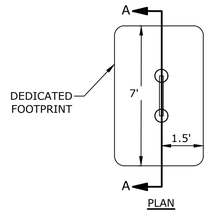
W16-7P
24"X12"
BLACK ON YELLOW



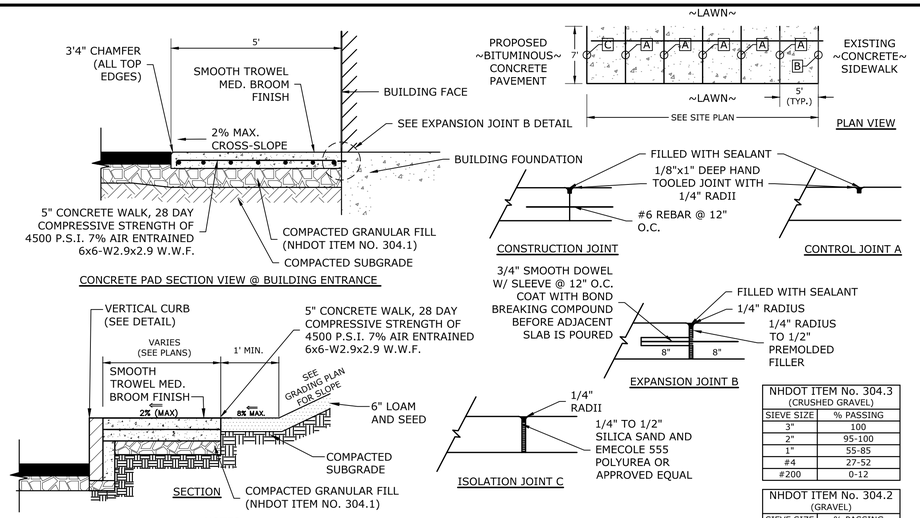
NOTES:
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
POST: SCHEDULE 40 GALVANIZED STEEL PIPE (OUTSIDE DIA. = 2.375").
FINISH: POST TO BE POWDER COATED GLOSS BLACK
LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER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

SIGN LEGEND & SIGN POST
NO SCALE





BIKE RACK
NO SCALE

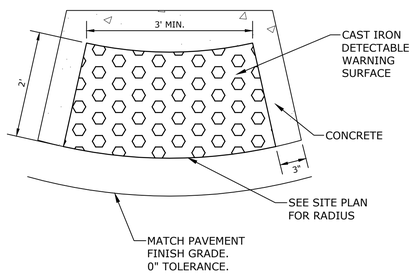


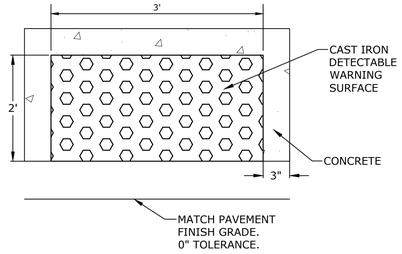
NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH AND LOCATIONS.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDE SLOPE GRADES.

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

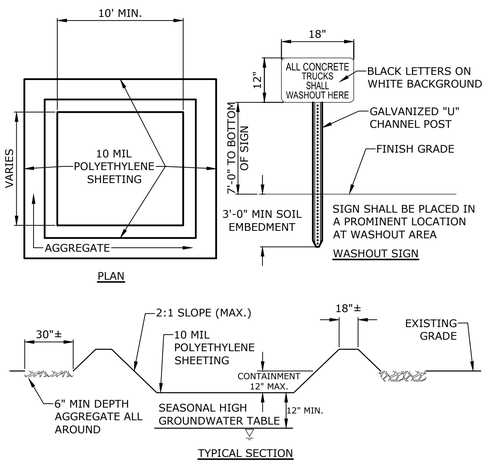
CONCRETE SIDEWALK
NO SCALE





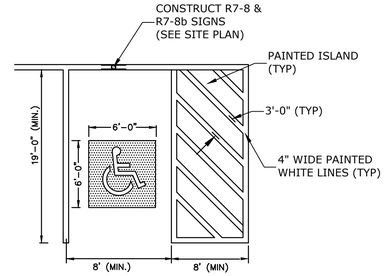
NOTES:
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

CAST IRON DETECTABLE WARNING SURFACE
NO SCALE



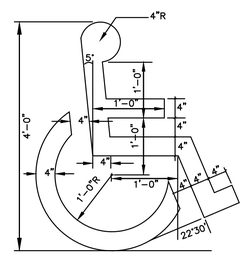
NOTES:
1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% 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



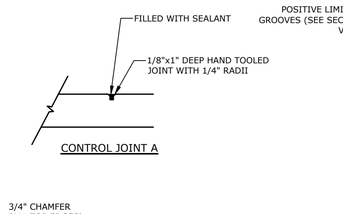
NOTES:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN W/DISABILITIES ACT.

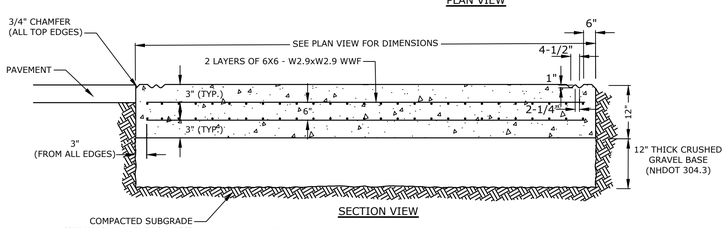
ACCESSIBLE PARKING STALL
NO SCALE



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.

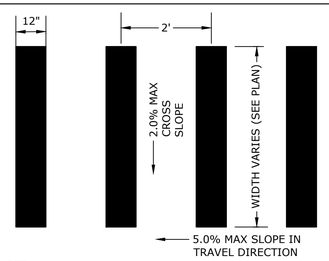
ACCESSIBLE SYMBOL
NO SCALE





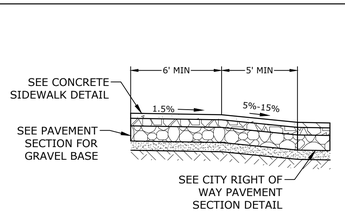
NOTES:
1. CONCRETE TO BE 4500 PSI, 7% AIR ENTRAINED
2. STANDARD BROOM FINISH.

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

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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: 3/22/2021
Plotted On: Mar 22, 2021-12:32pm By: CKrzcuik
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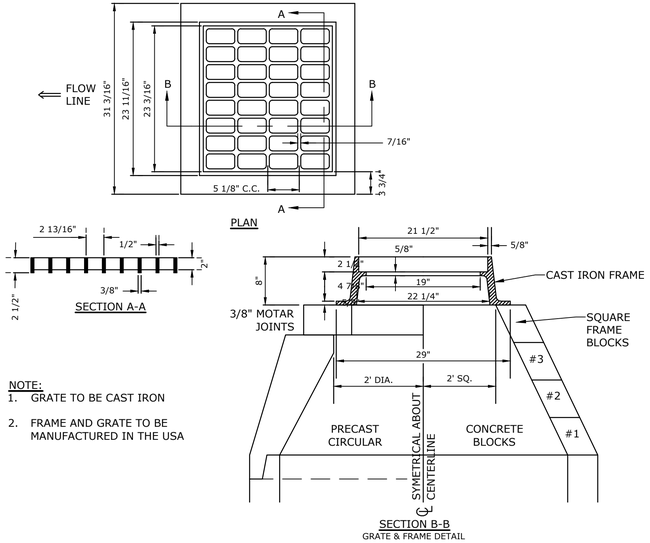
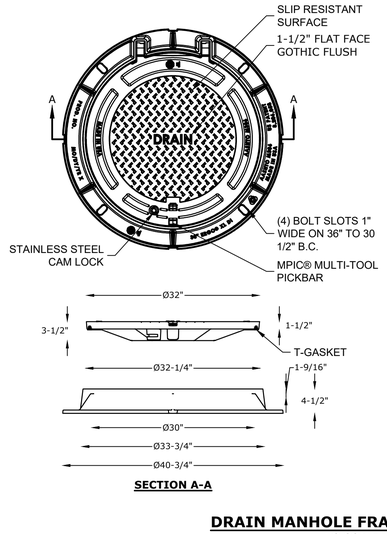


NOTE:
1. GRATE TO BE CAST IRON
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

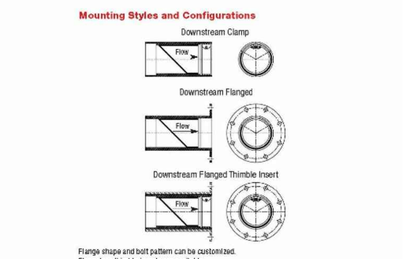
CATCH BASIN FRAME & GRATE
NO SCALE



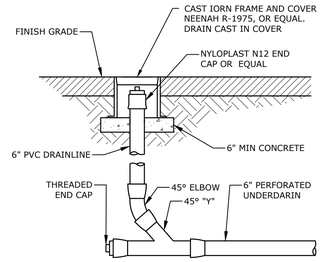
NOTES:
1. MANHOLE FRAME AND COVER SHALL BE 32" HINGED ERGO XL BY EJ CO.
2. ALL DIMENSIONS ARE NOMINAL.
3. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN 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

NOMINAL PIPE SIZE I.D.*		OVERALL LENGTH**		NUMBER OF CLAMPS	CUFF DEPTH		BACK PRESSURE RATING	
Inches	Millimeters	Inches	Millimeters		Inches	Millimeters	Feet	Meters
12	300	23	584	1	2	51	40	12



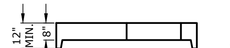
TYPICAL BACK FLOW PREVENTER
NO SCALE



DRAIN CLEAN-OUT
NO SCALE

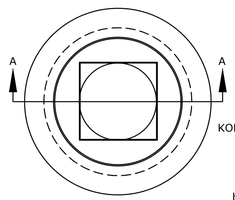
Tighe&Bond

03/22/2021

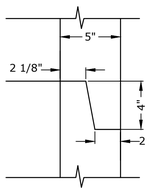


SECTION B-B

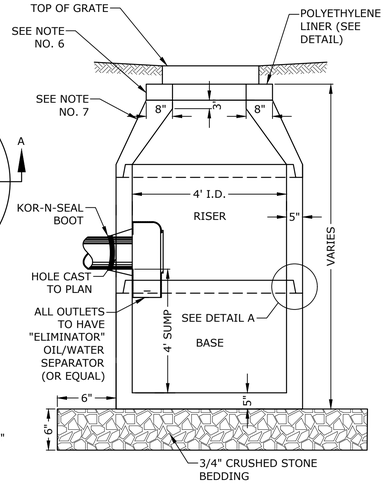
FLAT SLAB TOP



PLAN



DETAIL A
(TONGUE AND GROOVE JOINT)

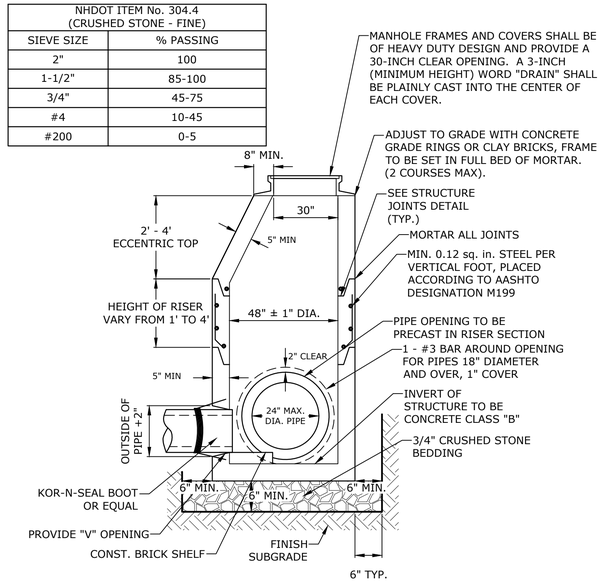


SECTION A-A

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.

