E5071-001
June 20, 2024

Ms. Samantha Collins, Chair
City of Portsmouth Conservation Commission
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Request for Wetlands Conditional Use Permit Review**
100 Durgin Lane – Proposed Redevelopment

Dear Chair Collins:

On behalf of 100 Durgin Lane Owner, LLC (applicant) we are pleased to submit one (1) set of hard copies and one electronic file (.pdf) of the following information to support a request for a Wetland Conditional Use Permit for the above referenced project:

- One (1) 22x34 & one (1) 11x17 copy of the Site Plan Set, last revised June 17, 2024;
- Drainage Analysis, last revised June 17, 2024;
- Long-Term Operation & Maintenance Plan, last revised June 17, 2024;
- Wetland Delineation Report, dated May 8, 2024;
- Impervious Surface Exhibit; last revised June 17, 2024;
- Wetland Buffer Exhibit, last revised June 17, 2024;
- Wetland Buffer Comparison Exhibit, last revised June 17, 2024;
- Rendered Plan, dated June 17, 2024;
- Community Space Exhibit, dated June 17, 2024;
- Planting Irrigation/Hydrozone Diagram, dated June 17, 2024;
- Authorization Form

PROJECT SUMMARY

Existing Conditions

The proposed project is located at 100 Durgin Lane and includes lots identified as Map 239 Lots 13-2, 16 & 18 on the City of Portsmouth Tax Maps. The site was previously home to Christmas Tree Shops and Bed, Bath and Beyond locations which are no longer in operation. The properties are a combined 26.2 acres of land and are located in the Gateway District (G1) and also lies within the Highway Noise Overlay District. The property is bound to the west by Route 16, to the north by the Motel 6 property and Gosling Road, to the south by the Hampton Inn and Home Depot properties, and to the east by an Eversource easement, Pep Boys and Durgin Plaza.

Proposed Redevelopment

The proposed project consists of the demolition of the existing Christmas Tree Shops and Bed, Bath and Beyond building and the construction of approximately 360 rental housing units in a mix of 3-story and 4-story buildings. The proposed project will include a community building and associated site improvements such as parking, pedestrian access, community spaces, utilities, stormwater management, lighting, and landscaping. The proposed project also includes a reduction in overall impervious surface on the development lot.

The proposed project will be providing 10% community space as required under the Development Site Conditional Use Permit for having more than one principal building on a single lot. Based on the lot area the required community spaces will exceed 2 acres and includes a public dog park, recreation areas, community walking paths, and open/green space.

Open Space & Buffer Enhancement

The proposed project results in work within the 100-foot wetland buffer and therefore is a Conditional Use Permit is required for demolition and construction activities. The 100-foot wetland buffer within the development area includes impervious parking surfaces, drive aisles, and roadways. The project will provide an overall improvement by reducing impervious cover within the 100-foot wetland buffer. The impervious surface impacts from the proposed project 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 project's landscape design proposes to replace existing impervious areas removed from the wetland buffer with a native grass mix and native trees in an effort to enhance the previously disturbed wetlands buffer.

Table 1. 100 Durgin Lane, Wetland Buffer Impervious Surfaces

Buffer Segment	Existing Impervious (SF)	Final Impervious (SF)
0-25 feet	3,114	2,467
25-50 feet	12,156	8,762
50-100 feet	45,975	39,945
Total	61,245	51,174
Net Impervious Surface	**-10,071**	

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 an 10,071 SF reduction in impervious surface.

Wetland Conditional Use Permit

Jurisdictional wetland areas, including forest, dense early successional shrub growth, and emergent wetland are present on site. A Conditional Use Permit for Wetland Buffer Impact will be required for the project for work within the 100 ft wetland buffer.

Wetland 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 that was previously home to Christmas Tree Shops and Bed, Bath and Beyond building. The proposed project design is an allowed use within the Gateway Neighborhood Mixed Use District. Additionally, the proposed project site consists of a previously disturbed wetland 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 to the site.

(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 sited in a way to reduce the areas of impervious surface within the 25-, 50-, and 100-foot wetland buffers. The proposed project design reduces the impervious surface within the 25-, 50-, and 100' buffers and proposes to replace existing impacted areas with native plants including trees, shrubs, and grasses.

(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 consisting of parking areas, drive aisles, and accessways. There is no real functional wetland buffer area on the project site. The proposed project intends to reduce impervious surfaces from the wetland buffer area. The buffer will be enhanced by the removal of invasive species and enhance the existing vegetation with native vegetation. The proposed site and landscape designs site enhance the previously disturbed wetland buffer area from its existing condition and provide added value by creating public open space for recreation on the site and along the buffer.

(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 minimal alteration to the natural woodland to the greatest extent practical. The areas impacted consist primarily of impervious surfaces and previously disturbed areas. Any temporary disturbances of the wetland buffer will be restored following construction.

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

The proposed project design is not an adverse impact to the site as it would enhance the buffer by reducing overall impervious surface on the site, improve water quality through stormwater treatment and provide public access to the site. In addition, the proposed project will reduce the impervious surface within the 25, 50, and 100-foot wetland buffers.

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

The proposed work within the vegetated buffer strip is limited to the removal of impervious areas and repaving of the existing access road to the north. The proposed project will collect and treat the onsite impervious surfaces prior to discharging to the onsite wetlands. Implementing these treatment measures will help improve the water quality discharged from the property. Areas temporarily disturbed for the removal of paved areas within the vegetated buffer strip will be restored following construction. The landscape plan proposes replacing the

existing disturbed areas within the 25-foot wetland buffer with a native grass mix, mown as required to avoid incursions of invasive species, and the addition of several native trees and shrubs within the previously disturbed buffer area.

CONCLUSION

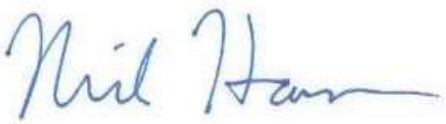
As shown in the enclosed information, the proposed project is expected to create a vibrant, authentic, diverse, and connected development that provides high quality housing to a variety of income ranges and meaningful community spaces.

We respectfully request to be placed on the Conservation Commission meeting agenda for July 10, 2024. If you have any questions or need any additional information, please contact me by phone at (603) 294-9213 or by email at NAHansen@tighebond.com.

Sincerely,

TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Vice President



Neil A. Hansen, PE
Project Manager

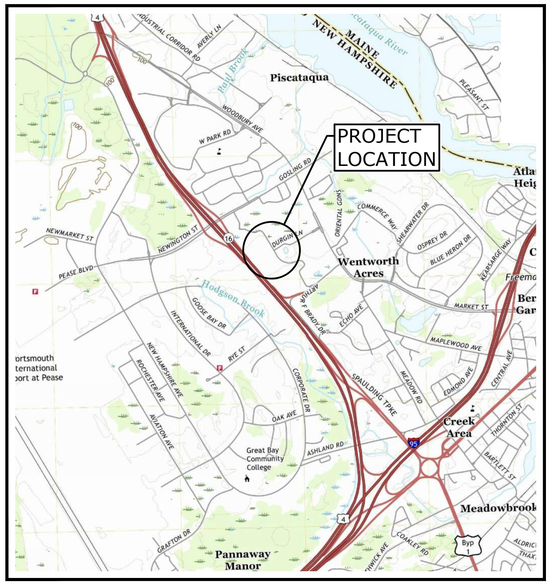
Enclosures
Copy: 100 Durgin Lane Owner, LLC
John K. Bosen, Bosen & Associates
Utile, Inc Architects
Aceto Landscape Architecture

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE
APRIL 22, 2024
LAST REVISED:
JUNE 17, 2024

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
-	COVER SHEET	6/17/2024
1 OF 4	TOPOGRAPHIC SURVEY NOTES	2/29/2024
2 OF 4	TOPOGRAPHIC SURVEY	2/29/2024
3 OF 4	TOPOGRAPHIC SURVEY	2/29/2024
4 OF 4	TOPOGRAPHIC SURVEY	2/29/2024
C-101	GENERAL NOTES AND LEGEND	6/17/2024
C-201	DEMOLITION PLAN	6/17/2024
C-202	DEMOLITION PLAN	6/17/2024
C-300	OVERALL SITE PLAN	6/17/2024
C-301	SITE PLAN	6/17/2024
C-302	SITE PLAN	6/17/2024
C-401	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	6/17/2024
C-402	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	6/17/2024
C-501	UTILITIES PLAN	6/17/2024
C-502	UTILITIES PLAN	6/17/2024
C-600	ACCESS EASEMENT PLAN	6/17/2024
C-601	UTILITY, DRAINAGE, AND GRADING EASEMENT PLAN	6/17/2024
C-602	COMMUNITY SPACE EASEMENT PLAN	6/17/2024
C-801	EROSION CONTROL NOTES AND DETAILS SHEET	6/17/2024
C-802	DETAILS SHEET	6/17/2024
C-803	DETAILS SHEET	6/17/2024
C-804	DETAILS SHEET	6/17/2024
C-805	DETAILS SHEET	6/17/2024
C-806	DETAILS SHEET	6/17/2024
C-807	DETAILS SHEET	6/17/2024
C-808	DETAILS SHEET	6/17/2024
C-809	DETAILS SHEET	6/17/2024
L0-01	LANDSCAPE NOTES	6/17/2024
L2-00	LAYOUT AND MATERIALS PLAN	6/17/2024
L3-00	PLANTING PLAN	6/17/2024
L4-00	PHOTOMETRIC PLAN	6/17/2024
L5-00	SITE DETAILS	6/17/2024
L5-01	SITE DETAILS	6/17/2024
L5-02	SITE DETAILS	6/17/2024
L5-03	PLANTING DETAILS	6/17/2024
1 OF 9	3-STORY BUILDING ELEVATIONS	6/14/2024
2 OF 9	3-STORY BUILDING ELEVATIONS	6/14/2024
3 OF 9	3-STORY BUILDING (SMALL) ELEVATIONS	6/14/2024
4 OF 9	4-STORY BUILDING ELEVATIONS	6/14/2024
5 OF 9	COMMUNITY BUILDING ELEVATIONS	6/14/2024
6 OF 9	3-STORY BUILDING PLANS	6/14/2024
7 OF 9	3-STORY BUILDING (SMALL) FLOOR PLANS	6/14/2024
8 OF 9	4-STORY BUILDING FLOOR PLANS	6/14/2024
9 OF 9	COMMUNITY BUILDING FLOOR PLANS	6/14/2024

T & B PROJECT NO: E-5071-001



LOCATION MAP
SCALE: 1" = 2000'

CONSTRUCTION NOTES:
1. THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.
3. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.

LIST OF PERMITS		
LOCAL	STATUS	DATE
SITE PLAN REVIEW PERMIT	PENDING	
LOT LINE REVISION PERMIT	PENDING	
CONDITIONAL USE PERMIT - DEVELOPMENT SITE	PENDING	
CONDITIONAL USE PERMIT - WETLAND BUFFER	PENDING	
CONDITIONAL USE PERMIT - HIGHWAY NOISE OVERLAY DISTRICT	PENDING	
STATE		
NHDES - SEWER CONNECTION PERMIT	NOT SUBMITTED	
NHDES - ALTERATION OF TERRAIN PERMIT	NOT SUBMITTED	
FEDERAL		
NPDES - CONSTRUCTION GENERAL PERMIT	NOT SUBMITTED	

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

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – PATRICK CRIMMINS No. 12378 LICENSED
6/17/24

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – NEIL A HANSEN No. 15227 LICENSED
06/17/2024

OWNER/APPLICANT:
100 Durgin Lane Owner LLC
ONE MARINA PARK DRIVE, SUITE 1500
BOSTON, MA 02210

SURVEYOR:
HOLDEN ENGINEERING & SURVEYING, INC.
56 OLD SUNCOOK ROAD, PO BOX 480
CONCORD, NH 03302

ARCHITECT:
UTILE
115 KINGSTON STREET
BOSTON, MA 02111

LANDSCAPE ARCHITECT:
ACETO LANDSCAPE ARCHITECTS
424 FORE STREET #3B
PORTLAND, ME 04101

TAC SUBMISSION
COMPLETE SET (44) SHEETS

ITEMS CORRESPONDING TO SCHEDULE B:

(9) Rights and easements in favor of the United States of America relating to electric power transmission lines as described in the Judgment on Declaration of Taking dated October 20, 1952 and recorded at Book 1283, Page 201; Order Amending Judgment on Declaration of Taking recorded November 26, 1954, at Book 1337, Page 277; Order of Court Amending Judgment on the Declaration of Taking, as Amended dated June 29, 1954, and recorded at Book 1340, Page 437 on December 29, 1954; Final Judgment of Condemnation for Tracts dated February 25, 1955, at Book 1370, Page 335; and Certification dated December 8, 1955, and recorded at Book 1379, Page 216. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(10) Rights and easements granted to Public Service Company of New Hampshire by instrument recorded at Book 1350, Page 186; agreement and consent to joint use between Public Service Company of New Hampshire and Costco Wholesale Corporation dated October 21, 1992, and recorded at Book 2965, Page 2892; rights and easements granted by Costco Wholesale Corporation to Public Service Company of New Hampshire and New England Telephone and Telegraph Company (NET&T) dated February 10, 1993, and recorded at Book 2972, Page 1422; and as shown on the 2019 ALTA Survey described herein. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(11) Right of way granted by Shaw's Realty Co. to Gilbert E. and Dorothy Soucy dated July 30, 1992, and recorded at Book 2965, Page 548. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(12) Rights and easements granted to New England Telephone and Telegraph Company dated April 12, 1957, and recorded at Book 1430, Page 375. MAY AFFECT THE SUBJECT PROPETY – VAGUE DESCRIPTION – NOT PLOTTABLE.

(13) Rights, easements, terms and obligations set forth in the Agreement between Gilbert E. Soucy and Dorothy Soucy and Costco Wholesale Corporation dated November 3, 1992, and recorded at Book 2956, Page 2200. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(14) Rights and easements granted to Gilbert E. and Dorothy Soucy for vehicular and pedestrian ingress and egress and for electric, telephone and cable television transmission lines as more fully described in the Grant of Right-of-Way from Costco Wholesale Corporation recorded at Book 2966, Page 754. MAY AFFECT THE SUBJECT PROPERTY – DOCUMENT DOES NOT DESCRIBE LOCATION – NOT PLOTTABLE.

(15) Rights and easements to lay, construct, operate, inspect, repair, maintain, renew, replace and remove underground sanitary sewer mains through a trip of land 20 feet in width as more fully described in the Sewer Easement from Costco Wholesale Corporation to Robert D. Haverty and Kathleen M. Haverty, Trustees of SFL Realty Trust, and Saturn Realty LLC dated June 9, 1994, and recorded at Book 3102, Page 379 and as shown on the 2019 ALTA Survey described herein. DOES AFFECT THE SUBJECT PROPERTY (LOT 239–18) – SHOWN ON PLAN.

(16) Rights and easements granted by Costco Wholesale Corporation to Saturn Realty LLC by Access Easement dated June 9, 1994, and recorded at Book 3102, Page 381, and as shown on the 2019 ALTA Survey described herein. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(17) Rights and easements for ingress and egress as more fully described in the Access Easement from Costco Wholesale Corporation to Robert D. Haverty and Kathleen M. Haverty, Trustees of SFL Realty Trust, dated June 9, 1994, and recorded at Book 3102, Page 391. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(18) Use limitations and general maintenance obligations as more fully set forth in the Real Estate Operation Agreement between the Trustees of SFL Realty Trust and Costco Wholesale Corporation dated as of June 9, 1994, and recorded at Book 3114, Page 601. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(19) Rights and easements for access and utilizes as described in the Easement Deed from Costco Wholesale Corporation to Gilbert E. Soucy and Dorothy Soucy dated November 11, 1992, and recorded at Book 2956, Page 2205; and Access Easement Deed dated June 12, 1996, from Costco Wholesale Corporation to Gilbert E. Soucy and Dorothy Soucy recorded at Book 3160, Page 2035, as affected by Amended Access Easement Deed between MIC PNH, LLC and Bed Bath & Beyond, Inc. dated November 21, 2013, and recorded at Book 5505, Page 683. See also Plan of Supplemental Access Easement recorded as Plan D–35346 and Amended Access Easement dated November 19, 2013, and recorded at Book 5498, Page 2502; and as shown on the 2019 ALTA Survey described herein. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(20) Rights and easement for utilizes in the Utility Easement Deed from Costco Wholesale Corporation to Gilbert E. Soucy and Dorothy Soucy dated June 12, 1996, and recorded at Book 3160, Page 2039; and as shown on the 2019 ALTA Survey described herein. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(21) Rights and easements in favor of the City of Portsmouth as described in the Access Easement Deed from Costco Wholesale Corporation dated June 12, 1996 and recorded at Book 3160, Page 2042. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(22) Rights and easements granted by Costco Wholesale Corporation to Gilbert E. Soucy and Dorothy Soucy as more fully described in the Slope and Landscape Easement Deed dated June 12, 1996, and recorded at Book 3160, Page 2045. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(23) Rights and easements in favor of Gilbert E. Soucy and Dorothy Soucy as set forth in the Drainage Easement Deed from Costco Wholesale Corporation dated June 12, 1996, and recorded at Book 3160, Page 2051; and as shown on the 2019 ALTA Survey described herein. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(24) Rights and easements for ingress and egress as more fully described in the Access Easement granted by SFL, LLC to Gilbert Soucy and Dorothy Soucy dated June 13, 1996, and recorded at Book 3160, Page 2033. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

ITEMS CORRESPONDING TO SCHEDULE B:

(25) Terms and provisions set forth in the Conservation Easement from SFL LLC. to the City of Portsmouth dated November 21, 1996 and recorded at Book 3192, Page 282. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(26) Terms and conditions of the Operation and Maintenance Agreement between SFL, LLC and During [sic.] Lane Hotel Corp. dated as of June 21, 1996 and recorded at Book 3165, Page 1545. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(27) Rights and easements for access, parking, utilities and signage as more fully described in the Access, Parking Signage and Utility Easement granted by Robert D. Haverty and Kathleen M. Haverty, Trustees of SFL Realty Trust, to Saturn Realty LLC dated June 9, 1994, and recorded at Book 3102, Page 397, as affected by the Quitclaim Deed and Release to Home Depot USA, Inc. from Saturn Realty LLC dated March 6, 1997 recorded in the Registry at Book 3202, Page 2465. DOES AFFECT THE SUBJECT PROPERTY (LOT 239–13–2) – SHOWN ON PLAN.

(28) Rights and easements for access, parking, utilities and signage as more fully described in the instrument granted by Saturn Realty LLC to Robert D. Haverty and Kathleen M. Haverty, Trustees of SFL Realty Trust, dated June 9, 1994, and recorded at Book 3102, Page 400, as affected by deed from Home Depot U.S.A., Inc. to Saturn Realty, LLC recorded March 10, 1997, at Book 3202, Page 2462. DOES AFFECT THE SUBJECT PROPERTY (LOT 239–13–1) – SHOWN ON PLAN.

(29) Terms and conditions set forth in the Mutual Access Easement between Home Depot U.S.A., Inc. and Thomas J. Flatley recorded September 14, 2006, at Book 4707, Page 1682, as may be affected by that certain Site Plan prepared by Appledore Engineering, Inc. recorded as Plan No. D–34142 on September 14, 2006. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(30) Rights and easements set forth in the Grant of Right–of–Way from Durgin Square Limited Partnership Louis L. Dow, Sr. et al. dated July 28, 1992, and recorded at Book 2939, Page 504; and as shown on the 2019 ALTA Survey described herein. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(31) Such state of facts and matters as shown on ALTA/NSPS Land Title Survey prepared by CDS Commercial Due Diligence Services bearing Field Date November 18, 2019, Project Address 100 Durgin Lane, Portsmouth NH; Project Name: BBBY Portfolio; CDS Project Number: 19–09–0671:011, Approved CDS Surveyor, Holden Engineering & Surveying, Inc. (the "2019 ALTA Survey") including the following: REFERENCES PRIOR VERSION OF CURRENT PLAN – NO ADDITIONAL MATTERS TO PLOT.

(a) encroachment of headwall extending 9.9+/– feet onto the Land;
(b) parking spaces and pavement located within easements described herein, to the extent the easement is in full force and effect;
(c) overhead and underground utility lines;
(d) utility poles and guy wires;
(e) landscaping, berms and medians traversing the boundary lines of the Land;
(f) City of Portsmouth site restrictions, building setbacks, and parking requirements;
(g) catch basins and drain manholes;
(h) water shut–offs and hydrants;
(i) sewer manholes;
(j) electric and gas meters; and
(k) signage.

(32) Rights, easements and obligations pertaining to ingress and egress as more fully described in the Access Easement Agreement between Home Depot U.S.A., Inc. and OCW Retail–Portsmouth, LLC dated as of December 27, 2007, and recorded on January 3, 2008, at Book 4875, Page 1438. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(33) Covenants and restrictions set forth in the Declaration of Use Restriction between Bed Bath & Beyond, Inc. and Home Depot U.S.A., Inc. dated as of December 27, 2007, and recorded on January 3, 2008, at Book 4875, Page 1464. DOES AFFECT THE SUBJECT PROPERTY – NOT SURVEY RELATED – NOT PLOTTABLE.

(34) Rights and easements relating to signage as more fully described in the Directional Signage Easement between Home Depot U.S.A., Inc., OCW Retail–Portsmouth, LLC and Bed Bath & Beyond, Inc. dated as of December 27, 2007, and recorded at Book 4875, Page 1477 on January 3, 2008. DOES AFFECT THE SUBJECT PROPERTY – BLANKET DESCRIPTION – NOT PLOTTABLE.

(35) Such state of facts and matters as shown on the plan entitled "Easement Plan Hampton Inn, Tax Map 239 Lots 15 & 18, Property of MIC PNH, LLC & Bed Bath & Beyond, Inc., 99 & 100 Durgin Lane, County of Rockingham, Portsmouth, New Hampshire", prepared by MSC Civil Engineers & Land Surveyors, Inc., dated February 20, 2013, revised through April 2, 2013, and recorded December 2, 2013, as Plan No. D–38033. DOES AFFECT THE SUBJECT PROPERTY – SHOWN ON PLAN.

(36) INTENTIONALLY DELETED.

(37) INTENTIONALLY DELETED.

(38) Subject to Subordination, Non–Disturbance and Attornment Agreement, recorded on January 6, 2022, in Book 6372, Page 839. DOES AFFECT THE SUBJECT PROPERTY – NOT SURVEY RELATED – NOT PLOTTABLE.

(39) Subject to Conditions, Etc. contained in Quitclaim Deed, recorded on December 27, 2021, in Book 6369, Page 422 and re–recorded on December 30, 2021, in Book 6370, Page 340. NO DOCUMENT PROVIDED.

(40) Subject to Easements contained in Quitclaim Deed, recorded on December 27, 2021, in Book 6369, Page 422 and re–recorded on December 30, 2021, in Book 6370, Page 340. NO DOCUMENT PROVIDED.

TITLE INFORMATION:

THE TITLE DESCRIPTION AND SCHEDULE B ITEMS HEREON ARE FROM FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NO. OAK ST INVEST DURGIN LANE WITH AN EFFECTIVE DATE OF NOVEMBER 9, 2023 AT 12:00 PM.

BASIS OF BEARINGS:

BEARINGS BASED ON PLAN D–35346 AND SHOWN ON PLAN AS N 59° 39' 24" E.

FLOOD NOTE:

Said described property is located within an area having a Zone Designation X by the Federal Emergency Management Agency (FEMA), on Flood Insurance Rate Map No. 33015C0260E, with a date of identification of May 17, 2005, for Community Panel No. 0260, in Rockingham County, State of New Hampshire, which is the current Flood Insurance Rate Map for the community in which said property is situated.

Zone "X" Denotes Areas of minimal flood hazard (No Shading)

The subject property IS NOT in a Special Flood Hazard Area

PARKING INFORMATION:

616 REGULAR SPACES
16 HANDICAPPED ACCESSIBLE SPACES
632 TOTAL PARKING SPACES

NOTES:

1. THE OWNER OF RECORD IS OAK STREET INVESTMENT GRADE NET LEASE FUND SERIES 2021–2 LLC, 30 N. LA SALLE ST. SUITE 4140, CHICAGO, IL 60602.

2. REFERENCE THE SUBJECT PROPERTIES AS TAX MAP 239 LOTS 16, 18, AND 13–2, PER THE CITY OF PORTSMOUTH, NH ASSESSORS MAPS.

3. DEED REFERENCE FOR THE SUBJECT PARCEL IS BOOK 6370, PAGE 340, AS RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

4. TOTAL AREA OF SUBJECT PARCEL IS 1,138,161 SQUARE FEET, OR 25.15 ACRES.

5. TABLE A ITEM 16– THERE IS NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.

6. THE ACCOMPANYING SURVEY WAS MADE ON THE GROUND AND CORRECTLY SHOWS THE LOCATION OF ALL BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS SITUATED ON THE ABOVE PREMISES; THERE ARE NO VISIBLE ENCROACHMENTS ON THE SUBJECT PROPERTY OR UPON ADJACENT LAND ABUTTING SAID PROPERTY EXCEPT AS SHOWN HEREON AND WAS MADE IN ACCORDANCE WITH LAWS AND/ OR MINIMUM STANDARDS OF THE STATE OF NEW HAMPSHIRE.

7. THE PROPERTY HAS DIRECT ACCESS TO DURGIN LANE A PUBLIC WAY AND INDIRECT ACCESS TO GOSLING ROAD A PUBLIC WAY.

8. THE INTERNAL CONTIGUITY OF THE SUBJECT PROPERTY HAS NO OVERLAPS, GAPS, OR GORES.

9. THE PROPERTY DESCRIBED HEREON HAS THE STREET ADDRESS AS FOLLOWS: 100 DURGIN LANE, PORTSMOUTH, NH

10. SAID PREMISES IS A SEPARATELY SUBDIVIDED TRACT.

11. ANY OFFSITE EASEMENTS OR SERVITUDES BENEFITTING THE SURVEYED PROPERTY AND DISCLOSED IN RECORD DOCUMENTS ARE DEPICTED HEREON.

12. "ALL STATEMENTS WITHIN THE CERTIFICATION, AND OTHER REFERENCES LOCATED ELSEWHERE HEREON, RELATED TO: UTILITIES, IMPROVEMENTS, STRUCTURES, BUILDINGS, PARTY WALLS, PARKING, EASEMENTS SERVITUDES, AND ENCROACHMENTS ARE BASED SOLELY ON ABOVE GROUND, VISIBLE EVIDENCE, UNLESS ANOTHER SOURCE OF INFORMATION IS SPECIFICALLY REFERENCED HEREON" IS NOT NOTED.

13. THE SUBJECT PROPERTY DOES NOT FALL WITHIN A WETLANDS AREA.

14. THERE WERE NO PARTY WALLS OBSERVED AT THE TIME OF SURVEY.

15. THERE IS NO VISIBLE EVENDENCE OF A CEMETERY ON THE SUBJECT PROPERTY AT THE TIME OF THE SURVEY.

16. HORIZONTAL DIMENSIONS ARE BASED ON THE 1983 NORTH AMERICAN DATUM (NAD 83) AND ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

STATEMENT OF ENCROACHMENTS

(A) HEADWALL EXTENDS ONTO SUBJECT PROPERTY 9.9' +/–

SURVEYOR'S CERTIFICATE:

To: Stebbins, Lazos & Van Der Beken PLLC; First American Title Insurance Company; and 100 Durgin Lane Owner LLC.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1, 2, 3, 4, 6(a), 6(b), 7(a), 7(b)(1), 7(c), 8, 9, 13, 14, 16, and 21(a) (Graphically depict in relation to the subject tract or property any offsite easements or servitudes benefitting the surveyed property and disclosed in Record Documents provided to the surveyor as part of the Schedule "A") of Table A thereof.

The field work was completed on August, 22, 2023

Peter D. Holden
Surveyor No. 596
In The State Of New Hampshire

STATE OF NEW HAMPSHIRE — No. 596 — PETER D. HOLDEN — LICENSED LAND SURVEYOR

ZONING INFORMATION:

ZONING INFORMATION TAKEN FROM THE REPORT PREPARED BY THE PLANNING & ZONING RESOURCE COMPANY, PZR SITE NUMBER 167869–1, DATED SEPTEMBER 12, 2023.

ZONE IS "G1" GATEWAY NEIGHBORHOOD MIXED USE CORRIDOR

SITE RESTRICTIONS:
MINIMUM LOT SIZE = NOT SPECIFIED
MINIMUM LOT FRONTAGE = 100 FEET
MINIMUM LOT WIDTH = NOT SPECIFIED
MINIMUM LOT DEPTH = NOT SPECIFIED
MAXIMUM BUILDING HEIGHT = 4 STORIES/50 FEET
MAXIMUM LOT COVERAGE = 70%

SETBACKS:
FRONT = 0 FEET MINIMUM/ 50 FEET MAXIMUM
SIDE = 15 FEET
REAR = 15 FEET

PARKING:
ALL RETAIL TRADE USES: 1 SPACE PER 300 SQ. FT. OF GROSS FLOOR AREA
(78,317 / 300 = 261) 261 TOTAL PARKING SPACES REQUIRED.

THE CURRENT USE IS PERMITTED IN THIS DISTRICT.

THE ABOVE RESTRICTIONS WERE OBTAINED FROM THE TOWN OF PORTSMOUTH, NH ZONING CODE

WETLAND NOTES:

The delineation work was performed on November 11, 2023 by Brendan Quigley, CWS #249 utilizing the following standards:

1. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, (Version 2.0) January 2012, U.S. Army Corps of Engineers.

2. Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, Version 8.2. United States Department of Agriculture (2018).

3. New England Hydric Soils Technical Committee. 2019 Version 4, Field Indicators for Identifying Hydric Soils in New England. New England Interstate Water Pollution Control Commission, Lowell, MA.

4. U.S. Army Corps of Engineers National Wetland Plant List, version 3.5. (2020)

HOLDEN ENGINEERING & SURVEYING, inc.

■ 56 Old Suncook Road
PO Box 480 Concord, NH 03302
(603) 225–6449

□ 9 Constitution Drive
Bedford, NH 03110
(603) 472–2078

ALTA / NSPS LAND TITLE SURVEY PREPARED FOR
100 DURGIN LANE OWNER LLC
100 DURGIN LANE, PORTSMOUTH, ROCKINGHAM COUNTY, NEW HAMPSHIRE

Revisions	Date:	Description	Dr. By	Chk. By
1.	11–10–23	REVISED PER CLIENT COMMENTS	DS	LR
2.	02–13–24	MINOR UTILITY EDITS	DS	PH
3.	02–29–24	UPDATE TITLE COMMITMENT	DS	LR
4.				
5.				

Book | Page

Date: 08–10–23
Scale: NONE
Dr. By: DS Ck By: LR
Job No. 2320547
Sheet no 1 of 8

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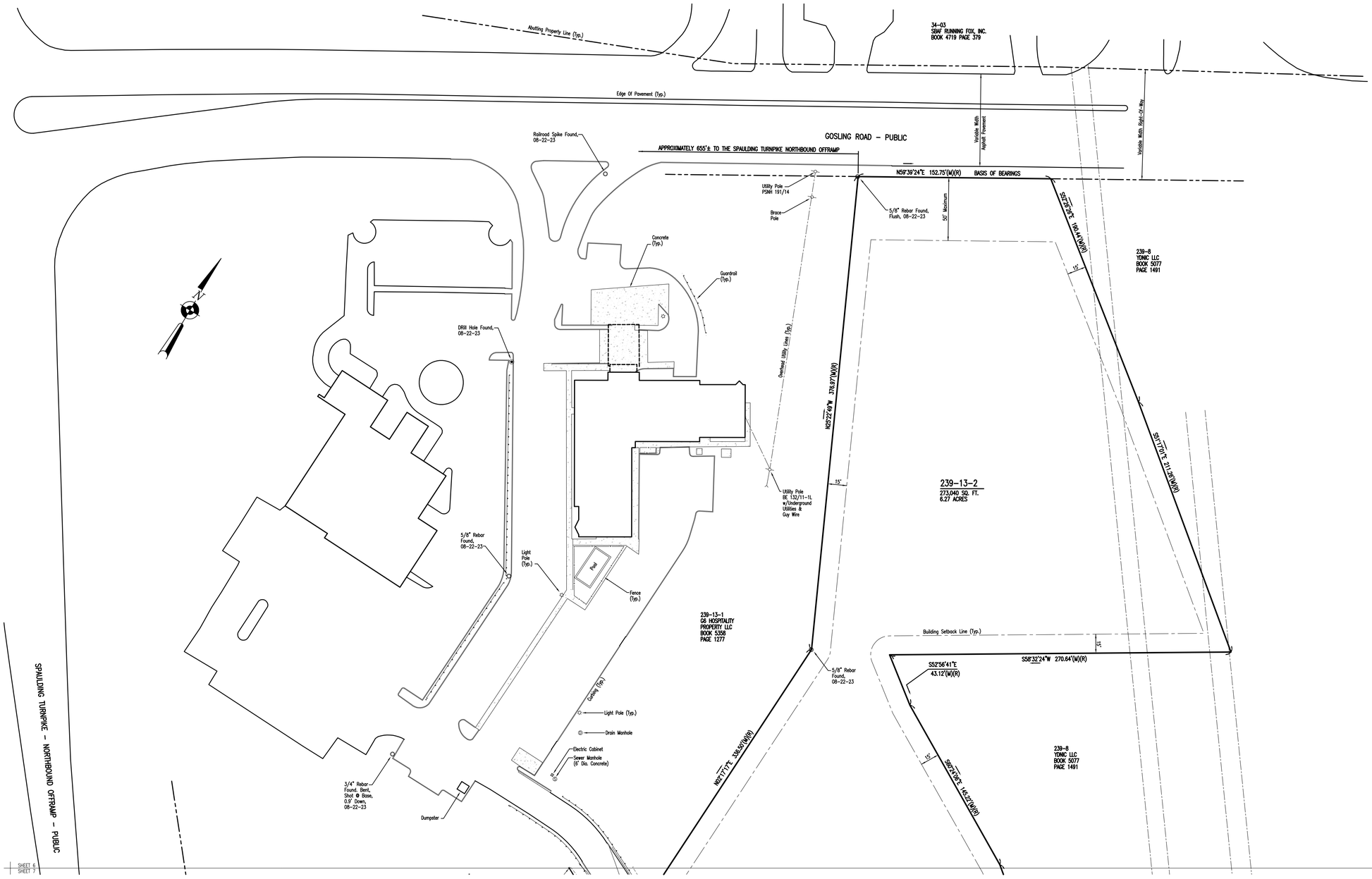

LEGEND:

- ABUTTING PROPERTY LINE
- TREELINE
- UNDERGROUND ELECTRIC (Paint)
- SEWER LINE (Paint)
- 10 FOOT CONTOUR
- 2 FOOT CONTOUR
- CURBING
- EDGE OF PAVEMENT
- FENCE
- GUARDRAIL
- PROPERTY LINE
- FORMER LOT LINE
- BUILDING SETBACK LINE
- OVERHEAD UTILITY LINES
- EASEMENT
- STONEWALL
- FLAGGED WETLAND
- SWALE
- GAS LINE (Point)
- CONCRETE
- CATCH BASIN
- DRAIN MANHOLE
- ELECTRIC BOX
- LIGHT POLE
- REBAR OR RAILROAD SPIKE
- DRILL HOLE
- POST
- SIGN
- SEWER MANHOLE
- UTILITY POLE OR BRACE POLE
- WATER SHUT-OFF
- HYDRANT
- ELECTRIC METER
- GAS METER
- FLAG POLE
- GAS SHUT-OFF
- BORING
- WETLAND FLAG LOCATION
- BOLLARD
- TREE

I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY AND HAS A MAX. ERROR OF CLOSURE OF 1:10,000 ON ALL PROPERTY LINES WITHIN AND BORDERING THE SUBJECT PROPERTY.

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — No. 596 PETER D. HOLDEN — SIGNATURE — DATE

SCALE: 1" = 40'

40 0 40 80 120

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TOPOGRAPHIC SURVEY PREPARED FOR

100 DURGAN LANE OWNER LLC

100 DURGIN LANE, PORTSMOUTH, ROCKINGHAM COUNTY, NEW HAMPSHIRE

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Dr. By: DS Ck By: LR
Job No. 2320547
Sheet no 6 of 8

SHEETS-6-7-8

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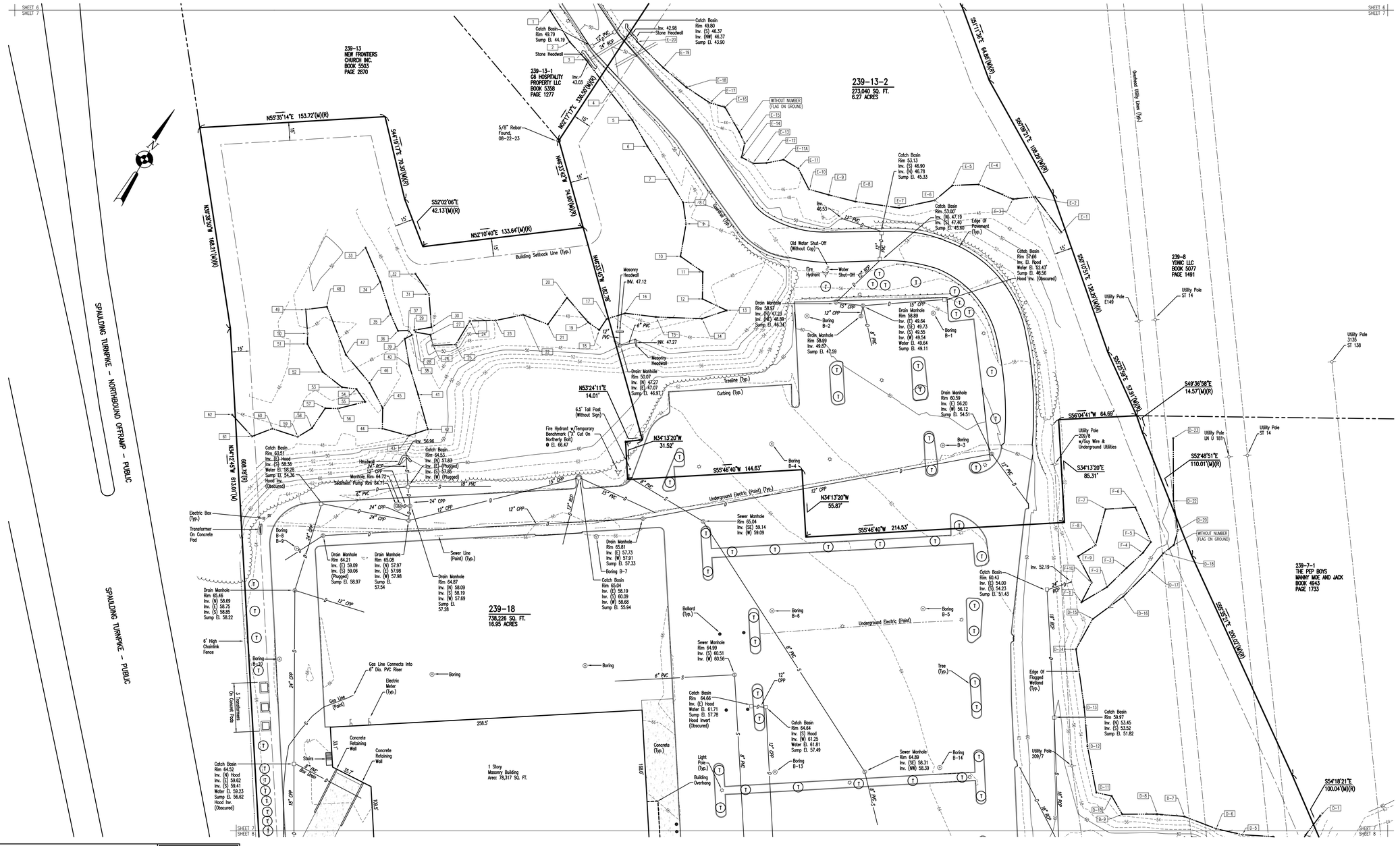

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SHEETS-6-7-8

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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.
13. APPLICANT SHALL SUBMIT, AS PART OF THE FINAL POST APPROVAL PROCEDURES, RELEVANT PTAP INFORMATION USING THE MOST RECENT ONLINE DATA PORTAL CURRENTLY MANAGED BY THE UNH STORMWATER CENTER. THE PLANNING DEPARTMENT SHALL BE NOTIFIED AND COPIED OF THE PTAP DATA SUBMITTAL.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
3. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
4. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
7. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY OF PORTSMOUTH STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
9. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
10. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, LIGHTING, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, STAIRS, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, BUILDING SLABS, FOUNDATION, TREES AND LANDSCAPING.
11. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
12. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
13. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
14. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
15. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
16. THE CONTRACTOR SHALL REMOVE AND SALVAGE EXISTING GRANITE CURB FOR REUSE.