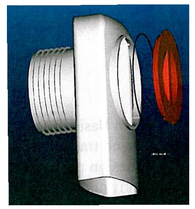
4' DIAMETER CATCHBASIN
NO SCALE

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



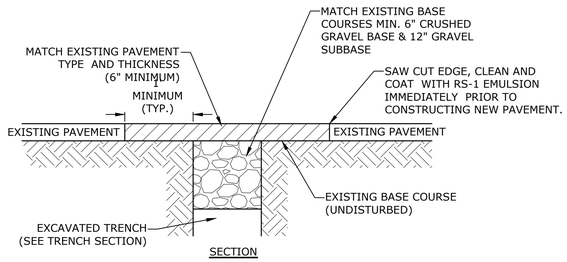
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL 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

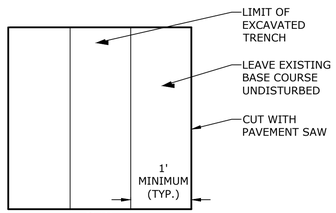


NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

"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

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

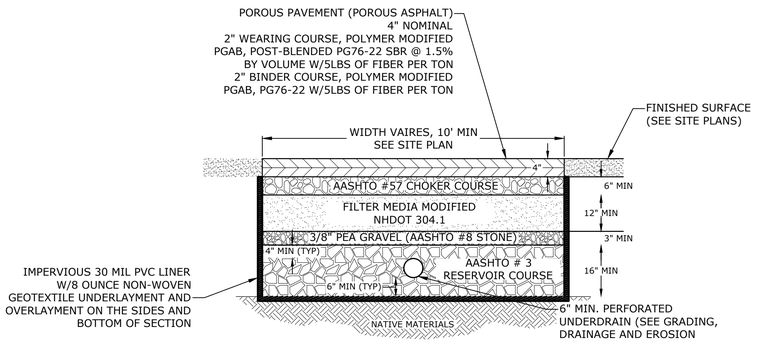
PROJECT NO:	P-0595-007
DATE:	December 22, 2020
FILE:	P-0595-007-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-504

Last Saved: 3/18/2021
Plotted On: Mar 19, 2021 - 4:55pm 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



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*

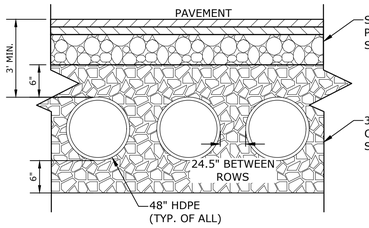
*PREFERABLY <4%

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

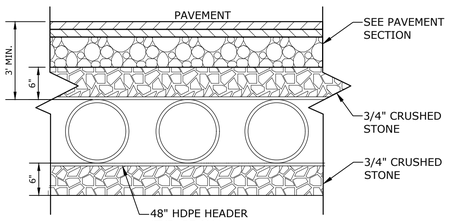
AASHTO #3 STONE (RESERVOIR COURSE)	
	% PASSING
2-½"	100
2"	90-100
1-½"	35-70
1"	0-15
½"	0-5

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.

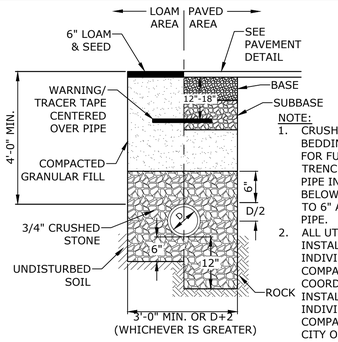
POROUS ASPHALT SECTION
NO SCALE



UNDERGROUND DETENTION AREA



HEADER ROW



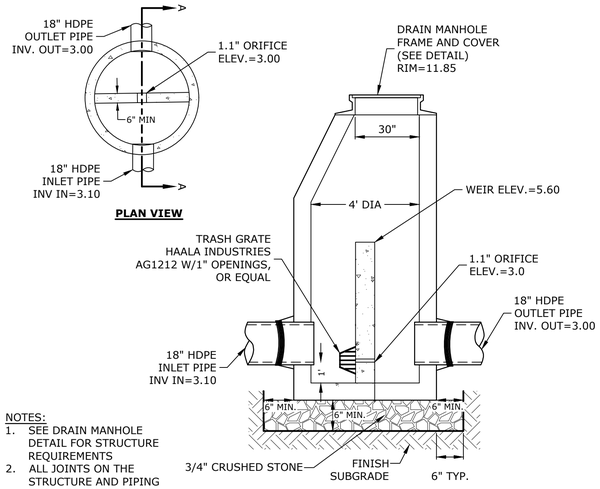
NOTE:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

STORM DRAIN TRENCH
NO SCALE

NOTES:
1. 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.

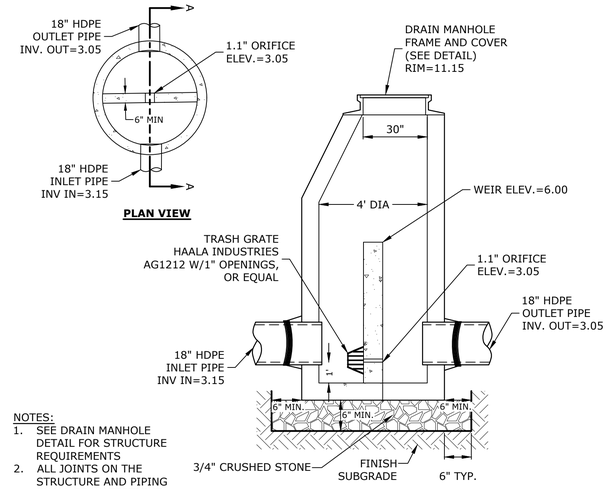
FIELD ELEVATIONS				
	TOP OF STONE ELEV	TOP OF PIPE ELEV	BOTTOM OF PIPE ELEV	BOTTOM OF STONE ELEV
UDB 1	8.25'	7.25'	3.50'	2.75'
UDB 2	8.25'	7.25'	3.50'	2.75'

UNDERGROUND DETENTION SYSYTEM DETAIL
NO SCALE



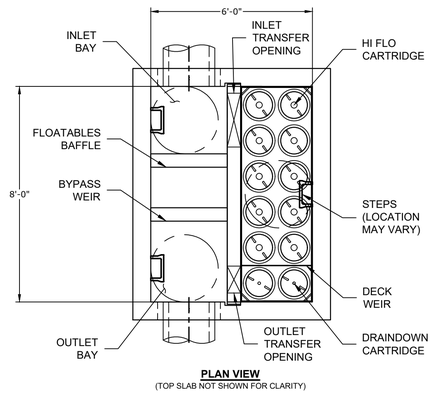
NOTES:
1. SEE DRAIN MANHOLE DETAIL FOR STRUCTURE REQUIREMENTS
2. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

PDMH3
NO SCALE

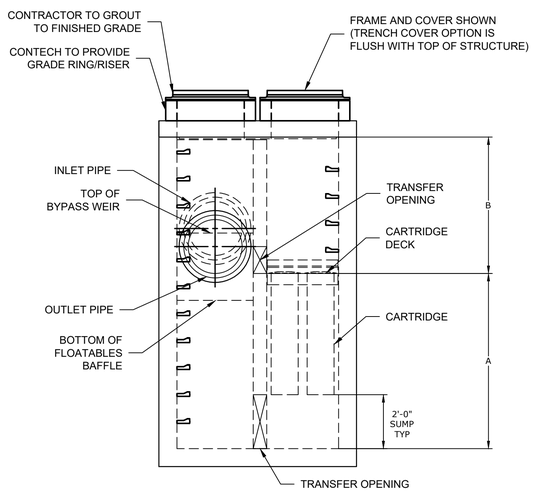


NOTES:
1. SEE DRAIN MANHOLE DETAIL FOR STRUCTURE REQUIREMENTS
2. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

PDMH6
NO SCALE



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

03/22/2021

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
C	3/22/2021	TAC Submission
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PROJECT NO:	P-0595-007
DATE:	December 22, 2020
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DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-505

Last Saved: 3/18/2021
Plotted On: Mar 19, 2021 - 4:55pm By: CKrzcuik
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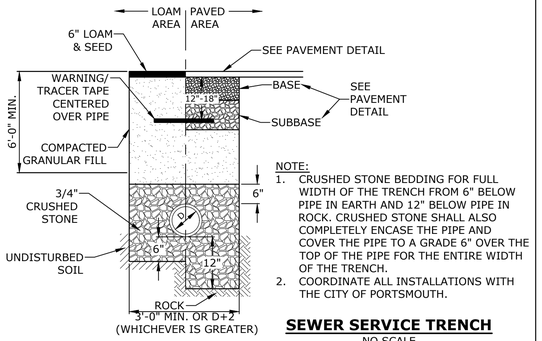
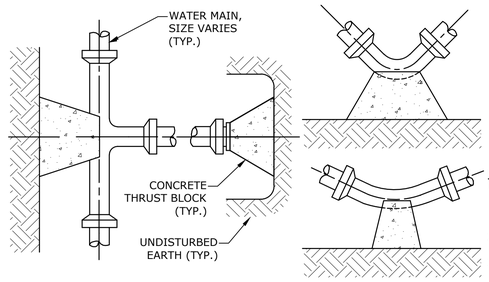


NOTE:
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. CRUSHED STONE SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 6" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
2. COORDINATE ALL INSTALLATIONS WITH THE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

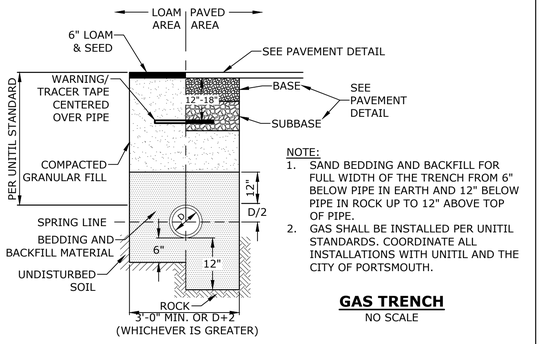
SEWER SERVICE TRENCH
NO SCALE



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

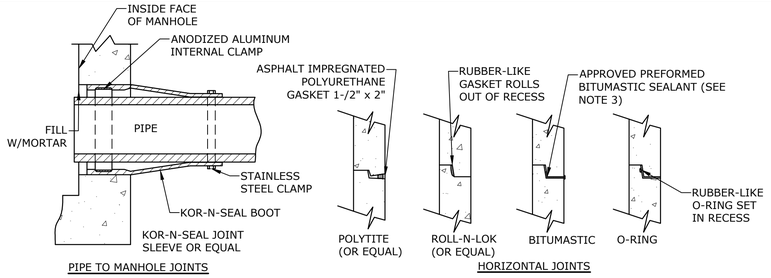
NOTES:
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT 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



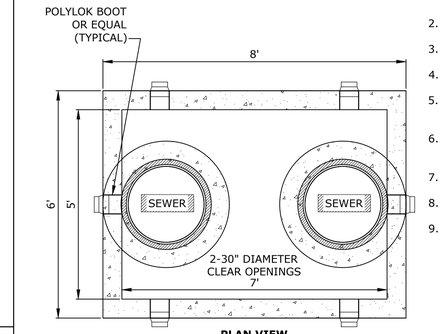
NOTE:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF PORTSMOUTH.

GAS TRENCH
NO SCALE



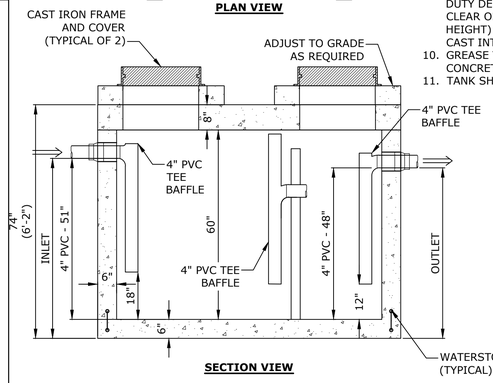
NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC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



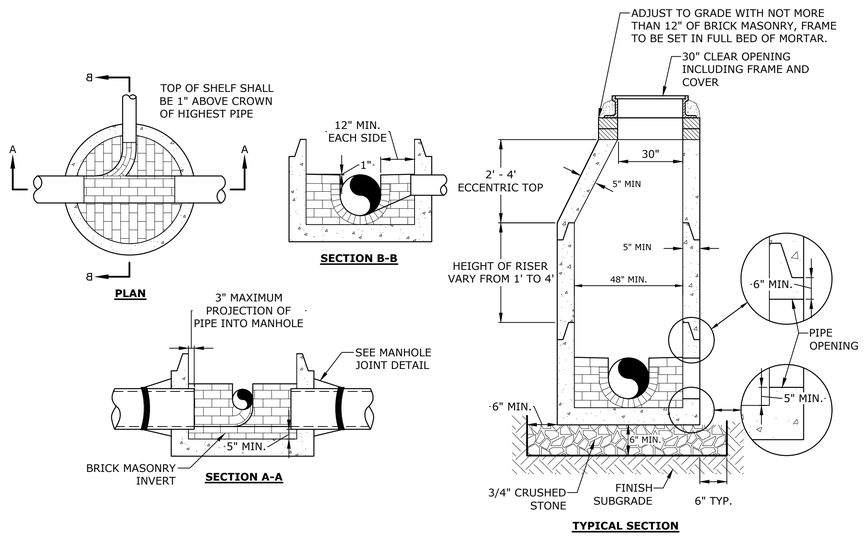
PLAN VIEW

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.



SECTION VIEW

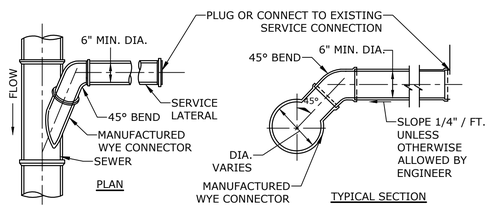
1,000 GALLON GREASE TRAP
NO SCALE



TYPICAL SECTION

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



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

STANDARD SERVICE LATERAL CONNECTION
NO SCALE

Tighe&Bond

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

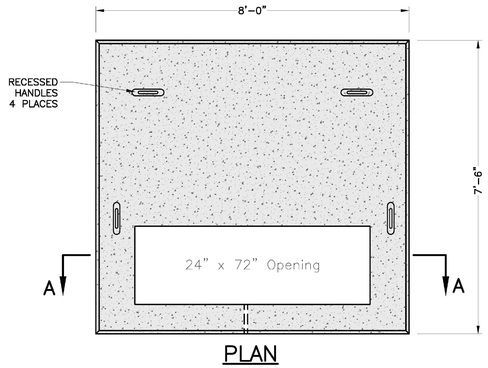
MARK	DATE	DESCRIPTION
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
A	12/1/2020	TAC Work Session

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

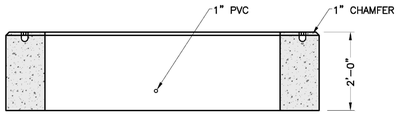
DETAILS SHEET

SCALE: AS SHOWN

C-506



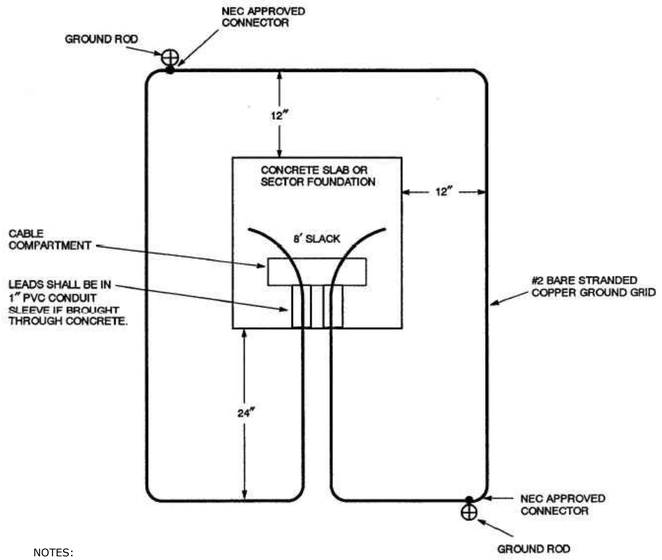
PLAN



SECTION A–A

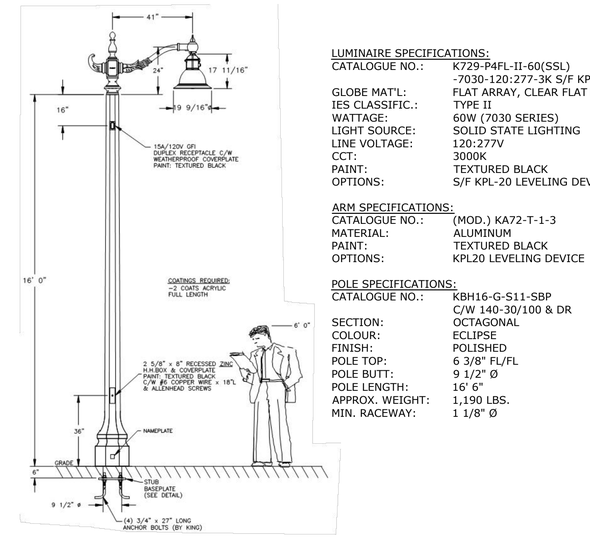
NOTES:
1. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
2. CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
3. STEEL REINFORCEMENT - ASTM A615, GRADE 60
4. PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS

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



NORTH END LIGHT POLE & FIXTURE
NO SCALE

LUMINAIRE SPECIFICATIONS:

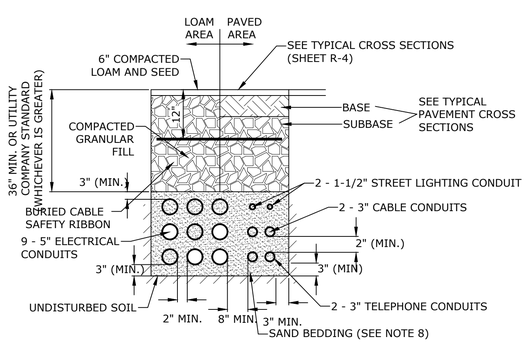
CATALOGUE NO.:	K729-P4FL-II-60(SSL) -7030-120:277-3K S/F KPL20
GLOBE MAT'L:	FLAT ARRAY, CLEAR FLAT LENS
IES CLASSIFIC.:	TYPE II
WATTAGE:	60W (7030 SERIES)
LIGHT SOURCE:	SOLID STATE LIGHTING
LINE VOLTAGE:	120:277V
CCT:	3000K
PAINT:	TEXTURED BLACK
OPTIONS:	S/F KPL-20 LEVELING DEVICE

ARM SPECIFICATIONS:

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

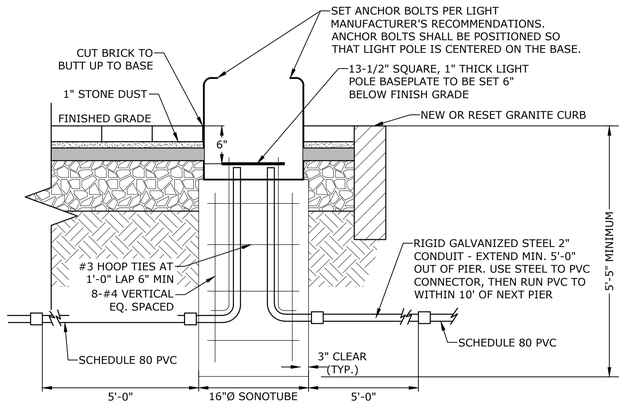
POLE SPECIFICATIONS:

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



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 90º 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.

NORTH END LIGHT FIXTURE BASE
NO SCALE

Tighe&Bond

03/22/2021

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
C	3/22/2021	TAC Submission
B	3/10/2021	Design Review Resubmission
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PROJECT NO:	P-0595-007
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DRAWN BY:	CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS SHEET

SCALE: AS SHOWN

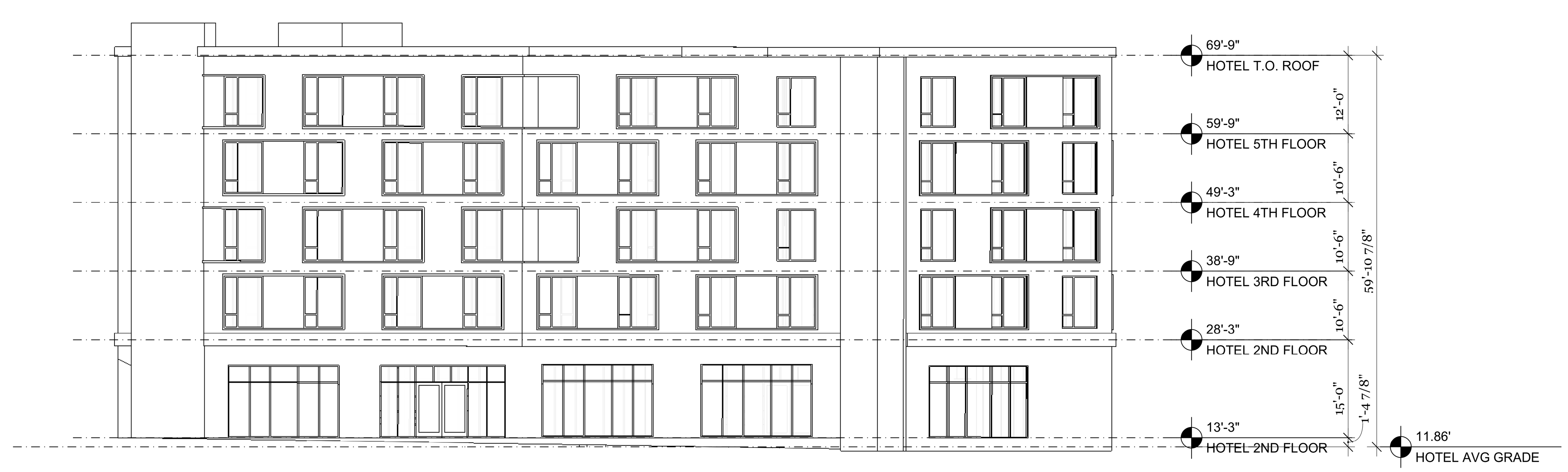
C-507

OVERALL ELEVATIONS

1/16"=1'-0"

MIXED USE ELEVATION

3/32"=1'-0"



HOTEL ELEVATION

3/32"=1'-0"