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. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
8. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
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. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING RETAINING WALL DESIGN FROM STRUCTURAL ENGINEER AND/OR WALL MANUFACTURER. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO CONSTRUCT WALL IN ACCORDANCE WITH DESIGN APPROVED BY THE ENGINEER. RETAINING WALL SHALL BE SEGMENTAL BLOCK WALL SYSTEM AS OUTLINED IN THE DETAILS.
13. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
14. 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.
15. THE PROPERTY OWNER WILL BE RESPONSIBLE FOR TIMELY SNOW REMOVAL FROM ALL PRIVATE SIDEWALKS, DRIVEWAYS, AND PARKING AREAS. ALL SNOW REMOVAL SHALL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF AS NECESSARY WHEN STORAGE AREAS HAVE REACHED CAPACITY.

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.

EROSION CONTROL NOTES:

1. SEE SHEET C-801 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

UTILITY NOTES:

1. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL
   - WATER - CITY OF PORTSMOUTH
   - SEWER - CITY OF PORTSMOUTH
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - CONSOLIDATED COMM/FAIRPOINT/COMCAST
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.
5. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
6. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH STANDARDS.
7. 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.
8. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
9. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
10. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
11. 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.
12. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
13. 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.
14. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
15. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
16. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
17. ALL SEWER PIPE WITH LESS THAN 6' OF COVER IN PAVED AREAS OR LESS THAT 4' OF COVER IN UNPAVED AREAS SHALL BE INSULATED.
18. 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.
19. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
20. CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
21. FINAL FIRE & DOMESTIC SERVICE CONNECTION SIZES TO BE DETERMINED BY PROJECT PLUMBING ENGINEER PRIOR TO CONSTRUCTION.

EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY BY HOLDEN ENGINEERING AND SURVEYING, INC. DATED 8/10/2023, LAST REVISED 2/13/2024.
2. WETLAND DELINEATION BY BRENDAN QUIGLEY, CWS #243 OF GOVE ENVIRONMENTAL SERVICES, INC., ON 11/11/2023, AND FIELD LOCATED BY HOLDEN ENGINEERING AND SURVEYING AT A FUTURE DATE.

LEGEND

- APPROXIMATE LIMIT OF SAWCUT
- LIMIT OF WORK
- APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED
- EXISTING TREES TO BE REMOVED
- EXISTING BUILDING TO BE REMOVED
- LOCATION OF PROPOSED BUILDING
- PROPOSED PAVEMENT SECTION
- PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED GUARDRAIL
- EXISTING GUARDRAIL
- FLAGGED WETLAND
- PROPOSED EDGE OF PAVEMENT
- PROPOSED CURB
- 100 PROPOSED MAJOR CONTOUR LINE
- 95 PROPOSED MINOR CONTOUR LINE
- CATCH BASIN
- DRAIN MANHOLE
- ELECTRIC BOX
- LIGHT POLE
- POST
- SIGN
- SEWER MANHOLE
- UTILITY POLE OR BRACE POLE
- WATER SHUT-OFF
- HYDRANT
- E ELECTRIC METER
- G GAS METER
- GAS SHUT-OFF
- PROPOSED DRAIN MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED YARD DRAIN
- PROPOSED RAIN GUARDIAN TURRET
- PROPOSED FLARED END SECTION
- PROPOSED CONTECH JELLYFISH FILTER UNIT
- PROPOSED OUTLET CONTROL STRUCTURE
- PROPOSED INLET PROTECTION BARRIER
- PROPOSED DRAINLINE
- PROPOSED SEWER MANHOLE
- PS PROPOSED SEWER LINE
- PG PROPOSED GAS LINE
- PW PROPOSED WATER LINE
- SFM PROPOSED SEWER FORCE MAIN
- SFM APPROXIMATE EXISTING SEWER FORCE MAIN
- XW APPROXIMATE WATER LINE
- PROPOSED WATER VALVE
- PROPOSED THRUST BLOCK
- PE PROPOSED UNDERGROUND ELECTRIC LINE
- PC&T PROPOSED UNDERGROUND TELECOMS
- T PROPOSED TRANSFORMER
- 100' WETLAND BUFFER
- 50' LIMITED CUT BUFFER
- 25' VEGETATIVE BUFFER

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AC	ACRES
ADA	AMERICANS WITH DISABILITIES ACT
AGGR	AGGREGATE
BLDG	BUILDING
BC	BOTTOM OF CURB
CB	CATCH BASIN
CONST	CONSTRUCT
COORD	COORDINATE
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DMH	DRAINAGE MANHOLE
DWG	DRAWING
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EV	ELECTRIC VEHICLE
FF	FINISHED FLOOR
FGC	FLUSH GRANITE CURB
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HYD	HYDRANT
ID	INSIDE DIAMETER
INV	INVERT
L	LENGTH
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
OC	ON CENTER
PCB	PROPOSED CATCH BASIN
PDMH	PROPOSED DRAINAGE MANHOLE
POCS	PROPOSED OUTLET STRUCTURE
PROP	PROPOSED
PSMH	PROPOSED SEWER MANHOLE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
SGC	SLOPED GRANITE CURB
SF	SQUARE FEET
STD	STANDARD
TBR	TO BE REMOVED
TC	TOP OF CURB
TYP	TYPICAL
UD	UNDERDRAIN
VGC	VERTICAL GRANITE CURB
VIF	VERIFY IN FIELD
W/	WITH
PYD	PROPOSED YARD DRAIN

Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS – No. 12378 – LICENSED PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE – NEIL A HANSEN – No. 15227 – LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DSGN.dwg
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APPROVED BY:	PMC

GENERAL NOTES AND LEGENDS

SCALE: AS SHOWN

C-101

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BEGIN SILT SOCK

GUARDRAIL TO REMAIN

APPROXIMATE LIMITS OF SAWCUT (TYP.)

EXISTING PAVEMENT TO BE REMOVED (TYP.)

END SILT SOCK

APPROXIMATE LOCATION OF EXISTING SEWER FORCE MAIN TO REMAIN (VERIFY LOCATION IN FIELD)

LIMIT OF SEWER FORCE MAIN TO BE REMOVED (VERIFY LOCATION IN FIELD)

LIMIT OF GUARDRAIL TO BE REMOVED

DRAINAGE STRUCTURES TO REMAIN

MAP 239 LOT 13

PROPERTY LINE (TYP.)

APPROXIMATE LOCATION OF EXISTING WATER LINE TO REMAIN (VERIFY LOCATION IN FIELD)

LIMIT OF EXISTING WATER LINE TO BE REMOVED (VERIFY LOCATION AND SIZE IN FIELD)

MAP 239 LOT 13-2
6.33 ACRES
275,630 SF

APPROXIMATE LIMIT OF WORK (TYP.)

25' VEGETATED BUFFER

50' LIMITED CUT BUFFER

APPROXIMATE LIMITS OF CLEARING

100' MSHWC BUFFER

50' LIMITED CUT BUFFER

PROPOSED SILT SOCK (TYP.)

24" RCP OUTLET TO REMAIN

EXISTING PAVEMENT TO BE REMOVED (TYP.)

24" RCP OUTLET TO REMAIN

MAP 239 LOT 7

100' WETLAND BUFFER

ALL EXISTING DRAINAGE STRUCTURES, PIPES, AND UTILITIES WITHIN THE LIMITS OF WORK SHALL BE REMOVED UNLESS SPECIFICALLY IDENTIFIED TO REMAIN (TYP.)

MAP 239 LOT 18
16.74 ACRES
729,279 SF

MAP 239 LOT 8

25' VEGETATED BUFFER

MATCH LINE

MATCH LINE

BEGIN REMOVAL OF DRAIN LINE AND DOWNSTREAM STRUCTURES

DRAINAGE TO REMAIN

SEE SHEET C-101 FOR DEMOLITION PLAN NOTES & LEGEND

0 40' 80'

GRAPHIC SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS – No. 12378 – LICENSED PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE – NEIL A HANSEN – No. 15227 – LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

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DEMOLITION PLAN

SCALE: AS SHOWN

C-201

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Tighe&Bond

PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
6/17/24

NEIL A HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
06/17/2024

MATCH LINE
MATCH LINE

EXISTING TREE TO BE REMOVED (TYP)

EXISTING BUILDING TO BE REMOVED

BEGIN SILT SOCK

ALL EXISTING DRAINAGE STRUCTURES, PIPES, AND UTILITIES WITHIN THE LIMITS OF WORK SHALL BE REMOVED UNLESS SPECIFICALLY IDENTIFIED TO REMAIN (TYP.)

BEGIN REMOVAL OF DRAIN LINE AND DOWNSTREAM STRUCTURES

DRAINAGE TO REMAIN

ELECTRICAL UTILITY POLES TO REMAIN

LIMIT FOR EXISTING SEWER LINE TO BE REMOVED

LIMIT OF GAS LINE TO BE REMOVED

APPROXIMATE EXISTING GAS LINE TO REMAIN (VERIFY LOCATION IN FIELD)

EXISTING SEWER LINE TO REMAIN

DRAINAGE PIPE AND STRUCTURE TO BE REMOVED

DRAINAGE STRUCTURE TO REMAIN

END SILT SOCK

APPROXIMATE LIMITS OF SAWCUT (TYP.)

PROPERTY LINE (TYP.)

UTILITY POLE TO REMAIN

APPROXIMATE LOCATION OF EXISTING WATER LINE TO REMAIN (1) 12" CLDI LINE PER CITY OF PORTSMOUTH GIS DEPARTMENT (VERIFY SIZE AND LOCATION IN FIELD)

LIMIT OF EXISTING WATER LINE TO BE REMOVED

PROPOSED SILT SOCK (TYP.)

BEGIN SILT SOCK

LIMIT OF EXISTING GAS LINE TO BE REMOVED

LIMIT OF WATER LINE TO BE REMOVED

EXISTING GAS LINE TO REMAIN

PROPERTY LINE (TYP.)

APPROXIMATE LIMIT OF WORK (TYP.)

EXISTING DRAIN MANHOLE TO REMAIN

SEWER LINE TO BE REMOVED

EXISTING SEWER MANHOLE TO REMAIN

APPROXIMATE LIMITS OF SAWCUT (TYP.)

APPROXIMATE LIMITS OF CLEARING

EXISTING CULVERT TO BE REMOVED

EXISTING PAVEMENT TO BE REMOVED (TYP.)

APPROXIMATE LIMITS OF CLEARING

EXISTING PAVEMENT TO BE REMOVED (TYP.)

BEGIN SILT SOCK

MAP 239 LOT 15

MAP 239 LOT 16
3.08 ACRES
134,252 SF

MAP 238 LOT 20

50' LIMITED CUT BUFFER

100' WETLAND BUFFER

25' VEGETATED BUFFER

BEGIN REMOVAL OF EXISTING GUARDRAIL

END SILT SOCK

APPROXIMATE LIMITS OF SAWCUT (TYP.)

APPROXIMATE LIMITS OF SAWCUT (TYP.)

END SILT SOCK

SEE SHEET C-101 FOR DEMOLITION PLAN NOTES & LEGEND

0 40' 80'
GRAPHIC SCALE

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
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DEMOLITION PLAN

SCALE: AS SHOWN

C-202

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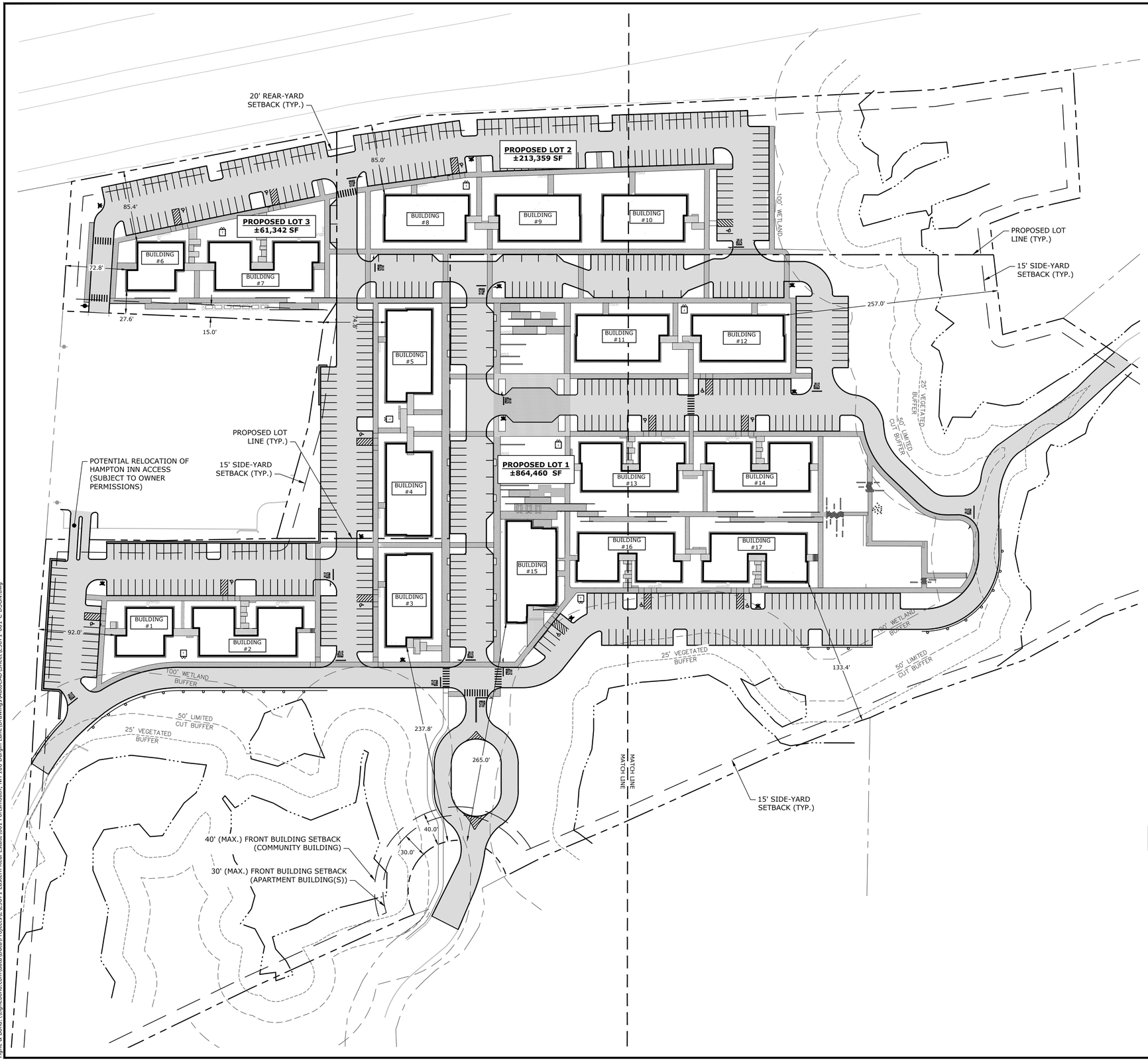

SITE DATA:

LOCATION: TAX MAP 239, LOT 13-2, MAP 239 LOT 16, MAP 239 LOT 18
OWNER: 100 DURGIN LANE OWNER LLC
ONE MARINA PARK DRIVE, SUITE 1500
BOSTON, MA 02210

ZONING DISTRICT: GATEWAY NEIGHBORHOOD MIXED USE CORRIDOR (G1)
HIGHWAY NOISE OVERLAY DISTRICT

PROPOSED USE: MULTI-FAMILY RESIDENTIAL DEVELOPMENT
EXISTING LOT SIZE: ±1,139,161 SF / 26.15 ACRES (MAP 239 LOT 13-2, LOT 16, LOT 18)

DEVELOPMENT STANDARDS

GENERAL RESIDENTIAL DEVELOPMENT (10.5B42.30)	REQUIRED	PROPOSED
MINIMUM SITE DEVELOPMENT AREA:	10,000 SF	±1,139,161 SF
MINIMUM SITE WIDTH:	75 FT	>75 FT
MINIMUM SITE LENGTH:	100 FT	>100 FT
MINIMUM PERIMETER BUFFER:	N/A	-
MAXIMUM DEVELOPMENT BLOCK DIMS:		
BLOCK LENGTH:	500 FT	441 FT
BLOCK PERIMETER:	1,500 FT	1,280 FT
MAXIMUM BUILDING COVERAGE:	50%	8.4%
MINIMUM OPEN SPACE COVERAGE:	20%	64.8%

APARTMENT BUILDING (10.5B34.40)	REQUIRED	PROPOSED
MINIMUM LOT DEPTH:	NR	-
MINIMUM STREET FRONTAGE:	50 FT	200.6 FT
FRONT YARD SETBACK:	10-30 FT	237.8 FT(1)
MIN. SIDE YARD SETBACK	15 FT	27.6 FT
MIN. REAR YARD SETBACK	20 FT	85.0 FT
DWELLING UNITS PER BUILDING	4-24	VARIES (24 MAX.)
MAXIMUM DWELLING UNIT SIZE	NR	-
MAXIMUM BUILDING HEIGHT	4 STORIES OR 50 FT	<50 FT
MINIMUM STREET-FACING FACADE HEIGHT	24 FT	>24 FT
MAX. FINISH FLOOR ABOVE SIDEWALK	36"	VARIES
MAXIMUM BUILDING COVERAGE	50%	7.8%
MAXIMUM BUILDING FOOTPRINT	NR	-
MAXIMUM FACADE MODULATION LENGTH	50 FT	<50 FT
MINIMUM STREET FACING FACADE GLAZING	20% GROUND FLOOR	>20%
MAXIMUM STREET FACING ENTRANCE SPACING	NR	-
ALLOWED ROOF TYPES	ALL	FLAT
ALLOWED FACADE TYPES		
FORECOURT, RECESSED, ENTRY, DOORYARD, STEP, PORCH		FORECOURT, RECESSED

COMMUNITY BUILDING (10.5B34.100)	REQUIRED	PROPOSED
MINIMUM LOT DEPTH:	NR	-
MINIMUM STREET FRONTAGE:	50 FT	200.6 FT
FRONT YARD SETBACK:	10-40 FT	265.0 FT(1)
MIN. SIDE YARD SETBACK	15 FT	258.2 FT
MIN. REAR YARD SETBACK	20 FT	488.2 FT
DWELLING UNITS PER BUILDING	NR	-
MAXIMUM DWELLING UNIT SIZE	NR	-
MAXIMUM BUILDING HEIGHT	3 STORIES OR 45 FT	18 FT
MINIMUM STREET-FACING FACADE HEIGHT	18 FT	18 FT
FINISH FLOOR GRADE ABOVE SIDEWALK	2 FT - 6FT	VARIES
MAXIMUM BUILDING COVERAGE	NR	-
MAXIMUM BUILDING FOOTPRINT	NR	-
MAXIMUM FACADE MODULATION LENGTH	100 FT	<100 FT
MINIMUM STREET FACING FACADE GLAZING	30% GROUND FLOOR	>30%
MAXIMUM STREET FACING ENTRANCE SPACING	NR	-
ALLOWED ROOF TYPES	ALL	GABLE
ALLOWED FACADE TYPES		
DOORYARD, FORECOURT, STOOP, RECESSED, ENTRY, STEP, PORCH, TERRACE, GALLERY, ARCADE		PORCH, FORECOURT, TERRACE

(1) - THE APPLICANT IS REQUESTING THE PLANNING BOARD TO ALLOW AN INCREASE OF BUILDING SETBACK FROM THE FRONT LOT LINE AS ALLOWED BY SECTION 10.5B41.60.

COMMUNITY SPACE:	REQUIRED	PROPOSED
	10%	12.2%
	113,916 SF	139,311 SF

PARKING REQUIREMENTS

RESIDENTIAL UNITS (<750 SF)	222 UNITS X 1.0 SPACES	221 SPACES
RESIDENTIAL UNITS (>750 SF)	138 UNITS X 1.3 SPACES	180 SPACES
VISITOR SPACES	1 SPACE / 5 UNITS	72 SPACES
TOTAL MINIMUM PARKING SPACES REQUIRED =		473 SPACES

PARKING SPACES	REQUIRED	PROPOSED
	472 SPACES	567 SPACES

ADA PARKING SPACES	REQUIRED(2)	PROPOSED
	12 SPACES	14 SPACES

(2) - PER THE AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS, LATEST EDITION.

PARKING SPACE DIMENSIONAL REQUIREMENTS:		
STANDARD 90° STALL :		
WIDTH	8.5 FT MIN	8.5 FT
LENGTH	19 FT MIN	19 FT
STANDARD 0° STALL :		
WIDTH	8.5 FT MIN	8.5 FT
LENGTH	20 FT MIN	20 FT
DRIVE AISLE WIDTH:		
90° (2-WAY TRAFFIC)	24 FT	24 FT
0° (2-WAY TRAFFIC)	24 FT	24 FT

BICYCLE SPACES	REQUIRED	PROPOSED
1 BICYCLE SPACE / 10 PARKING SPACES:	30 SPACES (MAX.)	>30 SPACES

(INDOOR BIKE STORAGE WILL BE PROVIDED THAT MEETS OR EXCEEDS REQUIRED.)

LOT LINE REVISIONS SHOWN HEREIN ARE FOR PERMITTING PURPOSES ONLY. FINAL LOT LINE REVISION PLAN SHALL BE PREPARED BY THE PROJECT SURVEYOR AND RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS PRIOR TO ISSUING BUILDING PERMITS.

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. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
4. THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.

SEE SHEET C-101 FOR SITE PLAN NOTES & LEGEND

0 60' 120'
GRAPHIC SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE – NEIL A HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

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APPROVED BY:	PMC

OVERALL SITE PLAN

SCALE: AS SHOWN

C-300

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PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
6/17/24

NEIL A HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
06/17/2024

MEET EXISTING DRIVE
EXISTING GUARDRAIL TO REMAIN (TYP.)
PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND
PROPOSED GUARDRAIL (MEET MATCH EXISTING)
BEGIN SGC (MEET MATCH EXISTING)
WOODEN BOARDWALK (TYP.) (REFER TO LANDSCAPE PLANS)
PROPERTY LINE (TYP.)
EDGE OF WETLAND (TYP.)
APPROXIMATE PROPOSED TREELINE (TYP.)
RAIN GARDEN (REFER TO GRADING, DRAINAGE, AND EROSION CONTROL PLANS)
25' VEGETATED BUFFER
50' LIMITED CUT BUFFER
APPROXIMATE SNOW STORAGE AREA (TYP.)
PROPOSED R1-1 "STOP" SIGN, STOP BAR, AND LEGEND
PROPOSED HYDRANT (TYP) (REFER TO UTILITY PLANS)
GRANITE CURB STEPS (TYP.) (REFER TO LANDSCAPE PLANS)
PROPOSED GUARDRAIL (TYP.)
PARK SPACE (REFER TO LANDSCAPE PLANS)
6'-WIDE SIDEWALKS (TYP.) (REFER TO LANDSCAPE PLANS FOR MATERIALITY)
100' WETLAND BUFFER
50' WETLAND BUFFER
BUILDING #10
BUILDING #11
BUILDING #12
BUILDING #13
BUILDING #14
BUILDING #16
BUILDING #17
PROPOSED BOLLARD MOUNTED R7-8 "RESERVED" AND R7-8P "VAN ACCESSIBLE" SIGN
PROPOSED TRANSFORMER PAD (TYP) (COORD WITH EVERSOURCE)
PROPOSED TIP-DOWNS AT ADA-ACCESSIBLE SPACES (TYP.)
PROPOSED PAINTED ISLAND (TYP.)
MATCH LINE
MATCH LINE
SEE SHEET C-101 FOR SITE PLAN NOTES & LEGEND
GRAPHIC SCALE 0 40' 80'

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
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SITE PLAN

SCALE: AS SHOWN

C-301

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Tighe&Bond

PATRICK CRIMMINS — STATE OF NEW HAMPSHIRE — No. 12378 — LICENSED PROFESSIONAL ENGINEER
6/17/24

NEIL A HANSEN — STATE OF NEW HAMPSHIRE — No. 15227 — LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
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APPROVED BY:	PMC

SITE PLAN

SCALE: AS SHOWN

C-302

SEE SHEET C-101 FOR SITE PLAN NOTES & LEGEND

0 40' 80'
GRAPHIC SCALE

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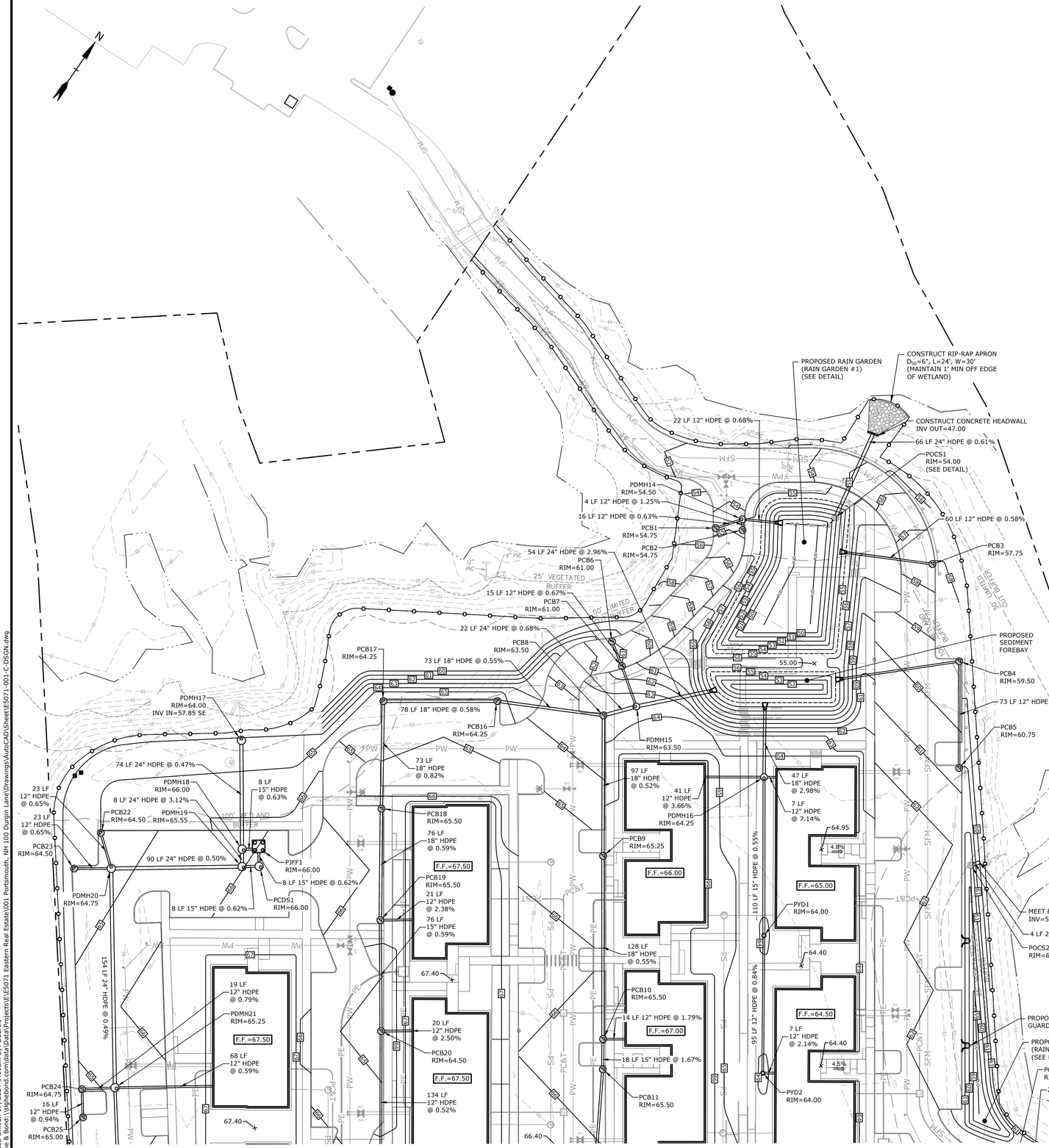

SEE SHEET C-101 FOR GRADING & DRAINAGE PLAN NOTES & LEGEND

0 40' 80'
GRAPHIC SCALE

STORM SEWER STRUCTURE TABLE

STRUCTURE	RIM	INV. IN	INV. OUT
PCB1	54.75		50.35 NE
PCB2	54.75		50.30 NW
PCB3	57.75		53.85 SW
PCB4	59.50	55.85 SE	55.75 SW
PCB5	60.75		56.25 NW
PCB6	61.00	57.00 SE	
PCB7	61.00	56.70 SE	57.10 NW
PCB8	63.50	56.95 SE 56.95 SW	56.85 NE
PCB9	65.25	57.55 SE	57.45 NW
PCB10	65.50	58.35 SE 61.25 NE	58.25 NW
PCB11	65.50	58.75 SE	58.65 NW
PCB12	65.60	60.65 SW	59.15 NW
PCB13	65.60	60.85 SW	60.85 NE
PCB14	64.65	61.25 S	61.25 NE
PCB15	65.50		61.75 N
PCB16	64.25	57.45 SW	57.35 NE
PCB17	64.25	58.00 SE	57.90 NE
PCB18	65.50	58.70 SE	58.60 NW
PCB19	65.50	59.25 SE 60.50 NE	59.15 NW
PCB20	64.50	59.80 SE 60.50 NE	59.70 NW
PCB21	64.50		60.50 NW
PCB22	64.50		59.35 SE
PCB23	64.50		59.35 NE
PCB24	64.75	60.20 SE	60.10 NE
PCB25	65.00		60.35 NW
PCB26	64.70	60.95 SE	60.85 N
PCB27	64.80		61.10 NW
PCB28	66.50	62.05 SE	62.05 SW
PCB29	67.00	62.35 SE	62.35 NW
PCB30	66.50	63.10 SE	63.10 NW
PCB31	66.75		63.20 NW
PCB32	62.75	58.55 SE	58.45 W
PCB33	62.75		58.90 NW
PCB34	63.45	58.25 S	58.15 NE
PCB35	63.50	58.85 SW	58.75 N
PCB36	64.50	60.85 NW	60.75 NE
PCB37	65.25		61.25 SE
PCB38	64.15	60.10 SW	60.00 SE
PCB39	64.15		60.20 NE
PCB40	64.65	60.15 NE	60.05 NW
PCB41	64.65		60.30 SW
PCB42	65.25	60.35 SE	60.25 NW
PCB43	65.75	60.60 SE	60.50 NW
PCB44	67.15	61.15 SE	61.05 NW
PCB45	66.85	61.60 SE 61.60 NE	61.50 NW

STORM SEWER STRUCTURE TABLE

STRUCTURE	RIM	INV. IN	INV. OUT
PCB46	66.25		63.00 SW
PCB47	65.00		61.00 NW
PCB48	65.15		61.70 NW
PCB49	65.60	62.40 SW 62.40 S	62.30 N
PCB50	66.50		63.00 NE
PCDS1	66.00	58.60 SW	58.50 NW
PCDS2	65.50	59.30 SW	59.20 SE
PDMH1	64.35	58.80 SE 58.80 NW	
PDMH2	65.50	59.00 NE 60.15 NW	58.90 SE
PDMH3	65.50	59.45 SW 59.45 NW	59.35 NE 60.35 SE
PDMH4	65.50	59.70 SW 59.80 SE	59.60 NE
PDMH5	65.50	60.20 SW 60.20 SE 60.20 NW	60.10 NE
PDMH6	68.00	61.85 SE 61.85 NW	61.75 SW
PDMH7	67.50	62.55 NE	62.45 NW
PDMH8	65.60	60.85 SW 60.85 NW 60.85 SE	60.75 NE
PDMH9	65.75	61.10 SW 62.20 SE	61.00 NE
PDMH10	65.75	61.55 SW 61.55 SE	61.45 NE
PDMH11	65.75	62.20 S 62.20 NW	62.10 NE
PDMH12	62.25	56.00 NE	56.00 W
PDMH13	64.50	59.30 SW 59.30 NW	59.20 NE
PDMH14	54.50	50.25 SW 50.25 SE	50.15 NE
PDMH15	63.50	56.70 SW	56.90 NW 56.60 NE
PDMH16	64.25	57.50 SE 59.00 SW 59.00 NE	56.40 NW
PDMH17	64.00	57.85 SE	
PDMH18	66.00	59.75 SE 58.30 NE	58.20 NW
PDMH19	65.55	58.65 SW	58.65 NE 60.00 NW
PDMH20	64.75	59.10 SE 59.20 SW 59.20 NW	59.10 NE
PDMH21	65.25	59.85 SE 59.95 NE 59.95 SW	59.85 NW
PDMH22	65.35	60.65 NE 60.65 S 60.55 SE	60.55 NW
PDMH23	66.25	61.30 NE 61.20 SE	61.20 NW
PDMH24	67.00	61.85 NE	61.85 NW
PDMH25	67.25	62.70 SE 62.70 NE	62.70 NW
PDMH26	67.75	63.00 NW 63.00 SE	62.90 SW
PJFF1	66.00	58.45 SE	58.35 SW
PJFF2	65.50	59.15 NW	59.05 SW
POCS1	54.00		47.40 N
POCS2	60.50		54.50 NE
POCS3	61.00	55.50 E	55.40 NW
PYD1	64.00	58.20 SE	58.10 NW
PYD2	64.00	59.10 NE	59.00 NW
PYD3	66.75	62.90 SE	62.80 N
PYD4	66.75		63.75 NW

Tighe&Bond

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE
NEIL A HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

GRADING, DRAINAGE, AND EROSION CONTROL PLAN

SCALE: AS SHOWN

C-401

Last Saved: 6/14/2024
Plotted: Jun 17, 2024 @ 9:09am By: RCiarcio
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Tighe&Bond

PDMH21 RIM=65.25
F.F.=67.50
68 LF 12" HDPE @ 0.59%
PCB24 RIM=64.75
16 LF 12" HDPE @ 0.94%
PCB25 RIM=65.00
67.40
136 LF 18" HDPE @ 0.51%
F.F.=67.50
PDMH22 RIM=65.35
63 LF 12" HDPE @ 0.56%
28 LF 12" HDPE @ 0.71%
PCB26 RIM=64.70
67.40
22 LF 12" HDPE @ 0.68%
PCB27 RIM=64.80
F.F.=67.50
57 LF 12" HDPE @ 0.53%
119 LF 18" HDPE @ 0.55%
PDMH23 RIM=66.25
126 LF 18" HDPE @ 0.52%
PCB50 RIM=66.50
PDMH24 RIM=67.00
35 LF 15" HDPE @ 0.57%
PCB29 RIM=67.00
PDMH25 GRATE=67.25 INV IN=62.70 SE INV IN=62.70 NE INV OUT=62.70 NW
75 LF 12" HDPE @ 0.53%
PCB30 RIM=66.50
15 LF 12" HDPE @ 0.67%
PCB31 RIM=66.75
20 LF 12" HDPE @ 2.50%
PCB20 RIM=64.50
F.F.=67.50
134 LF 12" HDPE @ 0.52%
14 LF 12" HDPE @ 1.79%
F.F.=67.00
18 LF 15" HDPE @ 1.67%
PCB11 RIM=65.50
95 LF 12" HDPE @ 0.49%
7 LF 12" HDPE @ 2.14%
64.40
4.5%
PYD2 RIM=64.00
F.F.=64.50
66.40
66.90
34 LF 12" HDPE @ 0.59%
PCB21 RIM=64.50
PCB13 RIM=65.60
PCB14 RIM=64.65
66 LF 12" HDPE @ 0.61%
PCB12 RIM=65.60
65 LF 12" HDPE @ 0.62%
PCB37 RIM=65.25
PCB36 RIM=64.50
F.F.=65.50
94 LF 12" HDPE @ 1.54%
59 LF 12" HDPE @ 0.59%
17 LF 12" HDPE @ 1.18%
PCB35 RIM=63.50
92 LF 12" HDPE @ 0.54%
66.15
66.15
65.65
65.65
66.50
96 LF 12" HDPE @ 0.53%
PDMH13 RIM=64.50
65.00
PROPOSED RAIN GUARDIAN TURRET (TYP.)
PROPOSED RAIN GARDEN (RAIN GARDEN #2) (SEE DETAIL)
PROPOSED RAIN GARDEN (RAIN GARDEN #3) (SEE DETAIL)
CONSTRUCT RIP-RAP APRON D_{50}=6" (MAINTAIN MIN. 1' OFF EDGE OF WETLAND)
CONSTRUCT CONCRETE HEADWALL INV OUT=55.25
PCB34 RIM=63.45
27 LF 12" HDPE @ 0.56%
PROPOSED SEDIMENT FOREBAY
19 LF 18" HDPE @ 0.79%
POCS3 RIM=61.00
26 LF 15" HDPE @ 1.92%
62.5
60.5
PDMH12 RIM=62.25
CONNECT EXISTING 15" RCP TO STRUCTURE INV=56.00 (VERIFY-IN-FIELD)
83 LF 12" HDPE @ 0.54%
PCB32 RIM=62.75
59 LF 12" HDPE @ 0.59%
18 LF 12" HDPE @ 0.56%
PCB39 RIM=64.15
PCB38 RIM=64.15
105 LF 12" HDPE @ 0.52%
PCB33 RIM=62.75
28 LF 36" HDPE @ 0.54%
PDMH3 RIM=65.50
9 LF 15" HDPE @ 0.56%
PCDS2 RIM=65.50
PDMH4 RIM=65.50
81 LF 30" HDPE @ 0.49%
11 LF 15" HDPE @ 0.45%
9 LF 36" HDPE @ 2.22%
PJFF2 RIM=65.50
7 LF 15" HDPE @ 0.71%
PDMH2 RIM=65.50
22 LF 36" HDPE @ 0.45%
PDMH1 RIM=64.35
CONNECT EXISTING 36" RCP TO STRUCTURE INV=58.80± (CONTRACTOR TO VERIFY INVERT IN-FIELD AS FIRST ORDER OF WORK)
PCB41 RIM=64.65
18 LF 12" HDPE @ 0.83%
106 LF 24" HDPE @ 0.52%
F.F.=67.00
44 LF 12" HDPE @ 0.80%
PDMH10 RIM=65.75
F.F.=67.00
44 LF 12" HDPE @ 0.68%
PDMH9 RIM=65.75
F.F.=66.75
PDMH5 RIM=65.50
47 LF 12" HDPE @ 1.70%
105 LF 15" HDPE @ 0.52%
70 LF 18" HDPE @ 0.50%
10 LF 18" HDPE @ 0.50%
PCB42 RIM=65.25
115 LF 12" HDPE @ 0.52%
54 LF 15" HDPE @ 0.56%
F.F.=68.00
11 LF 12" HDPE @ 0.91%
PDMH26 RIM=67.75
15 LF 12" HDPE @ 0.67%
29 LF 12" HDPE @ 0.69%
F.F.=68.00
PDMH11 RIM=65.75
11 LF 18" HDPE @ 0.91%
PCB49 RIM=65.60
75 LF 12" HDPE @ 0.53%
PYD3 RIM=66.75
163 LF 12" HDPE @ 0.52%
PYD4 RIM=66.75
26 LF 12" HDPE @ 0.58%
PCB48 RIM=65.15
56 LF 15" HDPE @ 0.50%
MEET EXISTING INVERT INV OUT=62.48 (V.I.F.)
25 LF 24" HDPE @ 0.60%
PDMH8 RIM=65.60
26 LF 12" HDPE @ 0.58%
PCB47 RIM=65.00
89 LF 18" HDPE @ 0.51%
PCB44 RIM=67.15
71 LF 18" HDPE @ 0.49%
22 LF 12" HDPE @ 0.68%
PCB45 RIM=66.85
83 LF 12" HDPE @ 1.02%
26 LF 18" HDPE @ 0.58%
PCB43 RIM=65.75
43 LF 12" HDPE @ 0.58%
F.F.=68.00
PCB40 RIM=64.65
11 LF 12" HDPE @ 1.36%
PDMH6 RIM=68.00
8 LF 12" HDPE @ 1.87%
F.F.=68.00
77 LF 12" HDPE @ 0.58%
PDMH7 RIM=67.50
PCB46 RIM=66.25
50' LIMITED CUT BUFFER
POND
25' VEGETATED BUFFER
SEE SHEET C-101 FOR GRADING & DRAINAGE PLAN NOTES & LEGEND
0 40' 80'
GRAPHIC SCALE

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE
NEIL A HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

GRADING, DRAINAGE, AND EROSION CONTROL PLAN

SCALE: AS SHOWN

C-402

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CONNECT TO EXISTING FORCE MAIN (VERIFY SIZE AND MATERIAL IN FIELD)

PROPOSED GATE VALVE (TYP.)