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

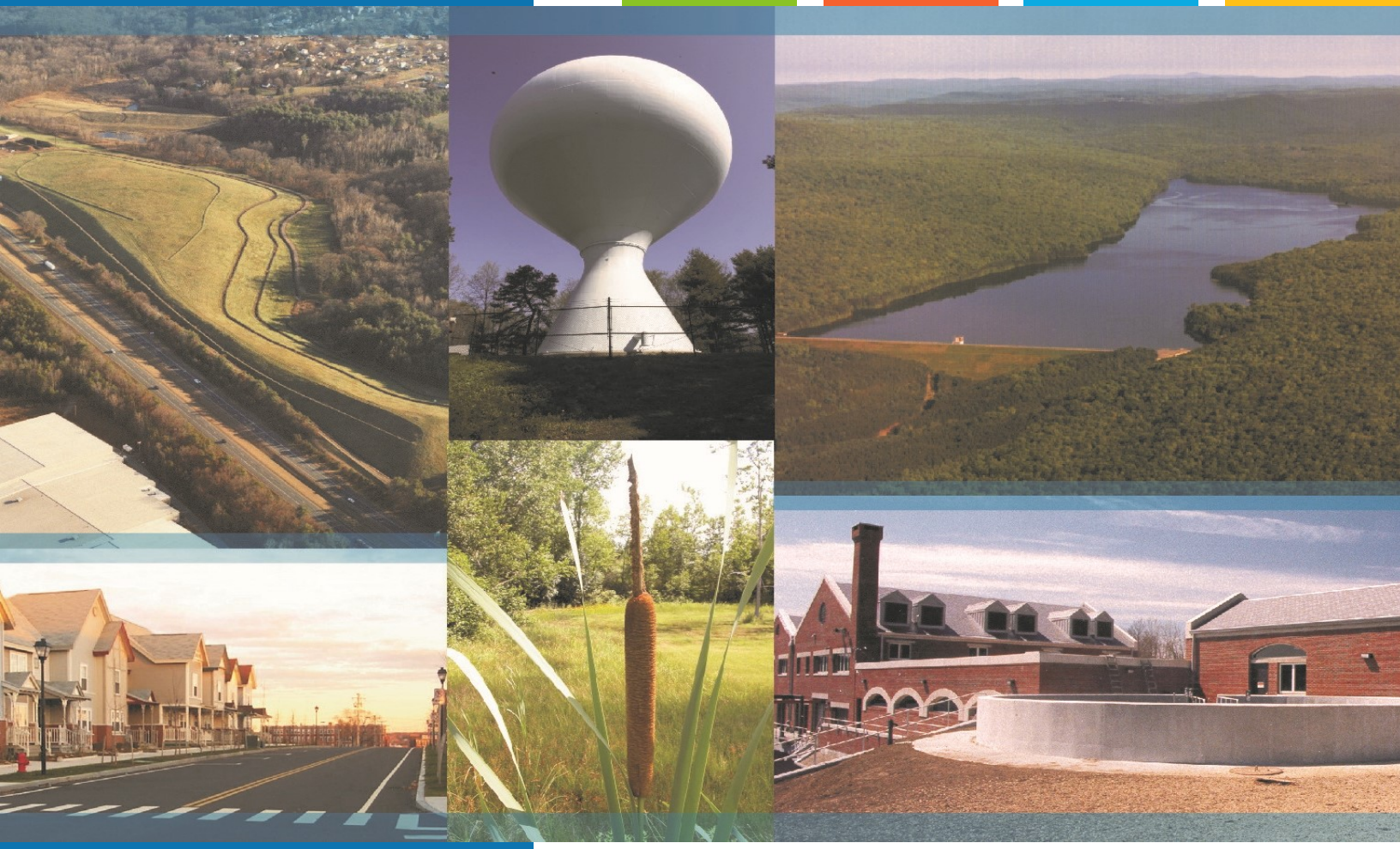
Architect:	JAL
Drawn By:	Author
Project No.:	XXX
Copyright:	2018 Pro Con, Inc.

Drawing Sheet

EXTERIOR ELEVATIONS

Drawing Sheet

A3.00



Proposed Mixed Use Development
Raynes Avenue
Portsmouth, NH

Drainage Analysis

North Mill Pond Holdings, LLC

March 22, 2021

03/22/2021

Tighe&Bond

Table of Contents

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 60 upper floor residential units. The second is a hotel building with 128 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.

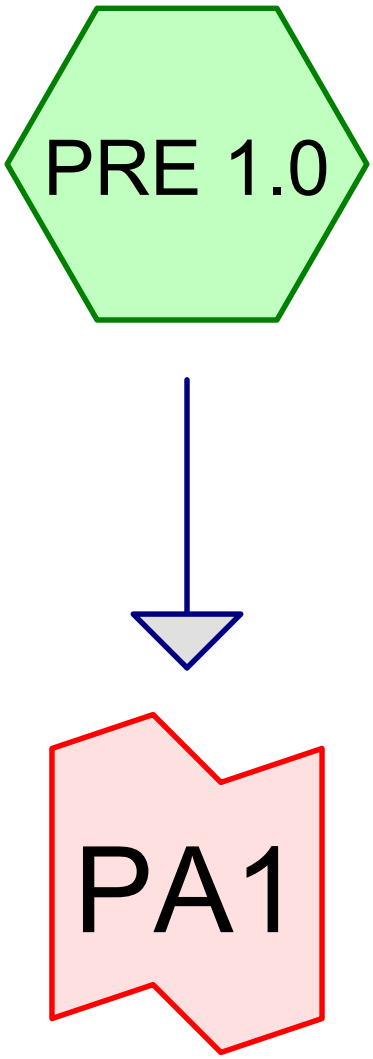
The point of analysis and its contributing watershed areas are described below:

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

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

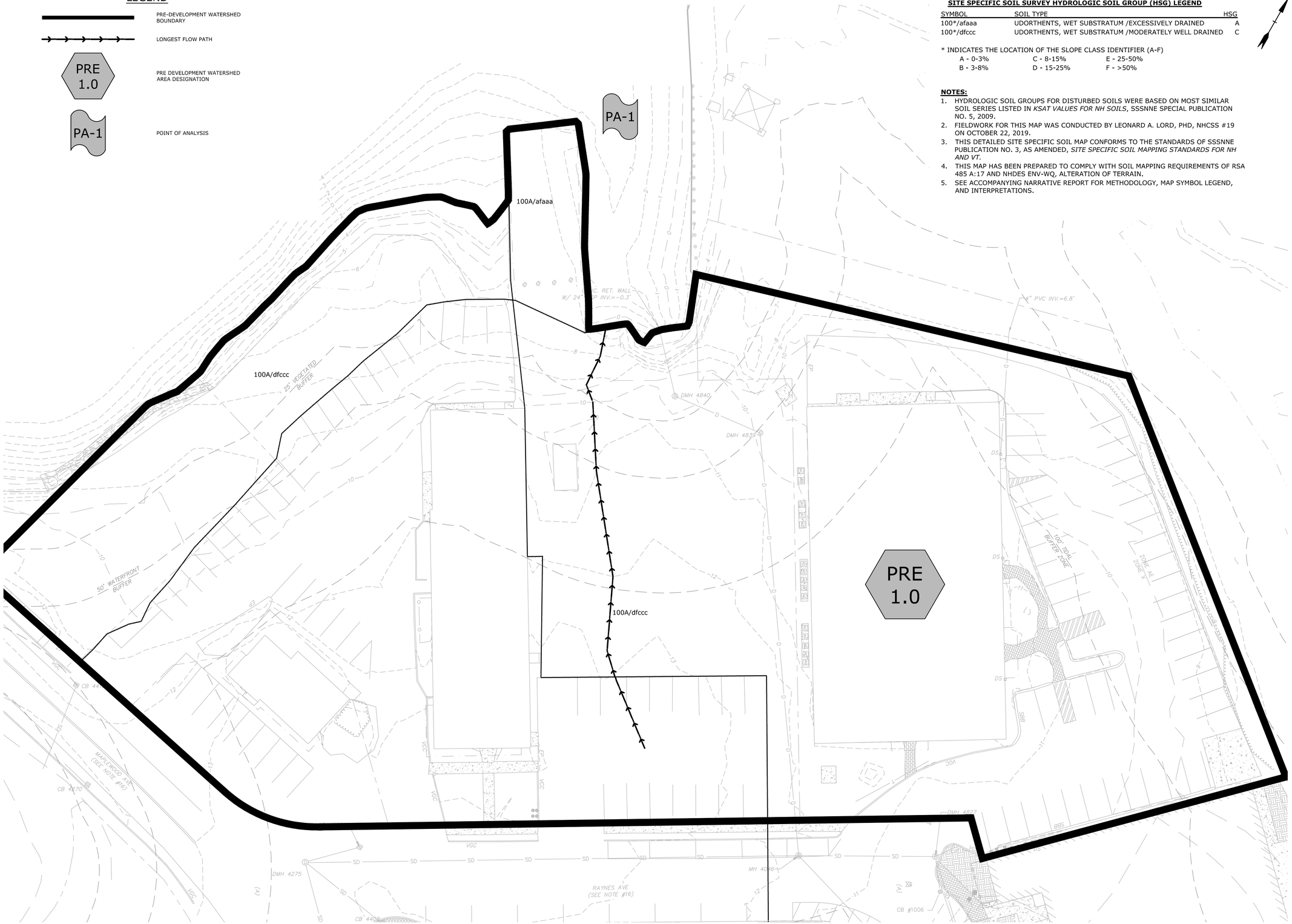
SYMBOL	SOIL TYPE	HSG
100*/afaaa	UDORTHENTS, WET SUBSTRATUM /EXCESSIVELY DRAINED	A
100*/dfccc	UDORTHENTS, WET SUBSTRATUM /MODERATELY WELL DRAINED	C

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

A - 0-3% 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.



0 20' 40'

GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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: 3/10/2021
Plotted On: Mar 22, 2021 - 9:47am By: CKrzculik
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.

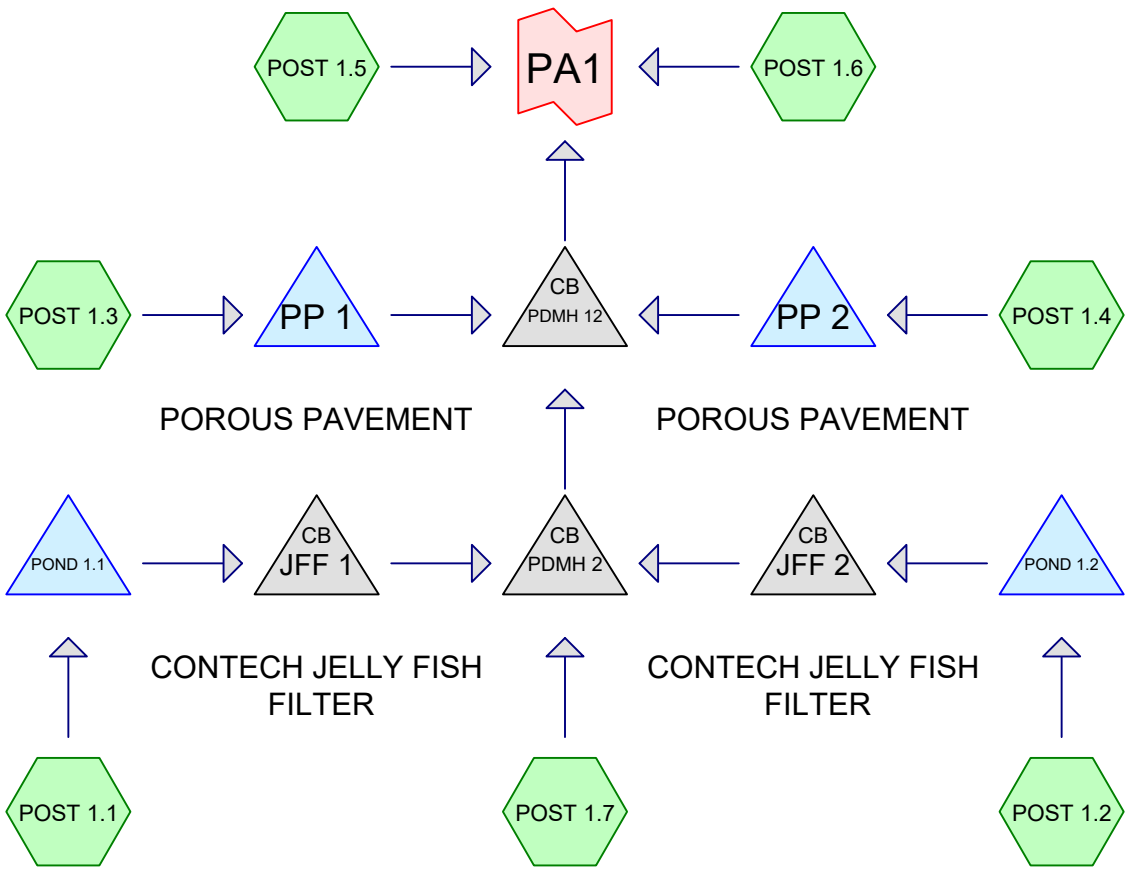
Post-development Watershed 1.5 (POST 1.5) is comprised mostly of grassy areas and a proposed boat/kayak launch and reconstructed timber pier. Runoff from this watershed simply sheets toward and discharges into North Mill Pond, as in the existing condition. There are no proposed impervious surfaces that 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 3/22/2021

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)
0.649	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)
1.022	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)
0.735	98	Roofs, HSG C (POST 1.1, POST 1.2)
2.537	**92**	**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	
2.474	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	
2.537		**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

SubcatchmentPOST 1.1: Runoff Area=29,978 sf 99.19% Impervious Runoff Depth=3.45"
Flow Length=114' Tc=5.0 min CN=98 Runoff=2.52 cfs 0.198 af

SubcatchmentPOST 1.2: Runoff Area=38,901 sf 97.58% Impervious Runoff Depth=3.33"
Flow Length=85' Tc=5.0 min CN=97 Runoff=3.23 cfs 0.248 af