PROPOSED SDR26 PVC SEWER FORCE MAIN (TYP.) (COORDINATE SIZE BASED ON EXISTING CONNECTION PRIOR TO CONSTRUCTION)

CONNECT TO EXISTING 6" WATER MAIN (TYP.) (COORD. W/ CITY OF PORTSMOUTH)

PROPOSED THRUST BLOCK (TYP.)

25' VEGETATED BUFFER

50' LIMITED CUT BUFFER

PROPOSED FIRE & DOMESTIC WATER SERVICE CONNECTIONS (COORD W/ BUILDING DWGS, FIRE DEPT & DPW) (SEE UTILITY NOTE # 20)

PROPOSED THRUST BLOCK (TYP)

PROPOSED GATE VALVE (TYP)

PROPOSED FIRE HYDRANT (TYP) (COORD W/ FIRE DEPT & DPW)

PROPOSED COMMUNICATIONS CONNECTION (COORD W/ BUILDING DWGS & UTILITY COMPANY) (TYP.)

PROPOSED FIRE & DOMESTIC WATER SERVICE CONNECTIONS (TYP.) (COORD W/ BUILDING DWGS, FIRE DEPT & DPW) (SEE UTILITY NOTE # 20)

PROPOSED ELECTRIC CONNECTION (COORD W/ BUILDING DWGS, EVERSOURCE)

PSMH11
RIM=65.50
INV IN=60.95 SW
INV OUT=60.85 SE
43 LF 6" PVC @ 1.28%
INVERT @ BUILDING=61.50
(COORD W/ BLDG DWGS)

PROPOSED COMMUNICATIONS CONNECTION (COORD W/ BUILDING DWGS & UTILITY COMPANY)

PROPOSED FIRE & DOMESTIC WATER SERVICE CONNECTIONS (TYP.) (COORD W/ BUILDING DWGS, FIRE DEPT & DPW) (SEE UTILITY NOTE # 20)

PROPOSED FIRE HYDRANT (COORD W/ FIRE DEPT & DPW)

PSMH8
RIM=65.35
INV IN=60.05 NE
INV IN=60.05 SW
INV OUT=59.95 SE

PROPOSED ELECTRIC CONNECTION (COORD W/ BUILDING DWGS, EVERSOURCE)

PROPOSED COMMUNICATIONS CONNECTION (COORD W/ BUILDING DWGS & UTILITY COMPANY) (TYP.)

PROPOSED SECONDARY ELECTRICAL DUCT BANK (TYP.)

11 LF 6" PVC @ 1.82%
INVERT @ BUILDING=60.25
(COORD W/ BLDG DWGS)

35 LF 6" PVC @ 1.14%
INVERT @ BUILDING=60.45
(COORD W/ BLDG DWGS)

185 LF 8" PVC @ 0.45%

152 LF 8" PVC @ 0.42%

PROPOSED ELECTRIC CONNECTION (COORD W/ BUILDING DWGS, EVERSOURCE)

PROPOSED COMMUNICATION JUNCTION MANHOLE (TYP.)

PROPOSED FIRE & DOMESTIC WATER SERVICE CONNECTIONS (COORD W/ BUILDING DWGS, FIRE DEPT & DPW) (SEE UTILITY NOTE # 20)

PROPOSED WATER LINE (COORD W/ PORTSMOUTH DPW)

PSMH13
RIM=65.75
INV IN=60.90 SW
INV OUT=60.80 SE

PROPOSED ELECTRIC CONNECTION (COORD W/ BUILDING DWGS, EVERSOURCE)

26 LF 6" PVC @ 1.35%
INVERT @ BUILDING=61.25
(COORD W/ BLDG DWGS)

PROPOSED FIRE & DOMESTIC WATER SERVICE CONNECTIONS (TYP.) (COORD W/ BUILDING DWGS, FIRE DEPT & DPW) (SEE UTILITY NOTE # 20)

PSMH7
RIM=65.50
INV IN=59.30 NW
INV IN=59.30 NE
INV IN=59.30 SW
INV OUT=59.20 SE

PROPOSED COMMUNICATIONS CONNECTION (COORD W/ BUILDING DWGS & UTILITY COMPANY)

MATCH LINE
MATCH LINE

SEE SHEET C-101 FOR UTILITY PLAN NOTES & LEGEND

0 40' 80'
GRAPHIC SCALE

Tighe&Bond

PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
6/17/24

NEIL A HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

UTILITIES PLAN

SCALE: AS SHOWN

C-501

Last Saved: 6/14/2024
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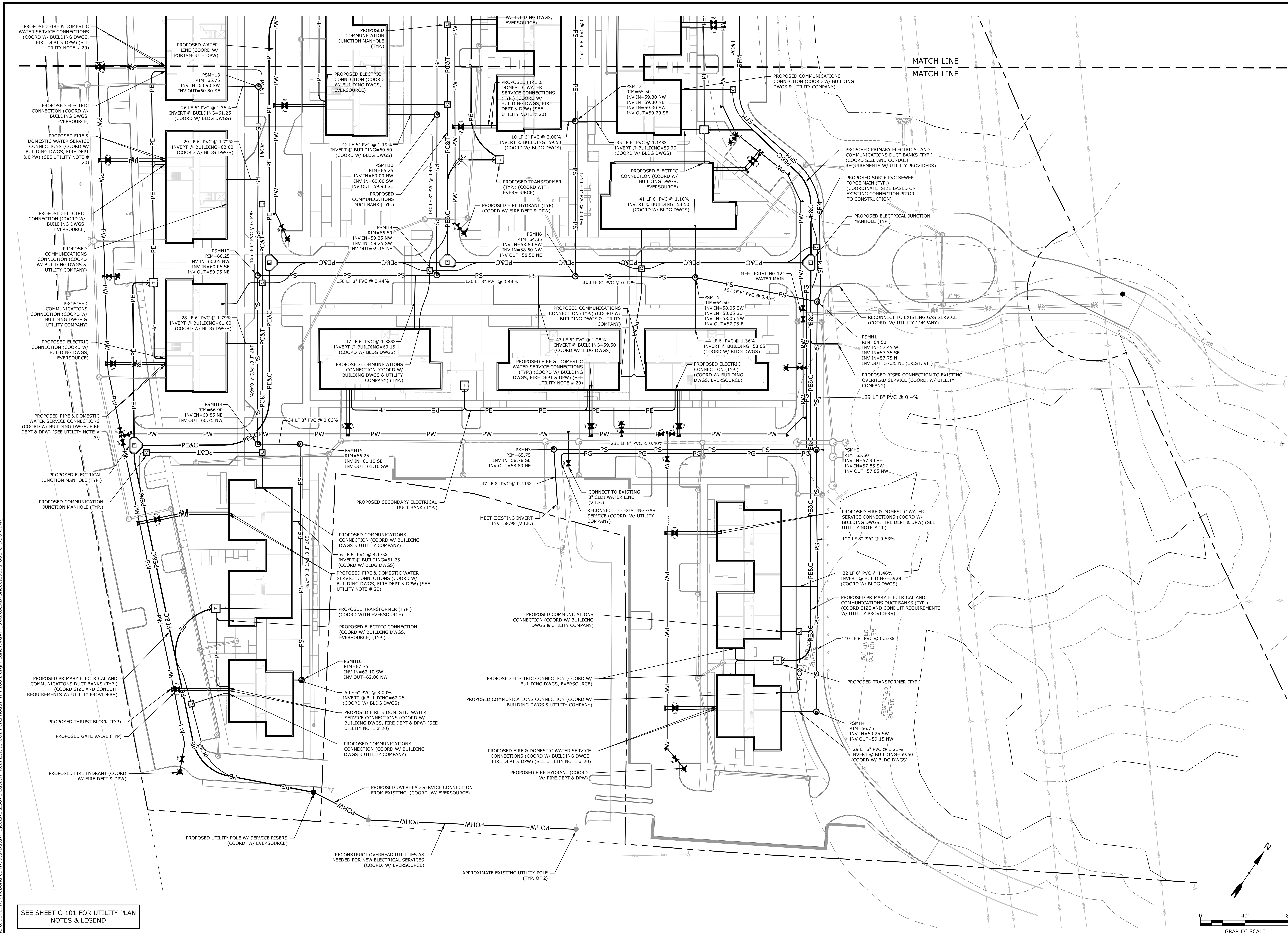

SEE SHEET C-101 FOR UTILITY PLAN NOTES & LEGEND

Last Saved: 6/14/2024
Plotted On:Jun 14, 2024-2:13pm By: BCurcio
Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-C-DSGN.dwg

Tighe&Bond

STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 6/17/24

STATE OF NEW HAMPSHIRE NEIL A HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
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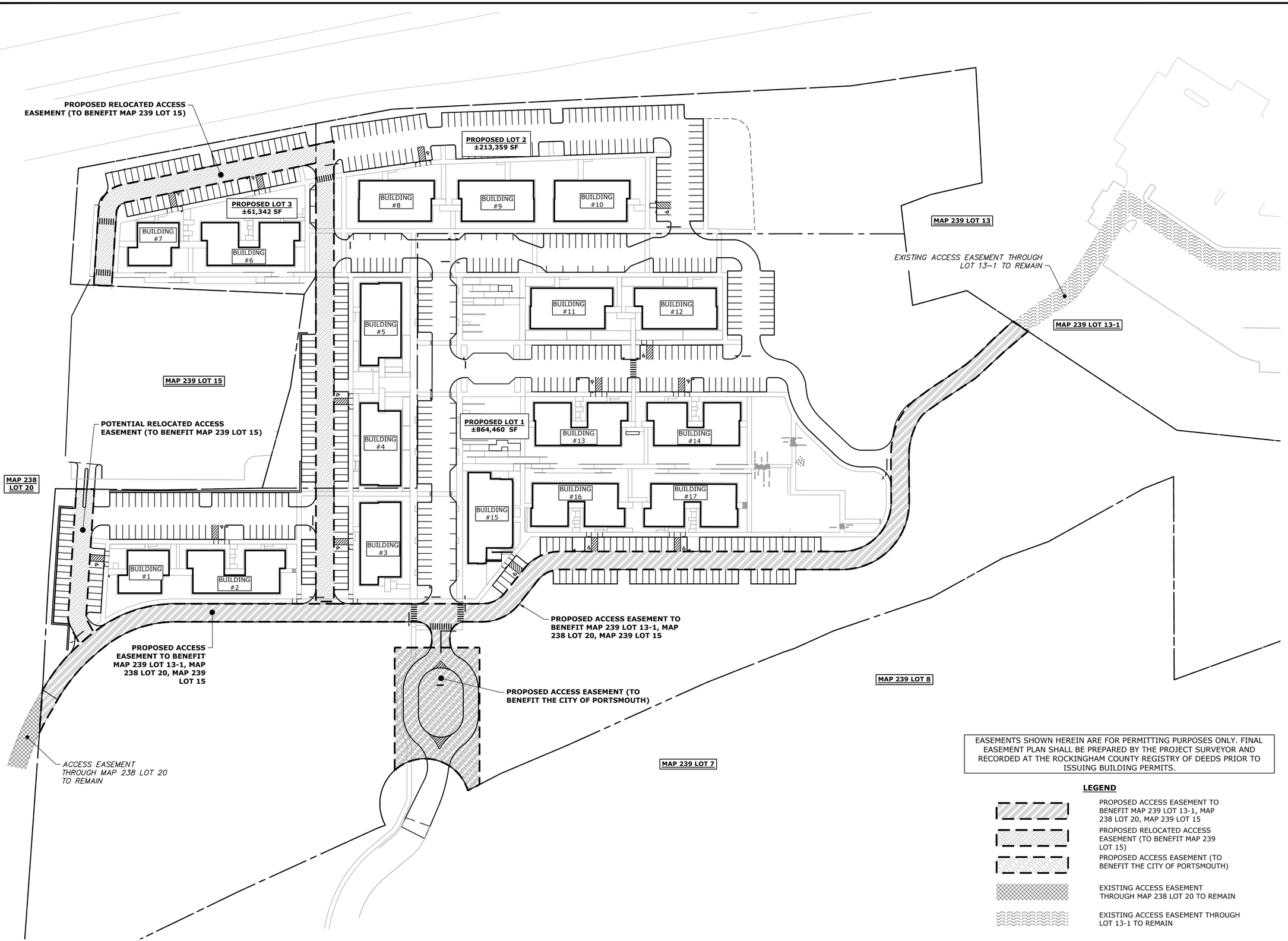
PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

UTILITIES PLAN

SCALE: AS SHOWN

C-502



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 DEEDS PRIOR TO ISSUING BUILDING PERMITS.

LEGEND

- PROPOSED ACCESS EASEMENT TO BENEFIT MAP 239 LOT 13-1, MAP 238 LOT 20, MAP 239 LOT 15
- PROPOSED RELOCATED ACCESS EASEMENT (TO BENEFIT MAP 239 LOT 15)
- PROPOSED ACCESS EASEMENT (TO BENEFIT THE CITY OF PORTSMOUTH)
- EXISTING ACCESS EASEMENT THROUGH MAP 238 LOT 20 TO REMAIN
- EXISTING ACCESS EASEMENT THROUGH LOT 13-1 TO REMAIN

Tighe&Bond

N

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 6/17/24

STATE OF NEW HAMPSHIRE – NEIL A HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER – 06/17/2024

0 60' 120'
GRAPHIC SCALE

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
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PROJECT NO:	E5071-001
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FILE:	E5071-001-FIGS.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

ACCESS EASEMENT PLAN

SCALE: AS SHOWN

C-600

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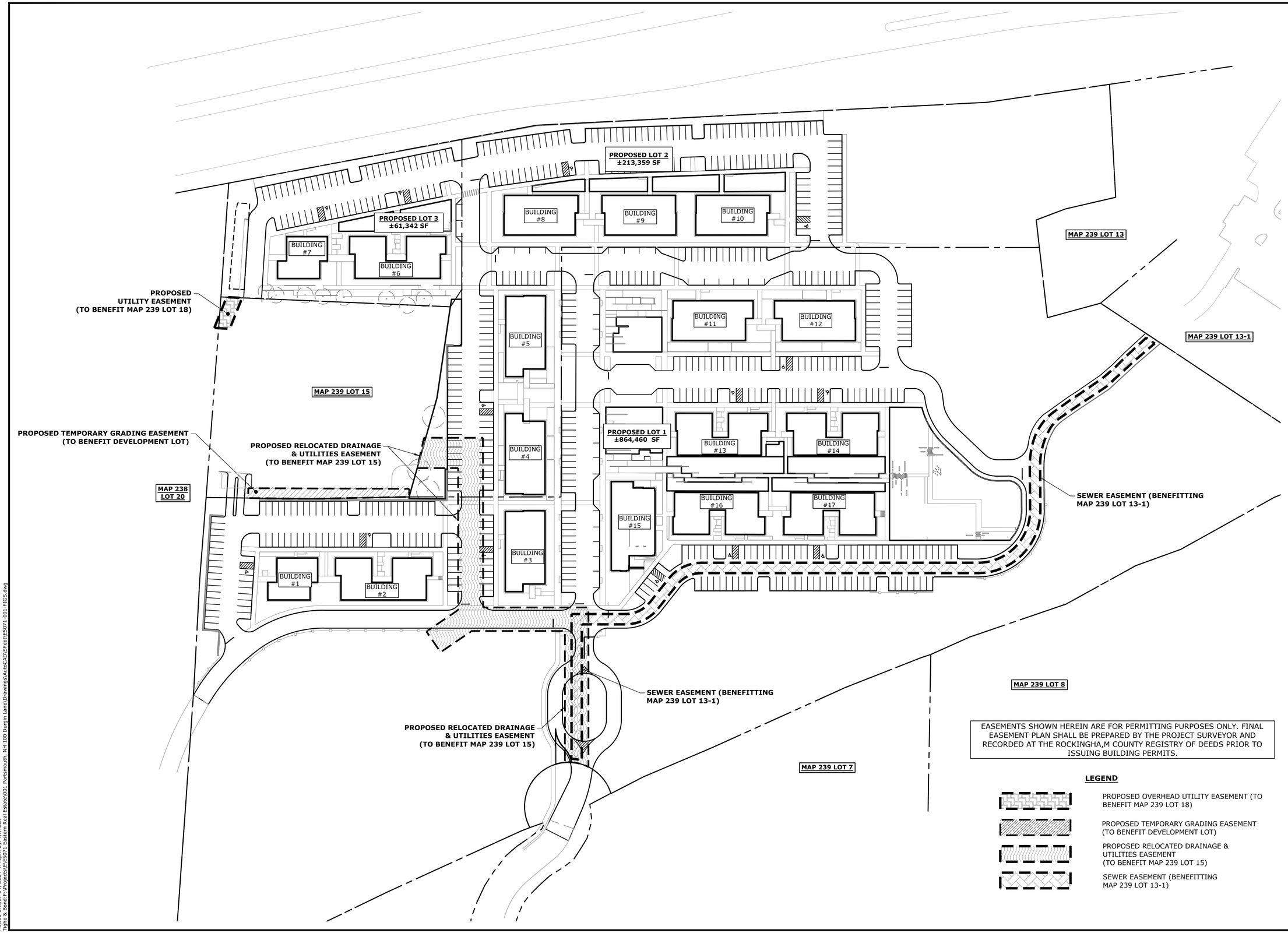

EASEMENTS SHOWN HEREIN ARE FOR PERMITTING PURPOSES ONLY. FINAL EASEMENT PLAN SHALL BE PREPARED BY THE PROJECT SURVEYOR AND RECORDED AT THE ROCKINGHA,M COUNTY REGISTRY OF DEEDS PRIOR TO ISSUING BUILDING PERMITS.

LEGEND

- PROPOSED OVERHEAD UTILITY EASEMENT (TO BENEFIT MAP 239 LOT 18)
- PROPOSED TEMPORARY GRADING EASEMENT (TO BENEFIT DEVELOPMENT LOT)
- PROPOSED RELOCATED DRAINAGE & UTILITIES EASEMENT (TO BENEFIT MAP 239 LOT 15)
- SEWER EASEMENT (BENEFITTING MAP 239 LOT 13-1)

Tighe&Bond

N

PATRICK CRIMMINS
No. 12378
LICENSED
STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
6/17/24

NEIL A HANSEN
No. 15227
LICENSED
STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
06/17/2024

0 60' 120'
GRAPHIC SCALE

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-FIGS.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

UTILITY, DRAINAGE, AND GRADING EASEMENT PLAN

SCALE: AS SHOWN

C-601

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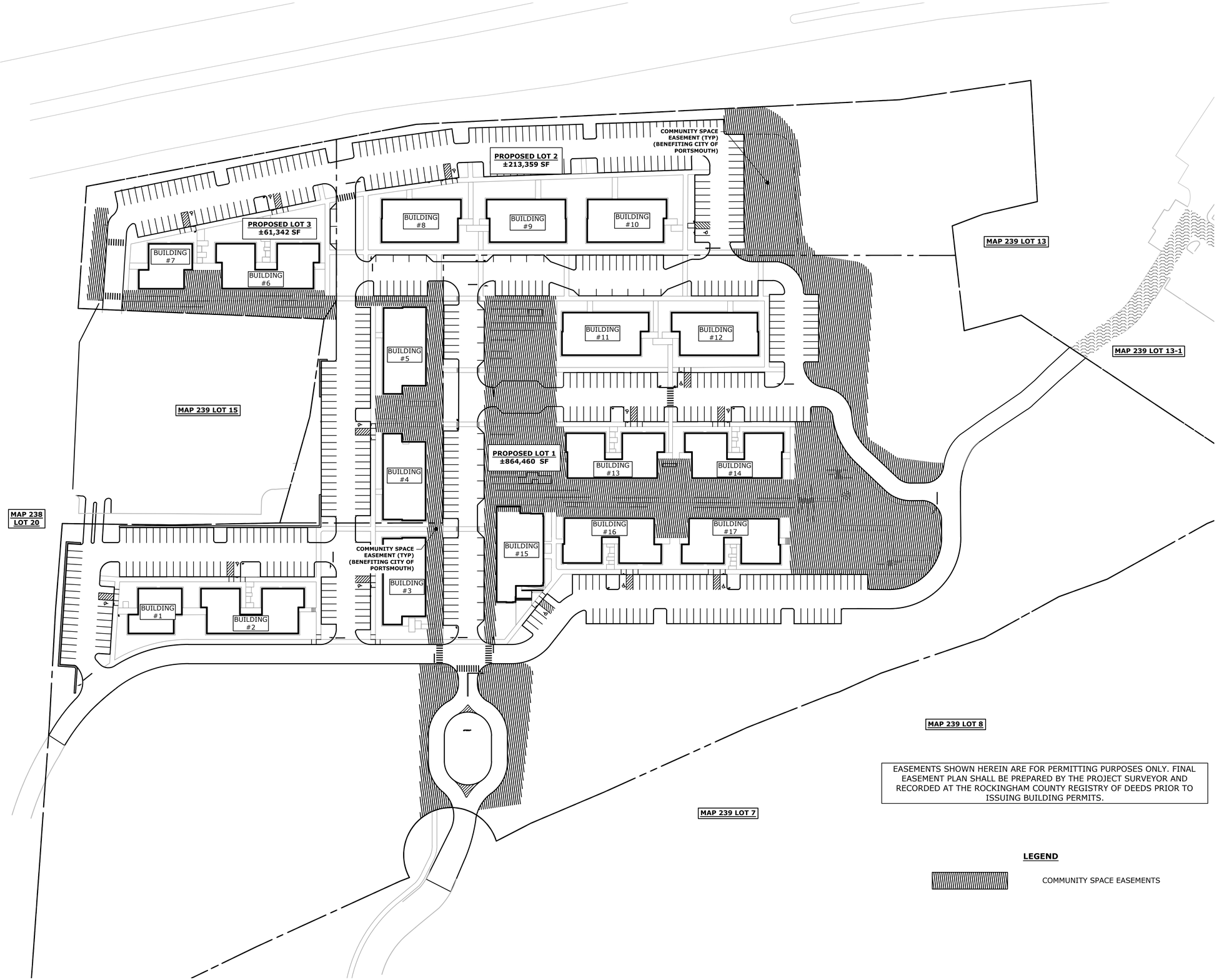
Tighe & Bond:F:\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-FIGS.dwg



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LEGEND

COMMUNITY SPACE EASEMENTS

Tighe&Bond

N

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE
NEIL A HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
06/17/2024

0 60' 120'
GRAPHIC SCALE

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
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DATE:	4/22/2024
FILE:	E5071-001-FIGS.dwg
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DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

COMMUNITY EASEMENT PLAN

SCALE: AS SHOWN

C-602

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Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-FIGS.dwg

GENERAL PROJECT INFORMATION
PROJECT APPLICANT: 100 DURGIN LANE OWNER, LLC

PROJECT NAME: PROPOSED MIXED USE DEVELOPMENT
PROJECT MAP / LOT: MAP 239 / LOT 18
MAP 239 / LOT 16
MAP 239 / LOT 13-2
PROJECT ADDRESS: DURGIN LANE
PORTSMOUTH, NH 03801
PROJECT LATITUDE: 43°-04'-43" N
PROJECT LONGITUDE: 70°-45'-41" W

PROJECT DESCRIPTION
THE PROJECT CONSISTS OF THE CONSTRUCTION OF AN 360 RESIDENTIAL UNITS IN A MIX OF 3 AND 4 STORY BUILDINGS.

DISTURBED AREA
THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 15.0 ACRES.

SOIL CHARACTERISTICS
BASED ON THE SITE SPECIFIC SOIL SURVEY, THE SOILS ON SITE PRIMARILY CONSIST OF UDORTHENTS SOILS WHICH ARE WELL DRAINED SOILS WITH A HYDROLOGIC SOIL GROUP RATING OF B.

NAME OF RECEIVING WATERS
THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA A CLOSED DRAINAGE SYSTEM TO AN UNNAMED ON SITE WETLANDS WHICH ULTIMATELY FLOW 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
   - 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. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. VEGETATIVE PRACTICE:
   A. FOR PERMANENT MEASURES AND PLANTINGS:
      a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
      b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
      c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
      d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
      e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
      f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
      g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 LBS/ACRE

   IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.
3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

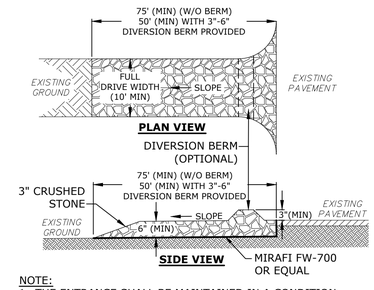
CONCRETE WASHOUT AREA:
1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:
1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

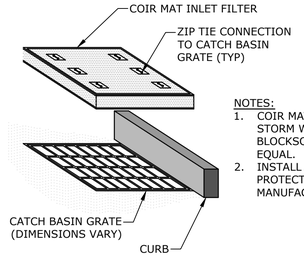
SPILL PREVENTION:
1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL REGULATED MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE, ON AN IMPERVIOUS SURFACE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
      g. THE TRAINING OF ON-SITE EMPLOYEES AND THE ON-SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      b. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      c. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
      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.



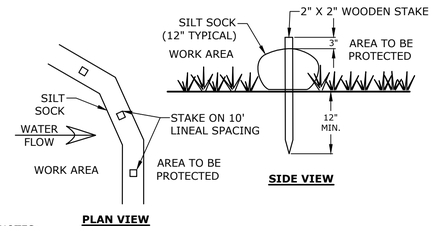
NOTE:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABILIZED CONSTRUCTION EXIT
NO SCALE



NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION BARRIER
NO SCALE



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

SILT SOCK
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS – No. 12378 – LICENSED PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE – NEIL A HANSEN – No. 15227 – LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

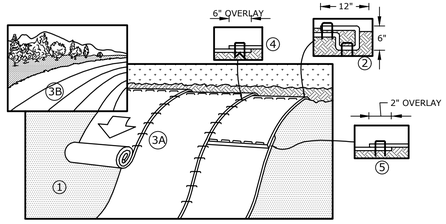
PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DTLS.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

EROSION CONTROL NOTES AND DETAILS SHEET

SCALE: AS SHOWN

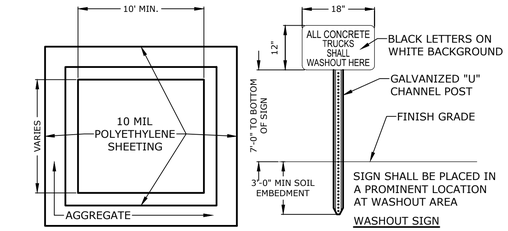
C-801

Last Saved: 6/14/2024
Printed: 6/17/2024 10:14:4-4:49pm By: BCurcio
Tighe & Bond: \\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-C-DTLS.dwg

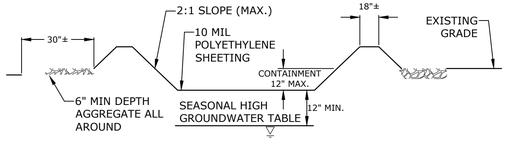


NOTES:
1. EROSION CONTROL BLANKET SHALL BE AN ALL NATURAL PRODUCT WITH NO PHOTO DEGRADABLE COMPONENTS, NORTH AMERICAN GREEN SC150BN OR APPROVED EQUAL.
2. STAKES SHALL BE BIODEGRADABLE BIOSTAKES OR ALL NATURAL WOOD ECOSTAKES OR APPROVED EQUAL. THE LENGTH OF STAKES SHALL BE BASED OFF OF THE MANUFACTURERS RECOMMENDATION.
3. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, COMPOST AND SEED.
4. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAKES IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAKING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAKES ACROSS THE WIDTH OF THE BLANKET.
5. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAKES IN APPROPRIATE LOCATIONS AS SHOWN ON THE MANUFACTURERS PATTERN GUIDE.
6. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES MATERIAL UTILIZED.

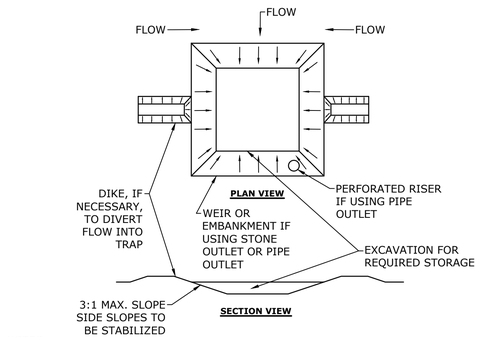
EROSION CONTROL BLANKET
NO SCALE



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.

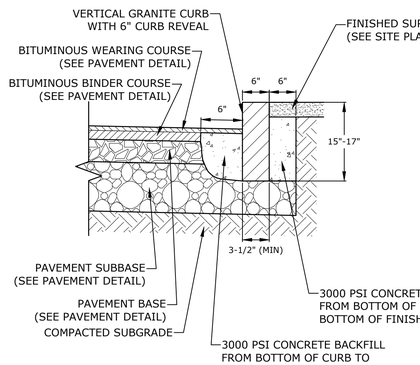


CONCRETE WASHOUT AREA
NO SCALE



NOTES:
1. 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.

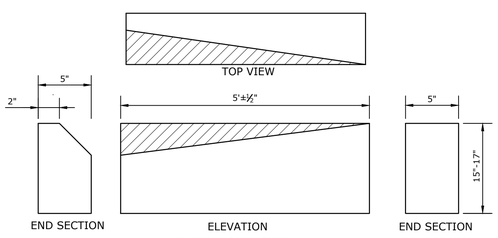
SEDIMENT TRAP
NO SCALE



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

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

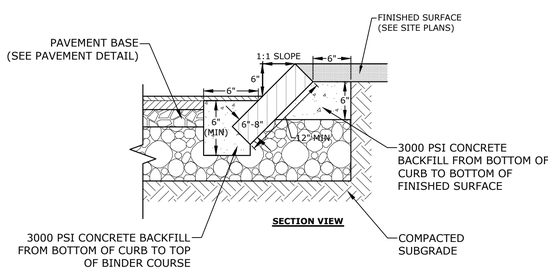
VERTICAL GRANITE CURB
NO SCALE



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.

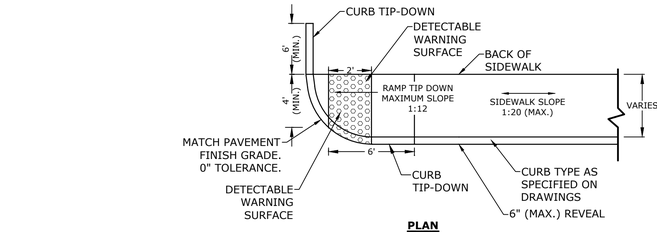
CURB TRANSITION
NO SCALE



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'

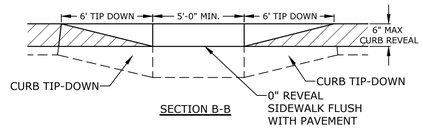
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF SLOPED GRANITE CURB (SGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).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

SLOPED GRANITE CURB
NO SCALE

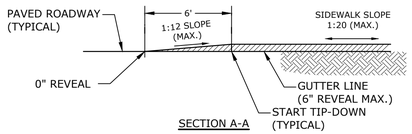


PLAN

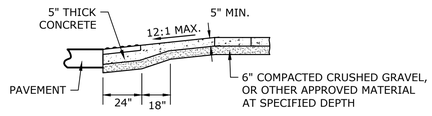
NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



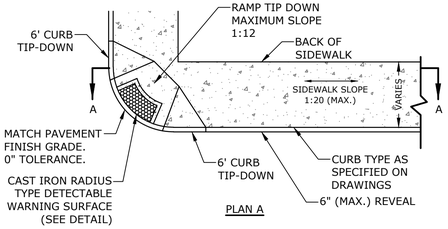
SECTION B-B



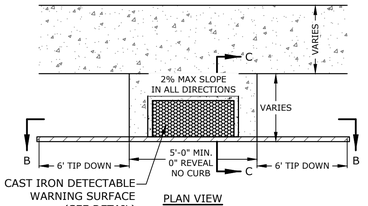
SECTION A-A



SECTION C-C



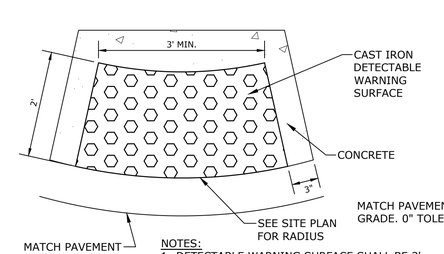
PLAN A



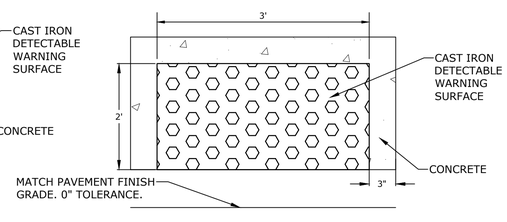
PLAN VIEW

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. LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB ALONG THE EDGE OF THE LANDING.
5. 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.
6. 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.
7. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
8. 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.
9. 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



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

Tighe&Bond

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

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APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-802

Last Saved: 6/14/2024
Plotted: Jun 14, 2024 - 4:48pm By: BCurcio
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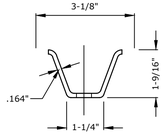
R7-8P
18" X 9"
GREEN ON WHITE

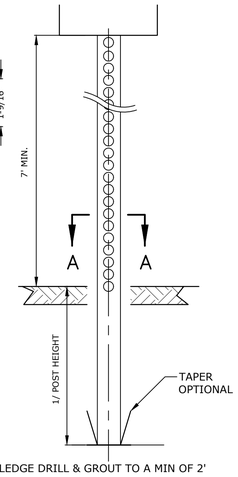
R7-8
12" X 18"
BLUE AND GREEN
ON WHITE

R5-1
30"X30"
WHITE ON RED

R1-1
30"X30"
WHITE ON RED



SECTION A-A



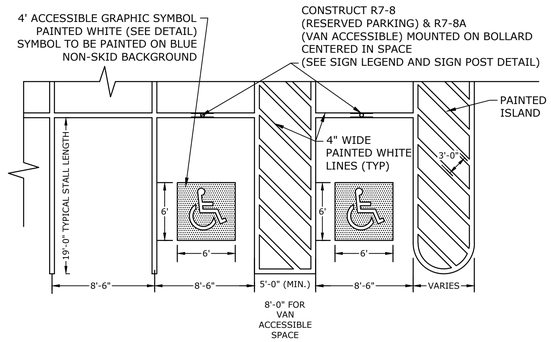
* IN LEDGE DRILL & GROUT TO A MIN OF 2'

LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASSTM A-576 (GRADE 1070 - 1080)

FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

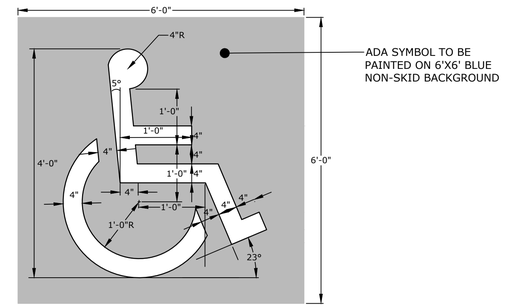
NOTE:
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

SIGN LEGEND AND SIGN POST
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 AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

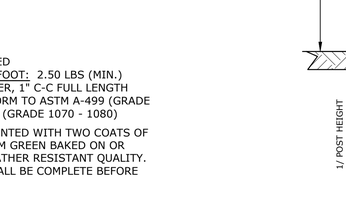
PARKING STALL/PAINTED ISLAND STRIPING
NO SCALE



NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

ACCESSIBLE SYMBOL
NO SCALE

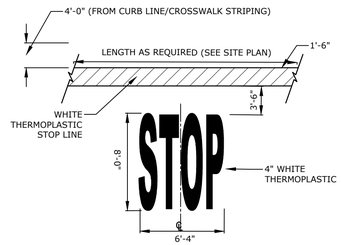
SECTION



PLAN

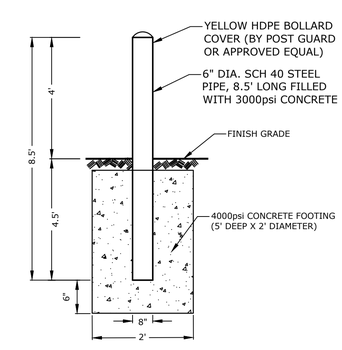
NOTE:
1. COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH
NO SCALE



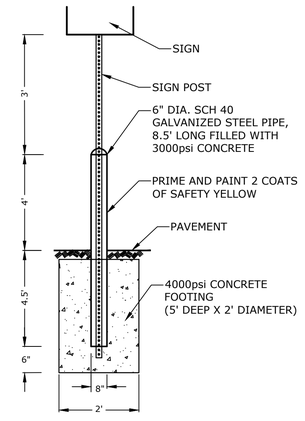
NOTE:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

STOP BAR AND LEGEND
NO SCALE

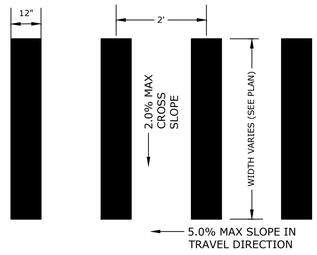


NOTE:
1. COORDINATE WITH EVERSOURCE TO VERIFY THAT BOLLARD, FOOTING, AND BOLLARD COVER MEET EVERSOURCE REQUIREMENTS.