SubcatchmentPOST 1.3: Runoff Area=13,558 sf 33.08% Impervious Runoff Depth=1.93"
Flow Length=59' Slope=0.0430 '/' Tc=5.0 min CN=82 Runoff=0.72 cfs 0.050 af

SubcatchmentPOST 1.4: Runoff Area=3,521 sf 22.47% Impervious Runoff Depth=1.71"
Flow Length=33' Slope=0.0270 '/' Tc=5.0 min CN=79 Runoff=0.16 cfs 0.011 af

SubcatchmentPOST 1.5: Runoff Area=16,946 sf 35.03% Impervious Runoff Depth=1.93"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=82 Runoff=0.90 cfs 0.063 af

SubcatchmentPOST 1.6: Runoff Area=3,725 sf 0.00% Impervious Runoff Depth=1.37"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.14 cfs 0.010 af

SubcatchmentPOST 1.7: Runoff Area=3,900 sf 77.85% Impervious Runoff Depth=2.91"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.30 cfs 0.022 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=3.23' Inflow=2.18 cfs 0.198 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=2.18 cfs 0.198 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=3.32' Inflow=2.91 cfs 0.248 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=2.91 cfs 0.248 af

Pond PDMH 12: Peak Elev=2.60' Inflow=5.34 cfs 0.508 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=5.34 cfs 0.508 af

Pond PDMH 2: Peak Elev=3.05' Inflow=5.34 cfs 0.467 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=5.34 cfs 0.467 af

Pond POND 1.1: Peak Elev=5.90' Storage=2,862 cf Inflow=2.52 cfs 0.198 af
Outflow=2.18 cfs 0.198 af

Pond POND 1.2: Peak Elev=6.46' Storage=3,633 cf Inflow=3.23 cfs 0.248 af
Outflow=2.91 cfs 0.248 af

Pond PP 1: POROUS PAVEMENT Peak Elev=5.08' Storage=1,087 cf Inflow=0.72 cfs 0.050 af
Outflow=0.12 cfs 0.032 af

Pond PP 2: POROUS PAVEMENT Peak Elev=4.62' Storage=195 cf Inflow=0.16 cfs 0.011 af
Outflow=0.06 cfs 0.008 af

Link PA1: Inflow=6.28 cfs 0.580 af
Primary=6.28 cfs 0.580 af

Total Runoff Area = 2.537 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.84"
25.86% Pervious = 0.656 ac 74.14% Impervious = 1.881 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

SubcatchmentPOST 1.1: Runoff Area=29,978 sf 99.19% Impervious Runoff Depth=5.35"
Flow Length=114' Tc=5.0 min CN=98 Runoff=3.85 cfs 0.307 af

SubcatchmentPOST 1.2: Runoff Area=38,901 sf 97.58% Impervious Runoff Depth=5.24"
Flow Length=85' Tc=5.0 min CN=97 Runoff=4.96 cfs 0.390 af

SubcatchmentPOST 1.3: Runoff Area=13,558 sf 33.08% Impervious Runoff Depth=3.61"
Flow Length=59' Slope=0.0430 '/' Tc=5.0 min CN=82 Runoff=1.34 cfs 0.094 af

SubcatchmentPOST 1.4: Runoff Area=3,521 sf 22.47% Impervious Runoff Depth=3.32"
Flow Length=33' Slope=0.0270 '/' Tc=5.0 min CN=79 Runoff=0.32 cfs 0.022 af

SubcatchmentPOST 1.5: Runoff Area=16,946 sf 35.03% Impervious Runoff Depth=3.61"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=82 Runoff=1.68 cfs 0.117 af

SubcatchmentPOST 1.6: Runoff Area=3,725 sf 0.00% Impervious Runoff Depth=2.84"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.29 cfs 0.020 af

SubcatchmentPOST 1.7: Runoff Area=3,900 sf 77.85% Impervious Runoff Depth=4.78"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.48 cfs 0.036 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=3.66' Inflow=3.57 cfs 0.307 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=3.57 cfs 0.307 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=3.77' Inflow=4.72 cfs 0.390 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=4.72 cfs 0.390 af

Pond PDMH 12: Peak Elev=2.99' Inflow=9.30 cfs 0.827 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=9.30 cfs 0.827 af

Pond PDMH 2: Peak Elev=3.47' Inflow=8.76 cfs 0.732 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=8.76 cfs 0.732 af

Pond POND 1.1: Peak Elev=6.02' Storage=3,031 cf Inflow=3.85 cfs 0.307 af
Outflow=3.57 cfs 0.307 af

Pond POND 1.2: Peak Elev=6.60' Storage=3,810 cf Inflow=4.96 cfs 0.390 af
Outflow=4.72 cfs 0.390 af

Pond PP 1: POROUS PAVEMENT Peak Elev=5.43' Storage=1,618 cf Inflow=1.34 cfs 0.094 af
Outflow=0.52 cfs 0.076 af

Pond PP 2: POROUS PAVEMENT Peak Elev=4.89' Storage=275 cf Inflow=0.32 cfs 0.022 af
Outflow=0.17 cfs 0.019 af

Link PA1: Inflow=11.20 cfs 0.964 af
Primary=11.20 cfs 0.964 af

Total Runoff Area = 2.537 ac Runoff Volume = 0.986 af Average Runoff Depth = 4.66"
25.86% Pervious = 0.656 ac 74.14% Impervious = 1.881 ac

Summary for Subcatchment POST 1.1:

Runoff = 3.85 cfs @ 12.07 hrs, Volume= 0.307 af, Depth= 5.35"

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
17,365	98	Roofs, HSG C
242	74	>75% Grass cover, Good, HSG C
12,371	98	Paved parking, HSG C
29,978	98	Weighted Average
242		0.81% Pervious Area
29,736		99.19% 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"
0.3	64	0.0360	3.85		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	114	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.2:

Runoff = 4.96 cfs @ 12.07 hrs, Volume= 0.390 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
942	74	>75% Grass cover, Good, HSG C
23,324	98	Paved parking, HSG C
38,901	97	Weighted Average
942		2.42% Pervious Area
37,959		97.58% 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 = 1.34 cfs @ 12.08 hrs, Volume= 0.094 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
9,067	74	>75% Grass cover, Good, HSG C
4,285	98	Paved parking, HSG C
13,558	82	Weighted Average
9,073		66.92% Pervious Area
4,485		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	59	0.0430	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
4.4	59	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.4:

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 3.32"

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
2,730	74	>75% Grass cover, Good, HSG C
791	98	Paved parking, HSG C
3,521	79	Weighted Average
2,730		77.53% Pervious Area
791		22.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	33	0.0270	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
3.3	33	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 1.5:

Runoff = 1.68 cfs @ 12.08 hrs, Volume= 0.117 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
	2,235	98	Paved parking, HSG A
	311	39	>75% Grass cover, Good, HSG A
*	2,980	98	Rock embankment, HSG C
	10,699	74	>75% Grass cover, Good, HSG C
	721	98	Paved parking, HSG C
	16,946	82	Weighted Average
	11,010		64.97% Pervious Area
	5,936		35.03% 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 = 0.29 cfs @ 12.08 hrs, Volume= 0.020 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
3,725	74	>75% Grass cover, Good, HSG C
0	98	Paved parking, HSG C
3,725	74	Weighted Average
3,725		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 = 0.48 cfs @ 12.07 hrs, Volume= 0.036 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
3,036	98	Paved parking, HSG C
3,900	93	Weighted Average
864		22.15% Pervious Area
3,036		77.85% 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 = 0.688 ac, 99.19% Impervious, Inflow Depth = 5.35" for 10 Year Storm event
Inflow = 3.57 cfs @ 12.10 hrs, Volume= 0.307 af
Outflow = 3.57 cfs @ 12.10 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min
Primary = 3.57 cfs @ 12.10 hrs, Volume= 0.307 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 3.66' @ 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=2.79 cfs @ 12.10 hrs HW=3.60' TW=3.46' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.79 cfs @ 2.40 fps)

Summary for Pond JFF 2: CONTECH JELLY FISH FILTER

Inflow Area = 0.893 ac, 97.58% Impervious, Inflow Depth = 5.24" for 10 Year Storm event
Inflow = 4.72 cfs @ 12.10 hrs, Volume= 0.390 af
Outflow = 4.72 cfs @ 12.10 hrs, Volume= 0.390 af, Atten= 0%, Lag= 0.0 min
Primary = 4.72 cfs @ 12.10 hrs, Volume= 0.390 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 3.77' @ 12.12 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=3.86 cfs @ 12.10 hrs HW=3.70' TW=3.45' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.86 cfs @ 3.17 fps)

Summary for Pond PDMH 12:

Inflow Area = 2.063 ac, 84.59% Impervious, Inflow Depth = 4.81" for 10 Year Storm event
Inflow = 9.30 cfs @ 12.10 hrs, Volume= 0.827 af
Outflow = 9.30 cfs @ 12.10 hrs, Volume= 0.827 af, Atten= 0%, Lag= 0.0 min
Primary = 9.30 cfs @ 12.10 hrs, Volume= 0.827 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 2.99' @ 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=9.08 cfs @ 12.10 hrs HW=2.96' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 9.08 cfs @ 3.98 fps)

Summary for Pond PDMH 2:

Inflow Area = 1.671 ac, 97.19% Impervious, Inflow Depth = 5.26" for 10 Year Storm event
Inflow = 8.76 cfs @ 12.10 hrs, Volume= 0.732 af
Outflow = 8.76 cfs @ 12.10 hrs, Volume= 0.732 af, Atten= 0%, Lag= 0.0 min
Primary = 8.76 cfs @ 12.10 hrs, Volume= 0.732 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 3.47' @ 12.10 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=8.43 cfs @ 12.10 hrs HW=3.45' TW=2.96' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 8.43 cfs @ 4.12 fps)

Summary for Pond POND 1.1:

Inflow Area = 0.688 ac, 99.19% Impervious, Inflow Depth = 5.35" for 10 Year Storm event
Inflow = 3.85 cfs @ 12.07 hrs, Volume= 0.307 af
Outflow = 3.57 cfs @ 12.10 hrs, Volume= 0.307 af, Atten= 7%, Lag= 1.8 min
Primary = 3.57 cfs @ 12.10 hrs, Volume= 0.307 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 6.02' @ 12.10 hrs Surf.Area= 2,496 sf Storage= 3,031 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= 238.1 min (983.4 - 745.3)

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=3.50 cfs @ 12.10 hrs HW=6.01' TW=3.60' (Dynamic Tailwater)
↑└─**1=Culvert** (Passes 3.50 cfs of 12.79 cfs potential flow)
  ↑┌─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 7.48 fps)
  └─**3=Custom Weir/Orifice** (Weir Controls 3.45 cfs @ 2.10 fps)

Summary for Pond POND 1.2:

Inflow Area = 0.893 ac, 97.58% Impervious, Inflow Depth = 5.24" for 10 Year Storm event
Inflow = 4.96 cfs @ 12.07 hrs, Volume= 0.390 af
Outflow = 4.72 cfs @ 12.10 hrs, Volume= 0.390 af, Atten= 5%, Lag= 1.4 min
Primary = 4.72 cfs @ 12.10 hrs, Volume= 0.390 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 6.60' @ 12.10 hrs Surf.Area= 2,496 sf Storage= 3,810 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= 267.0 min (1,019.6 - 752.6)

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	3.05'	**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	6.10'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=4.61 cfs @ 12.10 hrs HW=6.59' TW=3.70' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.61 cfs of 14.22 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.19 fps)
  └─**3=Custom Weir/Orifice** (Weir Controls 4.55 cfs @ 2.30 fps)

Summary for Pond PP 1: POROUS PAVEMENT

Inflow Area = 0.311 ac, 33.08% Impervious, Inflow Depth = 3.61" for 10 Year Storm event
Inflow = 1.34 cfs @ 12.08 hrs, Volume= 0.094 af
Outflow = 0.52 cfs @ 12.31 hrs, Volume= 0.076 af, Atten= 61%, Lag= 14.1 min
Primary = 0.52 cfs @ 12.31 hrs, Volume= 0.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Peak Elev= 5.43' @ 12.31 hrs Surf.Area= 3,857 sf Storage= 1,618 cf
Flood Elev= 8.80' Surf.Area= 3,857 sf Storage= 3,386 cf