BOLLARD DETAIL
NO SCALE

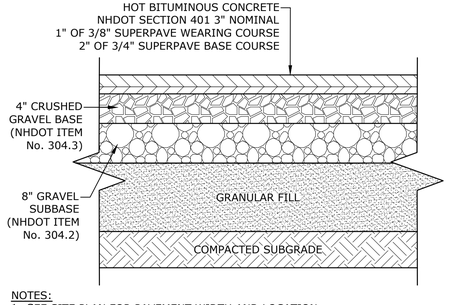


BOLLARD MOUNTED SIGN DETAIL
NO SCALE



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

CROSSWALK STRIPING
NO SCALE



NOTES:
1. 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.

ON-SITE PAVEMENT SECTION
NO SCALE

Tighe&Bond

6/17/24

06/17/2024

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100 DURGIN LANE
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DETAILS SHEET

SCALE: AS SHOWN

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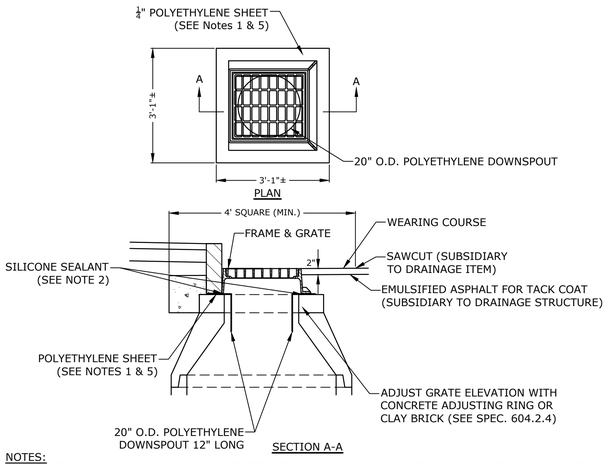
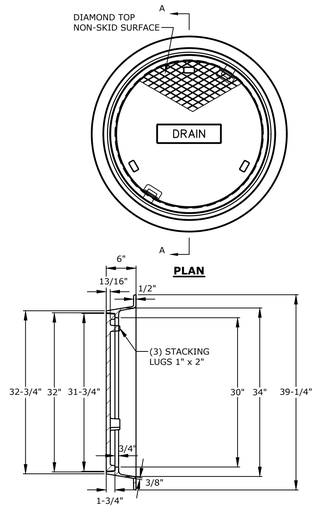
Printed: June 17, 2024 - 10:29am By: BCurcio
Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-C-DTLS.dwg



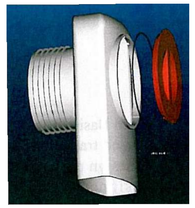
NOTES:
1. POLYETHYLENE LINER SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
2. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (SUBSIDIARY TO ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET.
3. PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF THE GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).
4. USE ON DRAINAGE STRUCTURES 4' MIN. DIAMETER ONLY.
5. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).
6. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.
7. PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT.
8. SEE NHDOT DR-04, "DI-DB, UNDERDRAIN FLUSHING BASIN AND POLYETHYLENE LINER DETAILS", FOR ADDITIONAL INFORMATION.
9. CATCHBASINS WITHIN CITY RIGHT OF WAY SHALL HAVE A POLYETHYLENE LINER

POLYETHYLENE LINER
NO SCALE



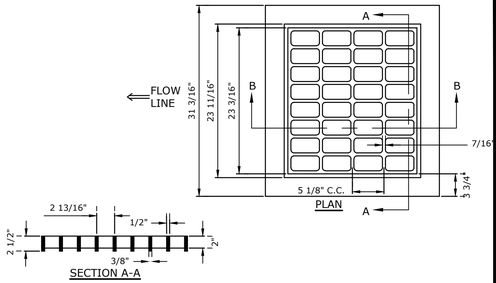
NOTES:
1. ALL DIMENSIONS ARE NOMINAL.
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER.

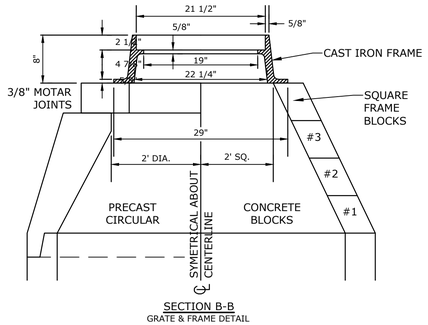
DRAIN MANHOLE FRAME & COVER
NO SCALE



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

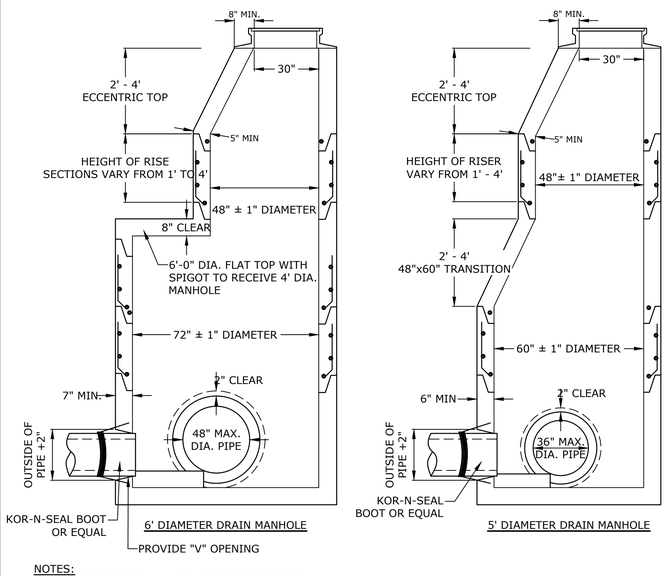
"ELIMINATOR" OIL FLOATING DEBRIS TRAP

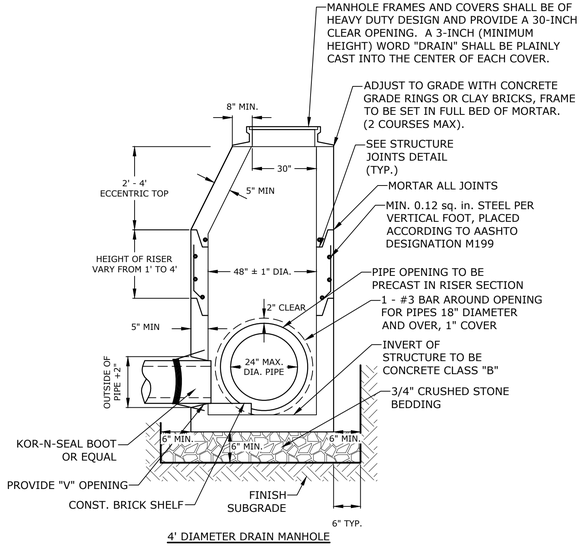




NOTE:
1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

CATCH BASIN FRAME & GRATE
NO SCALE

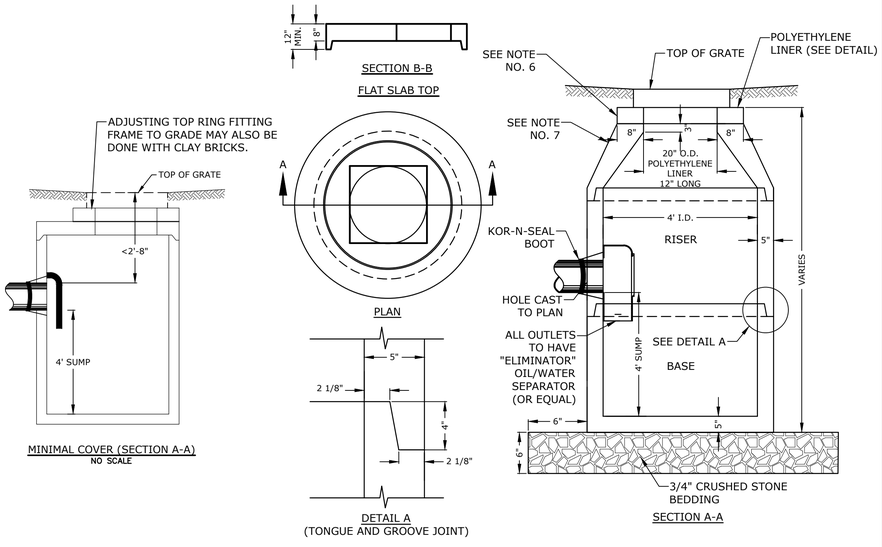




NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

DIAMETER	WALL THICKNESS (MIN.)	FLOOR THICKNESS (MIN.)
4'	5"	6"
5'	6"	8"
6'	7"	8"
8'	9"	10"
9'	11"	10"

DRAIN MANHOLES
NO SCALE



NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCHBASIN
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 6/17/24

STATE OF NEW HAMPSHIRE – NEIL A HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER – 06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

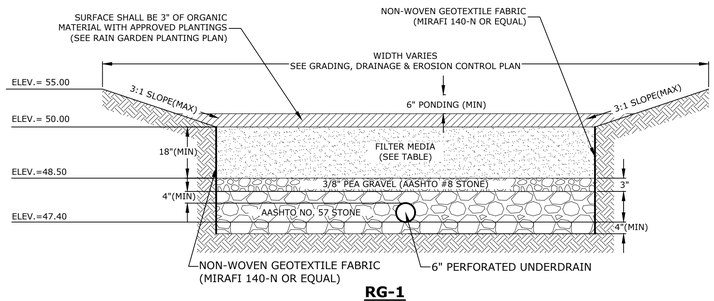
MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DTLS.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

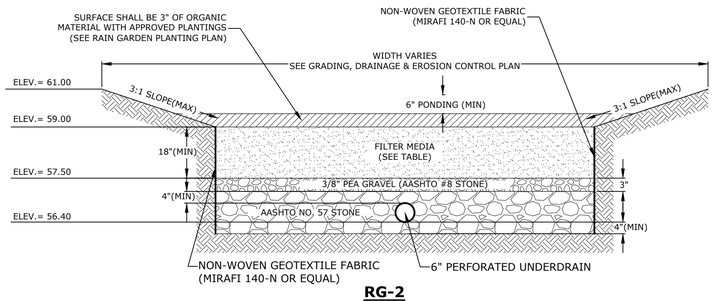
DETAILS SHEET

SCALE: AS SHOWN

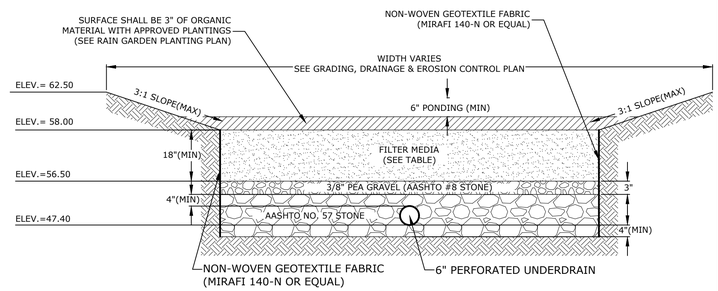
C-804



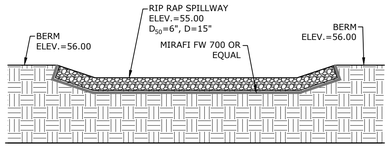
RG-1
NO SCALE



RG-2
NO SCALE



RG-3
NO SCALE



NOTES:
1. SEE GRADING, DRAINAGE & EROSION CONTROL PLANS FOR LOCATIONS AND DIMENSIONS.

RIP RAP SPILLWAY FOR RG-1
NO SCALE

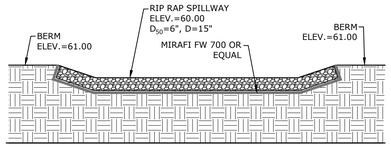
NOTES:
1. BARK MULCH SHALL BE AGED A MINIMUM OF 12 MONTHS AND SHALL NOT FLOAT.
2. RAIN GARDENS SHALL NOT BE PLACED INTO SERVICE UNTIL THE PRACTICE HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. CONTRACTOR SHALL KEEP ALL EXCAVATION EQUIPMENT OUTSIDE OF THE LIMIT OF THE RAIN GARDEN.
4. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR LOCATIONS, LAYOUTS, AND ELEVATIONS.
5. THE SAND PORTION OF THE FILTER MEDIA SHALL MEET THE FOLLOWING GRADATION (ASTM C-33):

SIEVE SIZE	PERCENT PASSING
3/8"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	5-30
#100	0-10

FILTER MEDIA COMPOSITION:

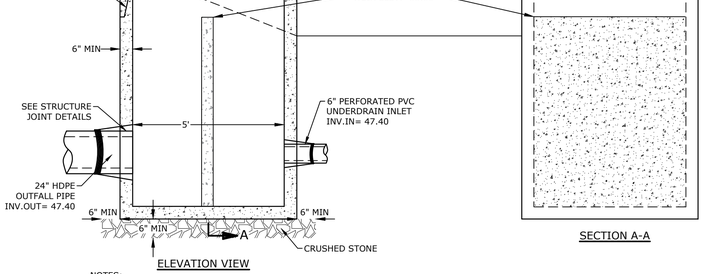
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL SIEVE NO.	PERCENT PASSING
ASTM C-33 CONCRETE SAND	50-55	SEE NOTE #5	
LOAMY SAND TOPSOIL	20-30	200	15-25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH	20-30	200	5 MAX

RAIN GARDENS
NO SCALE



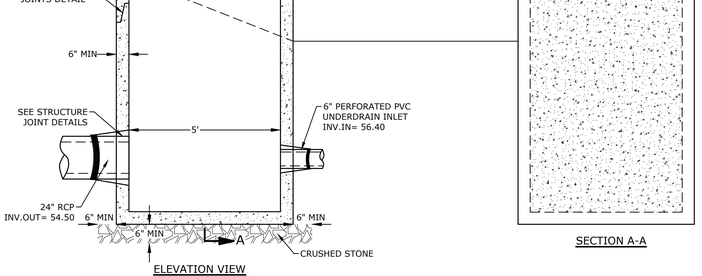
NOTES:
1. SEE GRADING, DRAINAGE & EROSION CONTROL PLANS FOR LOCATIONS AND DIMENSIONS.

RIP RAP SPILLWAY FOR RG-2
NO SCALE



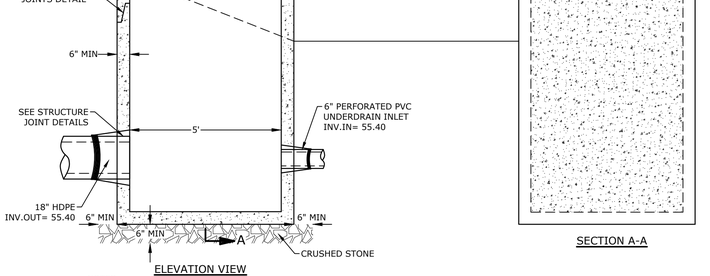
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

RAIN GARDEN OUTLET STRUCTURE (POCS1)
NO SCALE



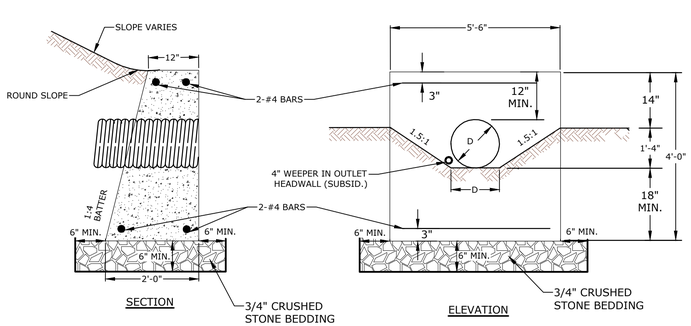
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

RAIN GARDEN OUTLET STRUCTURE (POCS2)
NO SCALE

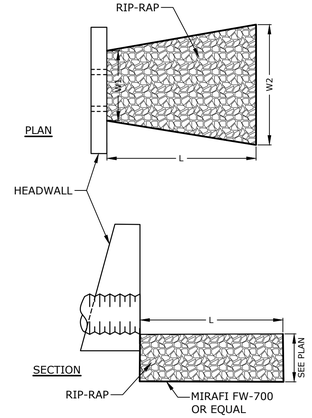


NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

RAIN GARDEN OUTLET STRUCTURE (POCS3)
NO SCALE



PRECAST CONCRETE HEADWALL
NO SCALE



NOTES:

1. STONE SIZE AND MAT DIMENSIONS DETAILED ON PLANS.
2. STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. FLAT OR ROUND ROCKS ARE NOT ACCEPTABLE. THE STONE SHALL BE HARD AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING, BE CHEMICALLY STABLE AND IT SHALL BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) OF THE INDIVIDUAL STONES SHALL BE AT LEAST 2.5.
3. THE STONE SHALL BE COMPOSED OF A WELL-GRADED MIXTURE DOWN TO THE ONE-INCH SIZE PARTICLE SUCH THAT 50 PERCENT OF THE MIXTURE BY WEIGHT SHALL BE LARGER THAN THE D50 SIZE SPECIFIED. A WELL-GRADED MIXTURE IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF THE LARGER STONE SIZE BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE PROGRESSIVELY SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE IN SUCH A MIXTURE SHALL BE 1.5 TIMES THE D50 SIZE.

RIP-RAP APRON DETAIL
NO SCALE

Tighe&Bond

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
6/17/24

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PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

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PORTSMOUTH,
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DETAILS SHEET

SCALE: AS SHOWN

C-805

Last Saved: 6/14/2024
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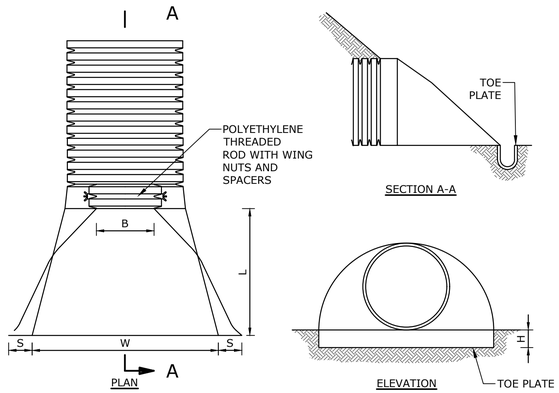
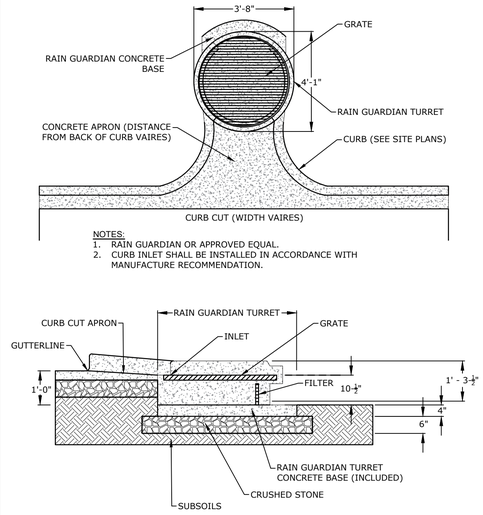


PIPE DIA.	S	B	H	L	W
12"	6.5"	10"	6.5"	25"	29"
15"	6.5"	10"	6.5"	25"	29"
18"	7.5"	15"	6.5"	32"	35"
24"	7.5"	18"	6.5"	36"	45"
30"	7.5"	12"	8.6"	58"	63"
36"	7.5"	25"	8.6"	58"	63"

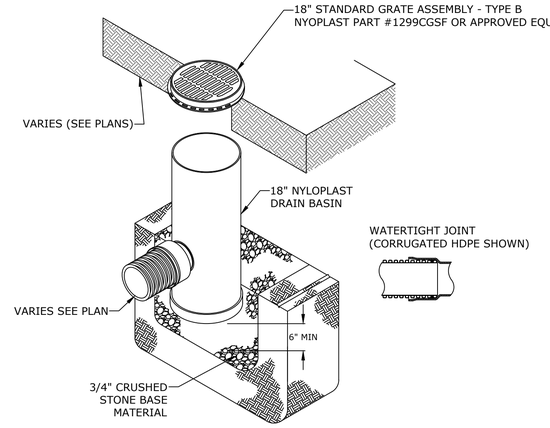
NOTE:
1. END SECTIONS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, COLUMBUS, OHIO. END SECTIONS TO BE WELDED TO PIPE AS PER MANUFACTURER'S RECOMMENDATIONS.