Plug-Flow detention time= 164.6 min calculated for 0.076 af (81% of inflow)
Center-of-Mass det. time= 90.1 min (900.9 - 810.8)

Volume	Invert	Avail.Storage	Storage Description
#1	4.38'	3,386 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.38	3,857	0.0	0	0
5.95	3,857	40.0	2,422	2,422
6.95	3,857	10.0	386	2,808
7.45	3,857	30.0	579	3,386
7.80	3,857	0.0	0	3,386

Device	Routing	Invert	Outlet Devices
#1	Primary	4.88'	**6.0" Vert. Underdrain** C= 0.600
#2	Device 1	4.38'	**10.000 in/hr Filter Media Infiltration over Surface area**

Primary OutFlow Max=0.52 cfs @ 12.31 hrs HW=5.43' TW=2.49' (Dynamic Tailwater)
└─**1=Underdrain** (Orifice Controls 0.52 cfs @ 2.63 fps)
  └─**2=Filter Media Infiltration** (Passes 0.52 cfs of 0.89 cfs potential flow)

Summary for Pond PP 2: POROUS PAVEMENT

Inflow Area = 0.081 ac, 22.47% Impervious, Inflow Depth = 3.32" for 10 Year Storm event
Inflow = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.17 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 46%, 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= 4.89' @ 12.20 hrs Surf.Area= 755 sf Storage= 275 cf
Flood Elev= 8.40' Surf.Area= 755 sf Storage= 640 cf

Plug-Flow detention time= 115.6 min calculated for 0.019 af (84% of inflow)
Center-of-Mass det. time= 49.3 min (868.0 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	3.98'	640 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
3.98	755	0.0	0	0
5.45	755	40.0	444	444
6.55	755	10.0	83	527
7.05	755	30.0	113	640
7.40	755	0.0	0	640

Device	Routing	Invert	Outlet Devices
#1	Primary	4.48'	**6.0" Vert. Underdrain** C= 0.600
#2	Device 1	3.98'	**10.000 in/hr Filter Media Infiltration over Surface area**

Primary OutFlow Max=0.17 cfs @ 12.08 hrs HW=4.79' TW=2.97' (Dynamic Tailwater)
↑**1=Underdrain** (Passes 0.17 cfs of 0.24 cfs potential flow)
↑**2=Filter Media Infiltration** (Exfiltration Controls 0.17 cfs)

Summary for Link PA1:

Inflow Area = 2.537 ac, 74.14% Impervious, Inflow Depth = 4.56" for 10 Year Storm event
Inflow = 11.20 cfs @ 12.09 hrs, Volume= 0.964 af
Primary = 11.20 cfs @ 12.09 hrs, Volume= 0.964 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

SubcatchmentPOST 1.1: Runoff Area=29,978 sf 99.19% Impervious Runoff Depth=6.84"
Flow Length=114' Tc=5.0 min CN=98 Runoff=4.88 cfs 0.392 af

SubcatchmentPOST 1.2: Runoff Area=38,901 sf 97.58% Impervious Runoff Depth=6.72"
Flow Length=85' Tc=5.0 min CN=97 Runoff=6.31 cfs 0.500 af

SubcatchmentPOST 1.3: Runoff Area=13,558 sf 33.08% Impervious Runoff Depth=4.99"
Flow Length=59' Slope=0.0430 '/' Tc=5.0 min CN=82 Runoff=1.83 cfs 0.129 af

SubcatchmentPOST 1.4: Runoff Area=3,521 sf 22.47% Impervious Runoff Depth=4.66"
Flow Length=33' Slope=0.0270 '/' Tc=5.0 min CN=79 Runoff=0.45 cfs 0.031 af

SubcatchmentPOST 1.5: Runoff Area=16,946 sf 35.03% Impervious Runoff Depth=4.99"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=82 Runoff=2.29 cfs 0.162 af

SubcatchmentPOST 1.6: Runoff Area=3,725 sf 0.00% Impervious Runoff Depth=4.11"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.42 cfs 0.029 af

SubcatchmentPOST 1.7: Runoff Area=3,900 sf 77.85% Impervious Runoff Depth=6.25"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.62 cfs 0.047 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=4.03' Inflow=4.59 cfs 0.392 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=4.59 cfs 0.392 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=4.20' Inflow=6.06 cfs 0.500 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=6.06 cfs 0.500 af

Pond PDMH 12: Peak Elev=3.24' Inflow=12.03 cfs 1.079 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=12.03 cfs 1.079 af

Pond PDMH 2: Peak Elev=3.77' Inflow=11.24 cfs 0.939 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=11.24 cfs 0.939 af

Pond POND 1.1: Peak Elev=6.09' Storage=3,139 cf Inflow=4.88 cfs 0.392 af
Outflow=4.59 cfs 0.392 af

Pond POND 1.2: Peak Elev=6.70' Storage=3,920 cf Inflow=6.31 cfs 0.500 af
Outflow=6.06 cfs 0.500 af

Pond PP 1: POROUS PAVEMENT Peak Elev=5.73' Storage=2,084 cf Inflow=1.83 cfs 0.129 af
Outflow=0.73 cfs 0.112 af

Pond PP 2: POROUS PAVEMENT Peak Elev=5.23' Storage=379 cf Inflow=0.45 cfs 0.031 af
Outflow=0.17 cfs 0.028 af

Link PA1: Inflow=14.68 cfs 1.270 af
Primary=14.68 cfs 1.270 af

Total Runoff Area = 2.537 ac Runoff Volume = 1.291 af Average Runoff Depth = 6.11"
25.86% Pervious = 0.656 ac 74.14% Impervious = 1.881 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

SubcatchmentPOST 1.1: Runoff Area=29,978 sf 99.19% Impervious Runoff Depth=8.24"
Flow Length=114' Tc=5.0 min CN=98 Runoff=5.85 cfs 0.473 af

SubcatchmentPOST 1.2: Runoff Area=38,901 sf 97.58% Impervious Runoff Depth=8.12"
Flow Length=85' Tc=5.0 min CN=97 Runoff=7.57 cfs 0.604 af

SubcatchmentPOST 1.3: Runoff Area=13,558 sf 33.08% Impervious Runoff Depth=6.32"
Flow Length=59' Slope=0.0430 '/' Tc=5.0 min CN=82 Runoff=2.29 cfs 0.164 af

SubcatchmentPOST 1.4: Runoff Area=3,521 sf 22.47% Impervious Runoff Depth=5.96"
Flow Length=33' Slope=0.0270 '/' Tc=5.0 min CN=79 Runoff=0.57 cfs 0.040 af

SubcatchmentPOST 1.5: Runoff Area=16,946 sf 35.03% Impervious Runoff Depth=6.32"
Flow Length=60' Slope=0.0520 '/' Tc=5.0 min CN=82 Runoff=2.87 cfs 0.205 af

SubcatchmentPOST 1.6: Runoff Area=3,725 sf 0.00% Impervious Runoff Depth=5.36"
Flow Length=37' Slope=0.0610 '/' Tc=5.0 min CN=74 Runoff=0.55 cfs 0.038 af

SubcatchmentPOST 1.7: Runoff Area=3,900 sf 77.85% Impervious Runoff Depth=7.64"
Flow Length=92' Slope=0.0350 '/' Tc=5.0 min CN=93 Runoff=0.74 cfs 0.057 af

Pond JFF 1: CONTECH JELLY FISH FILTER Peak Elev=4.52' Inflow=5.54 cfs 0.473 af
18.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=5.54 cfs 0.473 af

Pond JFF 2: CONTECH JELLY FISH FILTER Peak Elev=4.70' Inflow=7.33 cfs 0.604 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=7.33 cfs 0.604 af

Pond PDMH 12: Peak Elev=3.50' Inflow=14.51 cfs 1.316 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0704 '/' Outflow=14.51 cfs 1.316 af

Pond PDMH 2: Peak Elev=4.22' Inflow=13.58 cfs 1.134 af
24.0" Round Culvert n=0.013 L=34.0' S=0.0029 '/' Outflow=13.58 cfs 1.134 af

Pond POND 1.1: Peak Elev=6.16' Storage=3,231 cf Inflow=5.85 cfs 0.473 af
Outflow=5.54 cfs 0.473 af

Pond POND 1.2: Peak Elev=6.78' Storage=4,012 cf Inflow=7.57 cfs 0.604 af
Outflow=7.33 cfs 0.604 af

Pond PP 1: POROUS PAVEMENT Peak Elev=6.14' Storage=2,496 cf Inflow=2.29 cfs 0.164 af
Outflow=0.89 cfs 0.146 af

Pond PP 2: POROUS PAVEMENT Peak Elev=6.18' Storage=499 cf Inflow=0.57 cfs 0.040 af
Outflow=0.17 cfs 0.037 af

Link PA1: Inflow=17.85 cfs 1.559 af
Primary=17.85 cfs 1.559 af

Total Runoff Area = 2.537 ac Runoff Volume = 1.581 af Average Runoff Depth = 7.48"
25.86% Pervious = 0.656 ac 74.14% Impervious = 1.881 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

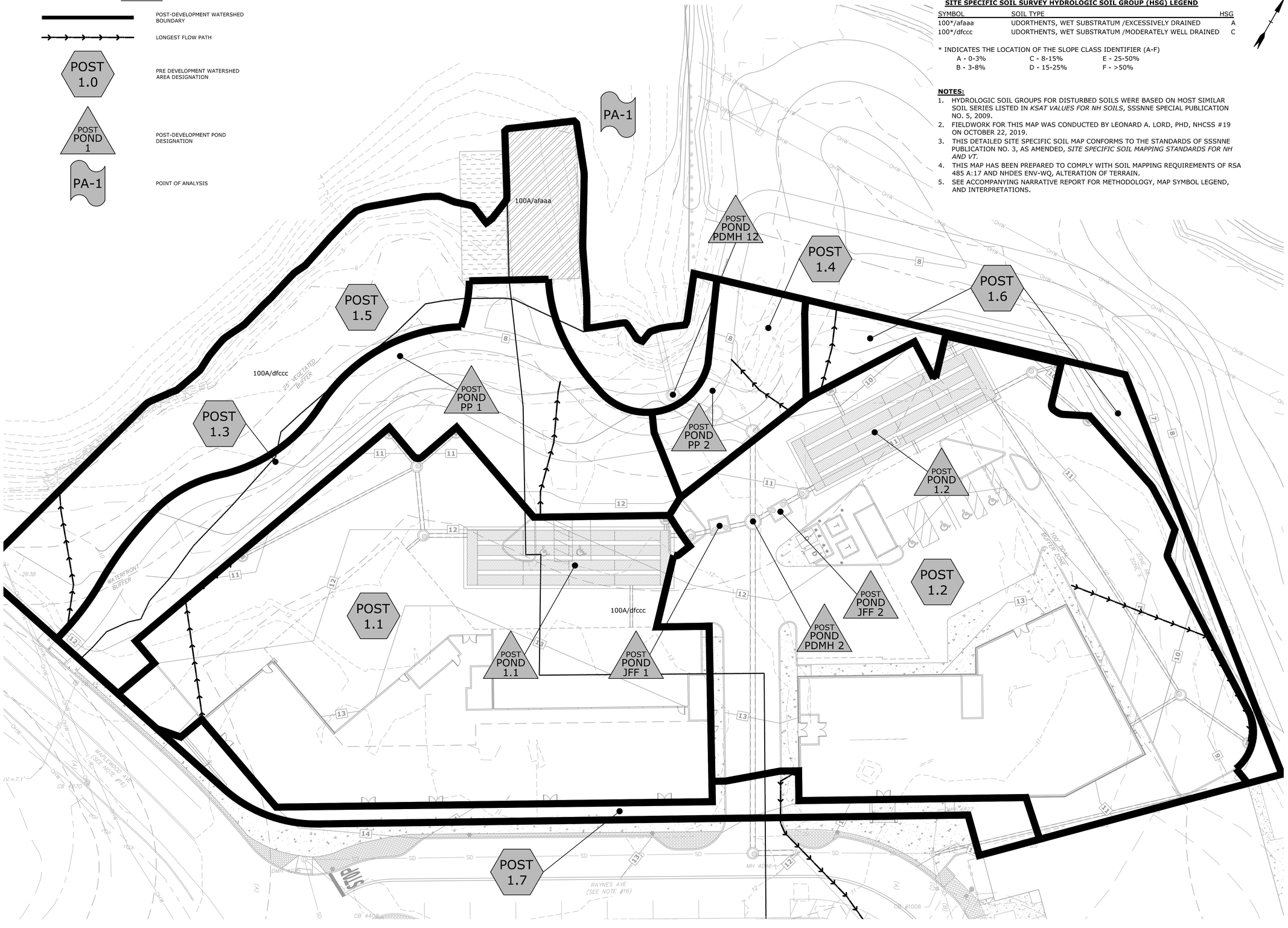
SYMBOL	SOIL TYPE	HSG
100*/afaaa	UDORTHENTS, WET SUBSTRATUM /EXCESSIVELY DRAINED	A
100*/dfccc	UDORTHENTS, WET SUBSTRATUM /MODERATELY WELL DRAINED	C

* 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.



0 20' 40'

GRAPHIC SCALE

Proposed Mixed Use Development

North Mill Pond Holdings, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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: 3/19/2021
Plotted On: Mar 22, 2021 - 9:48am 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	6.28	11.20	14.68	17.85

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)

0.68	ac	A = Area draining to the practice
0.68	ac	A_I = Impervious area draining to the practice
1.00	decimal	I = Percent impervious area draining to the practice, in decimal form
0.95	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.65	ac-in	WQV= 1" x Rv x A
2,345	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".
0.95	inches	Q = Water quality depth. Q = WQV/A
100	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.0	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.009	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.
0.646	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 = 5.54 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)

0.89	ac	A = Area draining to the practice
0.87	ac	A_I = Impervious area draining to the practice
0.98	decimal	I = Percent impervious area draining to the practice, in decimal form
0.93	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.83	ac-in	WQV= 1" x Rv x A
3,004	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".
0.93	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
0.012	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.
0.828	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 = 7.33 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**	

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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).	
0.31	ac	A = Area draining to the practice	
0.10	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)	
0.11	ac-in	WQV= 1" x Rv x A	
390	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
97	cf	25% x WQV (check calc for sediment forebay volume)	
292	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:			
5.05	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.08	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
2.71	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
5.45	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
4.48	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)	
0.97	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
5.45	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
5.45	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
6.14	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	
3.5	: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 1: POROUS PAVEMENT

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.38	**3,857**	0
4.43	3,857	77
4.48	3,857	154
4.53	3,857	231
4.58	3,857	309
4.63	3,857	386
4.68	3,857	463
4.73	3,857	540
4.78	3,857	617
4.83	3,857	694
4.88	3,857	771
4.93	3,857	849
4.98	3,857	926
5.03	3,857	1,003
5.08	3,857	1,080
5.13	3,857	1,157
5.18	3,857	1,234
5.23	3,857	1,311
5.28	3,857	1,389
5.33	3,857	1,466
5.38	3,857	1,543
5.43	3,857	1,620
5.48	3,857	1,697
5.53	3,857	1,774
5.58	3,857	1,851
5.63	3,857	1,929
5.68	3,857	2,006
5.73	3,857	2,083
5.78	3,857	2,160
5.83	3,857	2,237
5.88	3,857	2,314
5.93	3,857	2,391
5.98	3,857	2,434
6.03	3,857	2,453
6.08	3,857	2,472
6.13	3,857	2,492
6.18	3,857	2,511
6.23	3,857	2,530
6.28	3,857	2,549
6.33	3,857	2,569
6.38	3,857	2,588
6.43	3,857	2,607
6.48	3,857	2,627
6.53	3,857	2,646
6.58	3,857	2,665
6.63	3,857	2,684
6.68	3,857	2,704
6.73	3,857	2,723
6.78	3,857	2,742
6.83	3,857	2,762
6.88	3,857	2,781
6.93	3,857	2,800
6.98	3,857	2,843
7.03	3,857	2,900
7.08	3,857	2,958
7.13	3,857	3,016
7.18	3,857	3,074
7.23	3,857	3,132
7.28	3,857	3,190
7.33	3,857	3,248
7.38	3,857	3,305
7.43	3,857	**3,363**
7.48	3,857	**3,386**
7.53	3,857	3,386
7.58	3,857	3,386
7.63	3,857	3,386
7.68	3,857	3,386
7.73	3,857	3,386
7.78	3,857	3,386
7.83	3,857	3,386
7.88	3,857	3,386
7.93	3,857	3,386
7.98	3,857	3,386
8.03	3,857	3,386
8.08	3,857	3,386
8.13	3,857	3,386
8.18	3,857	3,386
8.23	3,857	3,386
8.28	3,857	3,386
8.33	3,857	3,386
8.38	3,857	3,386
8.43	3,857	3,386
8.48	3,857	3,386
8.53	3,857	3,386
8.58	3,857	3,386
8.63	3,857	3,386
8.68	3,857	3,386
8.73	3,857	3,386
8.78	3,857	3,386

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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).	
0.08	ac	A = Area draining to the practice	
0.02	ac	A_I = Impervious area draining to the practice	
0.23	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.25	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.02	ac-in	WQV= 1" x Rv x A	
73	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
18	cf	25% x WQV (check calc for sediment forebay volume)	
55	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:			
4.75	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.17	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
0.24	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'**
6.18	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	
4.7	: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)
3.98	**755**	0
4.03	755	15
4.08	755	30
4.13	755	45
4.18	755	60
4.23	755	76
4.28	755	91
4.33	755	106
4.38	755	121
4.43	755	136
4.48	755	151
4.53	755	166
4.58	755	181
4.63	755	196
4.68	755	211
4.73	755	227
4.78	755	242
4.83	755	257
4.88	755	272
4.93	755	287
4.98	755	302
5.03	755	317
5.08	755	332
5.13	755	347
5.18	755	362
5.23	755	378
5.28	755	393
5.33	755	408
5.38	755	423
5.43	755	438
5.48	755	446
5.53	755	450
5.58	755	454
5.63	755	458
5.68	755	461
5.73	755	465
5.78	755	469
5.83	755	473
5.88	755	476
5.93	755	480
5.98	755	484
6.03	755	488
6.08	755	492
6.13	755	495
6.18	755	499
6.23	755	503
6.28	755	507
6.33	755	510
6.38	755	514
6.43	755	518
6.48	755	522
6.53	755	525
6.58	755	534
6.63	755	545
6.68	755	556
6.73	755	568
6.78	755	579
6.83	755	590
6.88	755	602
6.93	755	613
6.98	755	624
7.03	755	**636**
7.08	755	**640**
7.13	755	640
7.18	755	640
7.23	755	640
7.28	755	640
7.33	755	640
7.38	755	640
7.43	755	640
7.48	755	640
7.53	755	640
7.58	755	640
7.63	755	640
7.68	755	640
7.73	755	640
7.78	755	640
7.83	755	640
7.88	755	640
7.93	755	640
7.98	755	640
8.03	755	640
8.08	755	640
8.13	755	640
8.18	755	640
8.23	755	640
8.28	755	640
8.33	755	640
8.38	755	640

Section 7
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.

7.1 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.)

7.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- 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

7.3 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.	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

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

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.

Additional Porous Asphalt Operation and Maintenance Requirements:

- ***No winter sanding or salting of porous pavements is permitted***
- Watering plants as necessary during the first growing season.
- 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.

7.3.1 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.

7.3.2 Snow & Ice Management for Standard Asphalt and Walkways

Snow storage areas shall be located such that no direct untreated discharges are possible to receiving waters from the storage site (snow storage areas have been shown on the Site Plan). The property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas. Snow removal will be hauled off-site and legally disposed of when snowbanks exceed 6 feet in height. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. 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,).

7.4 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.

7.4.1 Background Information

The Raynes Avenue, Mixed Use Development is located along the North Mill Pond in Portsmouth, New Hampshire.

7.4.2 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:

7.4.2.1 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.

7.4.2.2 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.

7.4.2.3 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.

7.4.2.3.1 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.

7.4.2.4 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.

7.4.3 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.

7.4.4 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:				

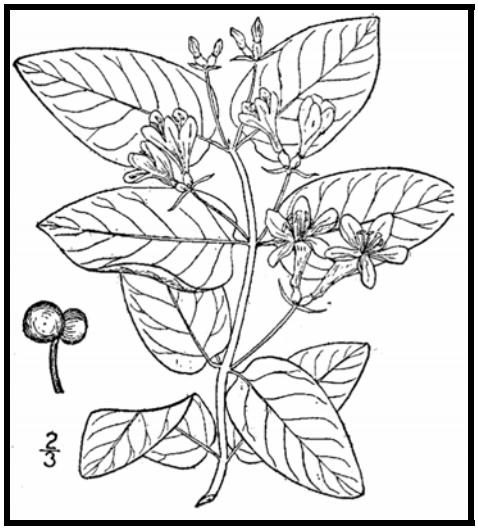
7.5 Invasive Species

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

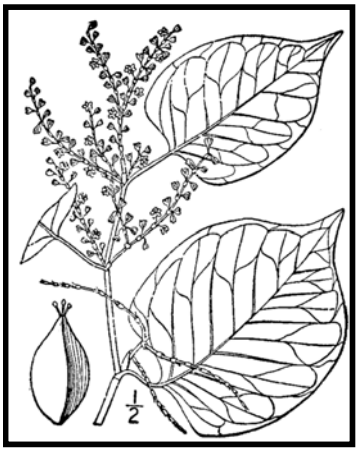
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

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.

7.6 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			

J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Report_Evaluation\Applications\City of Portsmouth\20210322 TAC Submission\Drainage\P0595-007_Drainage Report.docx

APPENDIX A

ProCon, LLC
31 Raynes Avenue Project
Portsmouth, NH

SITE SPECIFIC SOIL MAP

June 2020

Tighe&Bond
Engineers | Environmental Specialists

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.

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APPENDIX B

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.764 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

31 Raynes Avenue, Portsmouth, NH: Wetland & Buffer Report

TO: Patrick Crimmins, PE

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

DATE: January 6, 2020

PROJECT: P-0595-007

On October 29, 2019, Tighe & Bond delineated and assessed tidal wetlands and their 100-foot buffers at 31 Raynes Avenue in Portsmouth, NH. This 1.35-acre parcel lies along the northwestern end of North Mill Pond.

Methods

The 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 only wetlands located on the parcel are tidal wetlands (HOTL), which were delineated with sequentially-numbered flagging labelled 1B-1 to 1B-27.

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 on this site were generally classified as estuarine intertidal rocky shore, rubble, regularly flooded (E2RS2N), though some areas exhibited more of a cobble-gravel substrate. The wetland edge slopes sharply along the southern portion of the site and is armored 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*). 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

The 100-foot tidal buffer on this parcel consists primarily of maintained lawn, a commercial building, and a parking lot. There is also an old wood-framed pier that is filled with sand and

crushed stone. There are small patches of shrubby vegetation and small trees at the tops of the slopes between the lawn and tidal wetlands, particularly at both ends of the wetland delineation. 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 highly developed tidal buffer provides some vegetated permeable surfaces to help reduce and filter runoff, but otherwise does little to enhance and protect the downgradient tidal wetland.

J:\P\P0595 Pro Con General Proposals\P0595-007 Raynes Ave Hotel\Environmental\Raynes+Green Wetlands+Soils\Raynes Ave Wetland-Buffer Rept 2020-1-9.docx

Photographic Log

Client: ProCon

Site: 31 Raynes Avenue, Portsmouth, NH

Job Number: P-0595-007

Photograph No.: 1	**Date:** 10/29/2019	**Direction Taken:** Northeast
Description: Steep wetland bank armored with riprap along the southern wetland edge.		

Photograph No.: 2	**Date:** 10/29/2019	**Direction Taken:** Southwest
Description: Culvert outlet, steep bank, and filled pier along northern wetland edge.		

Photographic Log

Client: ProCon

Site: 31 Raynes Avenue, Portsmouth, NH

Job Number: P-0595-007

Photograph No.: 3	**Date:** 10/29/2019	**Direction Taken:** North
Description: Grassed portion of the tidal buffer. Tidal wetland boundary marked with pink flags extends over the top of the slope into the lawn in the background.		

Photograph No.: 4	**Date:** 10/29/2019	**Direction Taken:** Southeast
Description: Commercial buildings and parking lot in the tidal buffer viewed from near the wetland edge.		

Photographic Log

Client: ProCon

Site: 31 Raynes Avenue, Portsmouth, NH

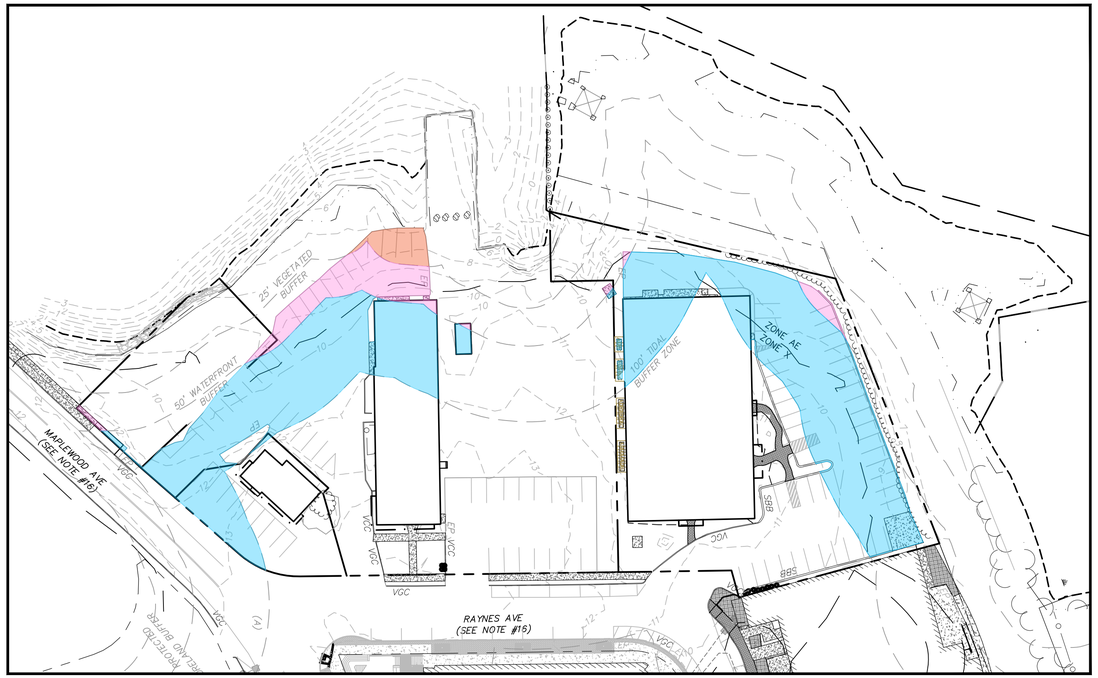
Job Number: P-0595-007

Photograph No.: 5	**Date:** 10/29/2019	**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.		

Photograph No.: 6	**Date:** 10/29/2019	**Direction Taken:** Northwest
Description: Shrubby vegetation in the tidal buffer at the northern end of the site.		

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

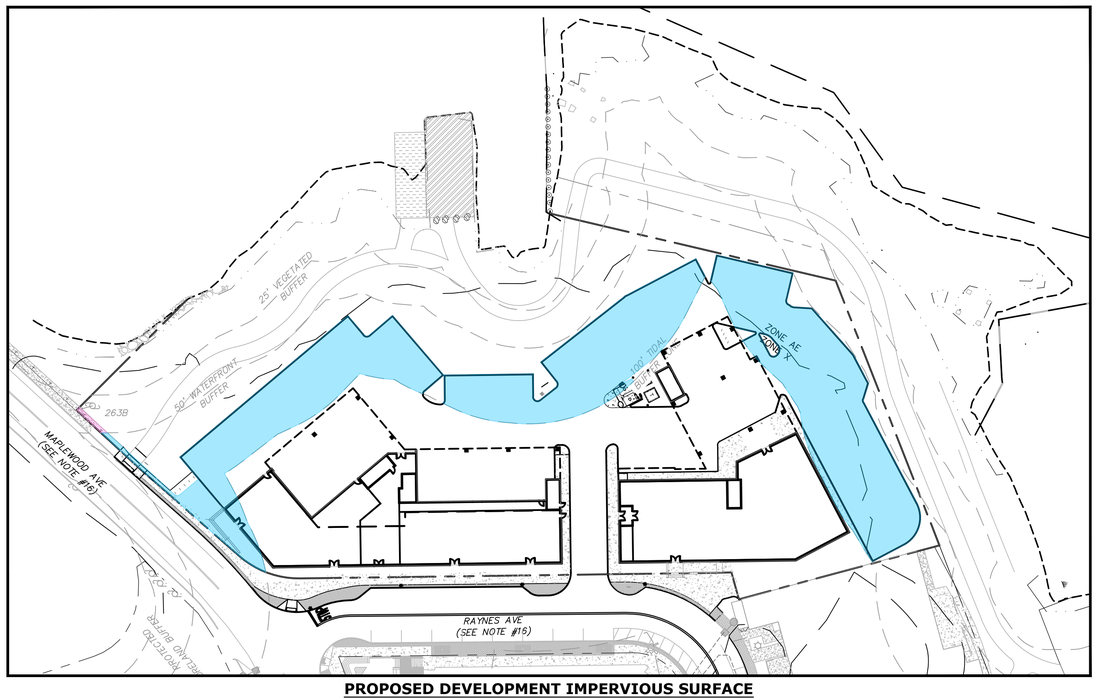
WETLAND BUFFER IMPERVIOUS SURFACE EXHIBIT



EXISTING CONDITIONS IMPERVIOUS SURFACE

Impervious Surface Witihin Buffer Area			
Wetland Buffer Setback	**Existing Impervious Surface**	**Previous CC Work Session Site Plan**	**Current Proposed Site Plan**
0 - 25 FT	848 SF	220 SF	0 SF
25 - 50 FT	3,006 SF	3,762 SF	67 SF (1)
50 - 100 FT	24,473 SF	28,411 SF	24,528 SF
Total Impervious Surface	**28,327 SF**	**32,393 SF**	**24,595 SF**

(1) Existing City Sidewalk Area



PROPOSED DEVELOPMENT IMPERVIOUS SURFACE

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March 22, 2021
P-0595-007-C-DSGN.dwg

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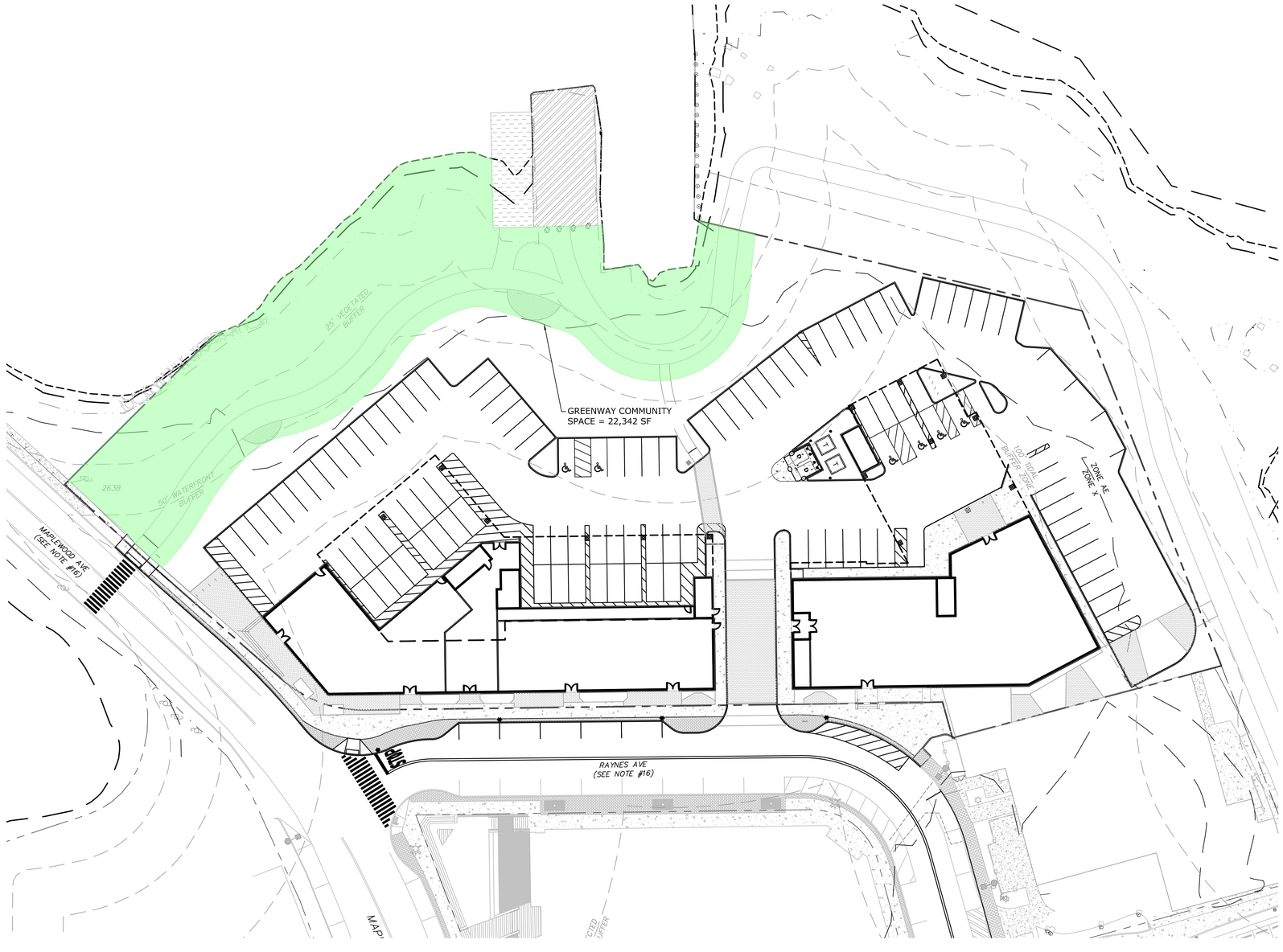
Plot Date: Monday, March 22, 2021 Plotted By: Neil A. Hansen
TGB File Location: J:\VP\0595 Pro Con General Proposals\0595-007 Raynes Ave Hotel\Drawings_Figures\AutoCAD\Sheet\P-0595-007-EXHIBITS.dwg Layout Tab: 1 OF 1

PROPOSED MIXED USE DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

COMMUNITY SPACE EXHIBIT

COMMUNITY OPEN SPACE:

		REQUIRED	PROVIDED
	GREENWAY COMMUNITY SPACE		22,342 SF
TOTAL LOT AREA: 110,415 SF COMMUNITY OPEN SPACE (20% OF TOTAL)		21,274 SF 20%	22,342 SF 20.2%



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SITE LANDSCAPE PLAN

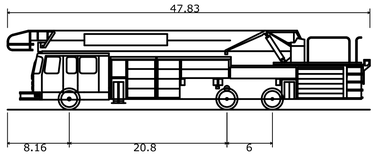
RAYNES AVE - PORTSMOUTH, NH

3/18/2021

Tighe&Bond

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

263B

80' WATERFRONT BUFFER

100' TIDAL BUFFER ZONE

VEHICLE WHEEL BASE (TYP)

VEHICLE BODY OVERHANG (TYP)

MARLEWOOD AVE. (SEE NOTE #16)

RAYNES AVE (SEE NOTE #16)

N

0 20' 40'

GRAPHIC SCALE

Tighe&Bond

Engineers | Environmental Specialists

March 22, 2021

P-0595-007-C-DSGN.dwg