HDPE FLARED END SECTION
NO SCALE



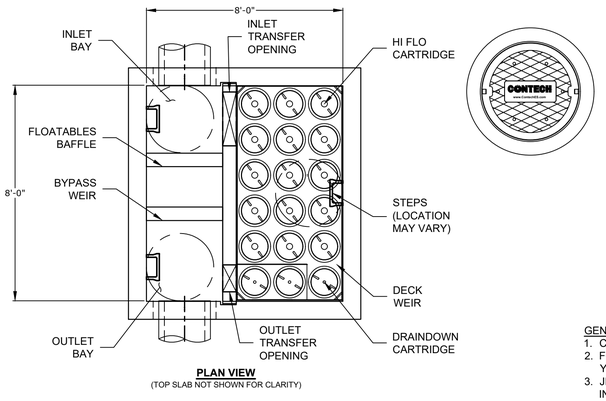
NOTES:
1. RAIN GUARDIAN OR APPROVED EQUAL.
2. CURB INLET SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURE RECOMMENDATION.

RAIN GUARDIAN TURRET
NO SCALE

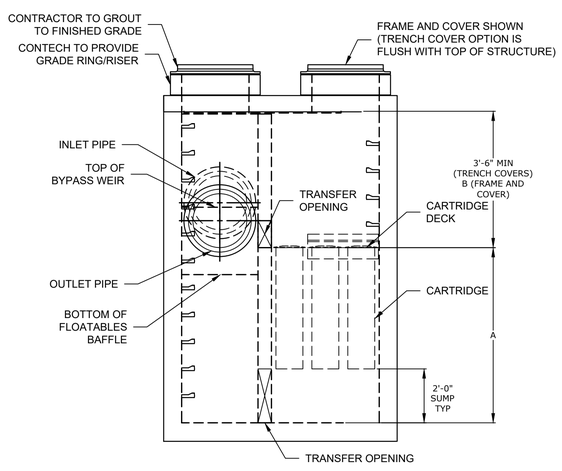


NOTES:
1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. SEE GRADING, DRAINAGE, AND EROSION CONTROL PLAN FOR LOCATIONS.

YARD DRAIN
NO SCALE



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

PROPOSED CDS STRUCTURE SCHEDULE	
STRUCTURE ID#	JFF TYPE
PJFF1	JFPD0808-10-3
PJFF2	JFPD0808-13-3

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.

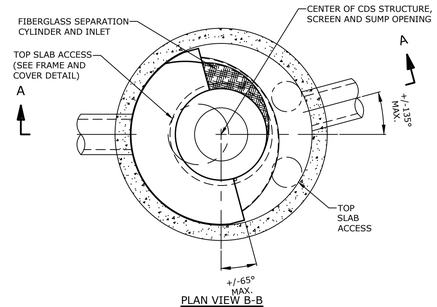
NOTE:
1. A QUALIFIED ENGINEER SHALL PROVIDE SUFFICIENT INSPECTION TO CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED DESIGN PLANS PER THE REQUIREMENTS OF THE ALTERATION OF TERRAIN PERMIT. CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO THE CONSTRUCTION OF THE UNDERGROUND FILTRATION UNITS.

Jellyfish Filter
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 8,287,728, 8,221,618 & US 8,123,935. OTHER INTERNATIONAL PATENTS PENDING

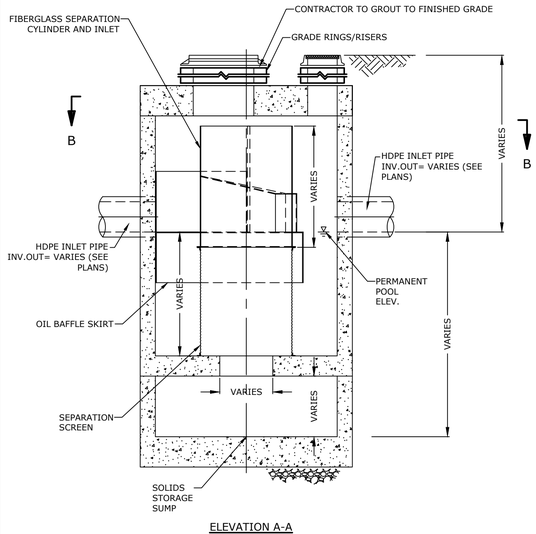
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH JELLYFISH STORMWATER FILTER (JFPD0808)
NO SCALE

PROPOSED CDS STRUCTURE SCHEDULE	
STRUCTURE ID#	JFF TYPE
PCDS1	CDS 6-3020
PCDS2	CDS 6-3030

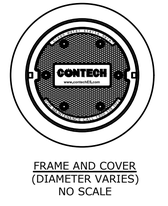


PLAN VIEW B-B



ELEVATION A-A

CONTECH CDS UNIT
NO SCALE



FRAME AND COVER
(DIAMETER VARIES)
NO SCALE

GENERAL NOTES:
1. CONTECH TO PROVIDE FINAL DIMENSIONS BASED ON APPROVED FLOWS AND ALL MATERIALS UNLESS NOTED OTHERWISE.
2. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
3. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
4. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

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 CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN ON GRADING PLAN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

Tighe&Bond

PATRICK CRIMMINS
No. 12378
STATE OF NEW HAMPSHIRE
LICENSED PROFESSIONAL ENGINEER
6/17/24

NEIL A HANSEN
No. 15227
STATE OF NEW HAMPSHIRE
LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DTLS.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-806

Last Saved: 6/14/2024
Printed: 6/17/2024 - 2:22pm By: BCurcio
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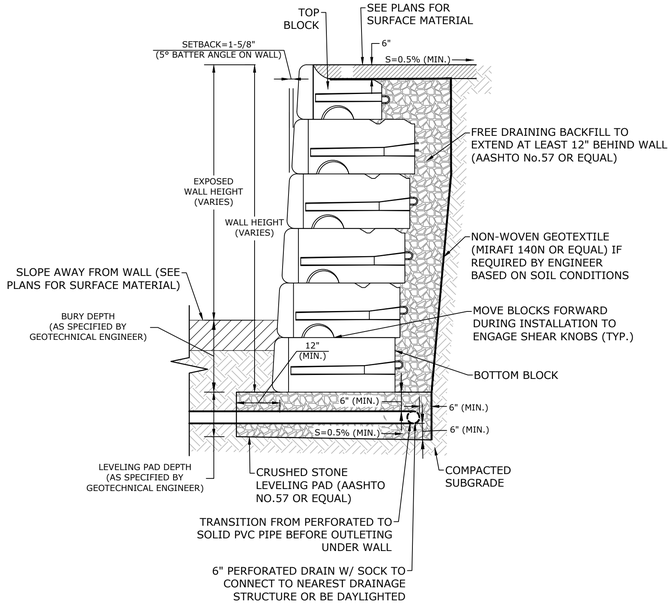
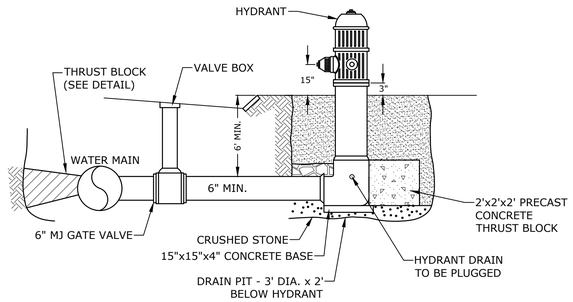


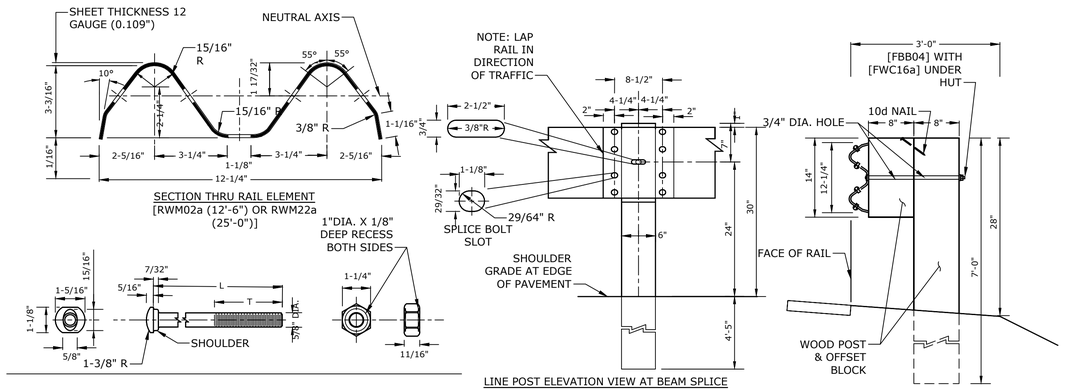
NOTES:
1. RETAINING WALL SHALL BE BY REDI ROCK LEDGESTONE OR APPROVED EQUAL.
2. THE CONTRACTOR SHALL SUBMIT DESIGN AND CALCULATIONS FOR THE RETAINING WALL THAT SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. CALCULATIONS SHALL INCLUDE A GLOBAL STABILITY ANALYSIS.
3. MINIMUM DESIGN PARARMETERS:
   - GLOBAL STABILITY FACTOR OF SAFETY = 1.3
   - OVERTURNING FACTOR OF SAFETY = 2.0
   - SLIDING FACTOR OF SAFETY = 1.5
   - GEOGRID PULLOUT FACTOR OF SAFETY = 1.5
   - SEISMIC FACTOR OF SAFETY = 1.1
4. WALL DESIGNS SHALL CONSIDER EFFECTS OF SLOPE, TRAFFIC LOADS, BUILDING LOADS, GUARDRAIL AND/OR FENCING AS REQUIRED.
5. WALL DESIGN ENGINEER SHALL CONSIDER HEIGHT AND SPECIFY SAFETY RAIL WHERE REQUIRED
6. ALL INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION MANUAL AND THE WALL DESIGN ENGINEER'S DESIGN PLANS AND SPECIFICATIONS.
7. THE WALL DESIGN ENGINEER SHALL COMPLETE SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY WORK IS COMPLETED IN ACCORDANCE WITH DESIGN.
8. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS OF WALL WITH WALL DESIGNER'S CERTIFICATION TO OWNER.
9. CONTRACTOR SHALL DIRECT SURFACE RUNOFF AWAY FROM THE WALL DURING CONSTRUCTION.
10. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT OR OTHER SURFACE TREATMENT SHALL BE INSTALLED IN THE AREA OF THE WALL IMMEDIATELY AFTER THE WALL IS COMPLETE OR OTHER MEASURES SHALL BE TAKEN TO PROTECT THE WALL FROM RUNOFF.
11. CONTRACTOR SHALL SUPPLY SAMPLE TO THE OWNER FOR APPROVAL PRIOR TO WALL CONSTRUCTION.

TYPICAL BLOCK RETAINING WALL SECTION
NO SCALE



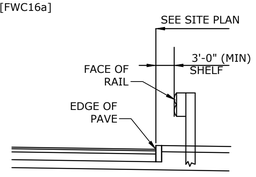
NOTES:
1. HYDRANT TO BE KENNEDY TYPE K-81, RIGHT OPEN (NO EQUAL). COORDINATE WITH CITY OF PORTSMOUTH WATER DEPARTMENT AND CITY OF PORTSMOUTH FIRE DEPARTMENT.
2. PAINT HYDRANT IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS AFTER INSTALLATION AND TESTING.

FIRE HYDRANT
NO SCALE



DESIGNATOR	L	T	INTENDED USE
FBB01	1-1/4"	FULL LENGTH THREAD	RAIL SPLICE BOLTS
FBB02	2"	1-3/4" MIN. THREAD LENGTH	POST BOLT (STEEL POSTS)
FBB03	10"	4" MIN. THREAD LENGTH	POST BOLT
FBB04	18"	4" MIN. THREAD LENGTH	POST BOLT (WOOD POSTS)

5/8" BUTTON HEAD BOLT AND RECESSED NUT
[FBB01-04]



NOTES:
1. SEE SITE PLAN FOR LIMITS OF GUARDRAIL.
2. DESIGNATION PROVIDED IN BRACKETS ( ) REFERENCE STANDARD ELEMENTS DETAILED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE" (1979) - AASHTO - AGC - ARTBA JOINT COOPERATIVE COMMITTEE.
3. ALL DIMENSIONS SUBJECT TO MANUFACTURER'S TOLERANCES.
4. USE 6'-0" LONG POSTS WHEN FILL SLOPE IS 4:1 OR FLATTER AND/OR WHEN FIELD CONDITIONS DICTATE (e.g., LEDGE FILLS), AS DETERMINED BY THE ENGINEER.

WOOD POST/STEEL BEAM GUARDRAIL
NO SCALE

Tighe&Bond

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
6/17/24

NEIL A HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

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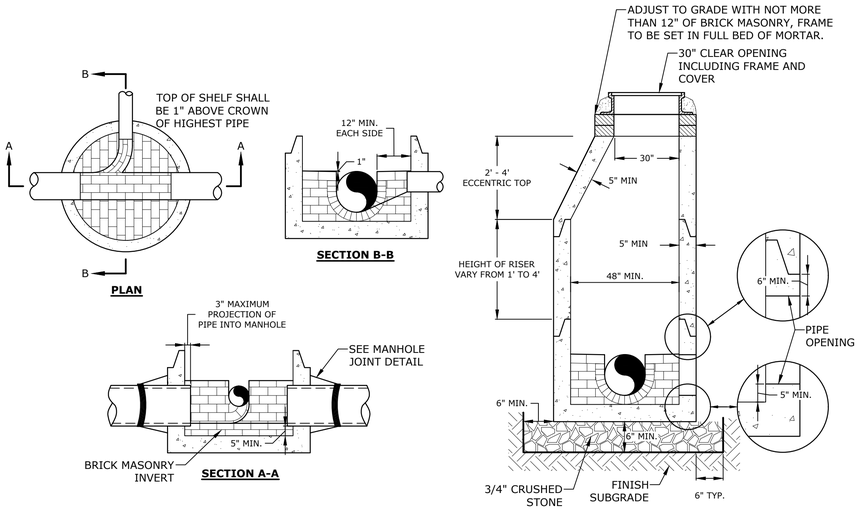
DETAILS SHEET

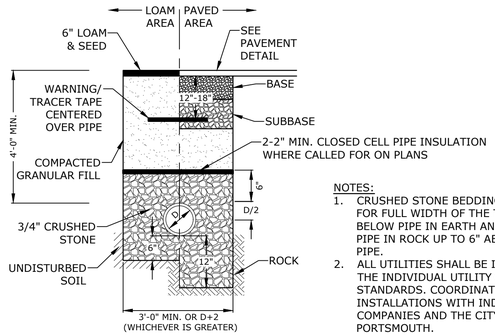
SCALE: AS SHOWN

C-807



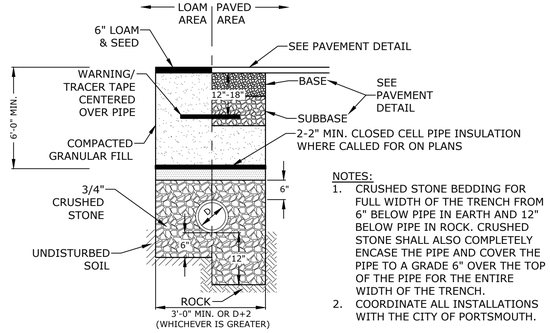
NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
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



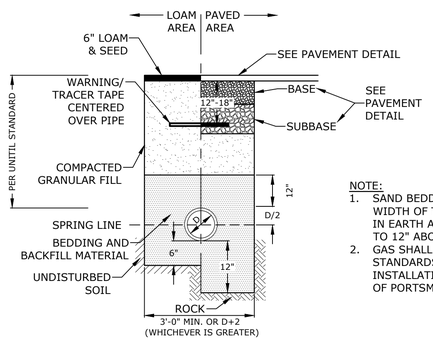
NOTES:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES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

STORM DRAIN TRENCH
NO SCALE



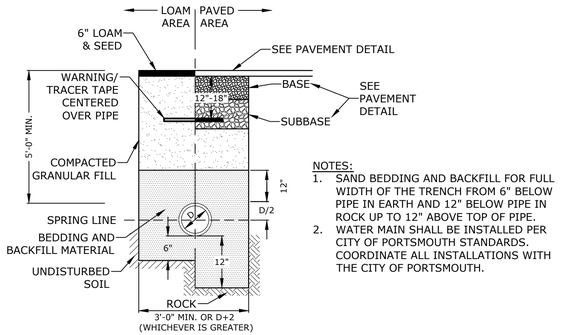
NOTES:
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. CRUSHED STONE SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 6" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
2. COORDINATE ALL INSTALLATIONS WITH THE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

SEWER SERVICE TRENCH
NO SCALE



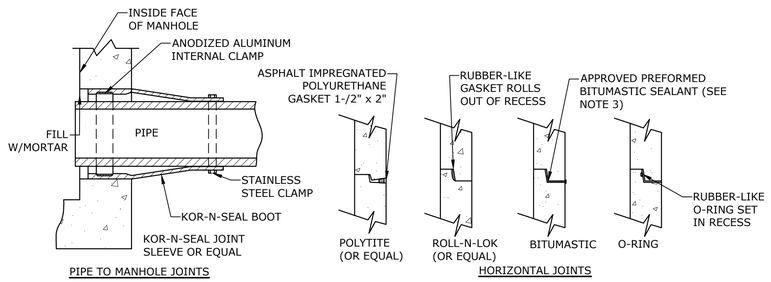
NOTE:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF PORTSMOUTH.

GAS TRENCH
NO SCALE



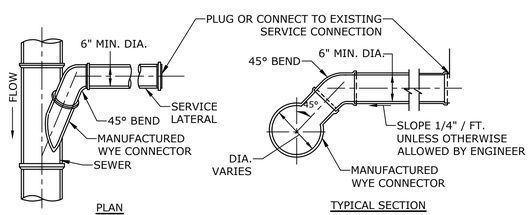
NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. WATER MAIN SHALL BE INSTALLED PER CITY OF PORTSMOUTH STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

WATER TRENCH
NO SCALE

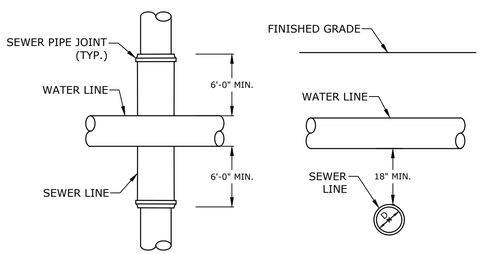


NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC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

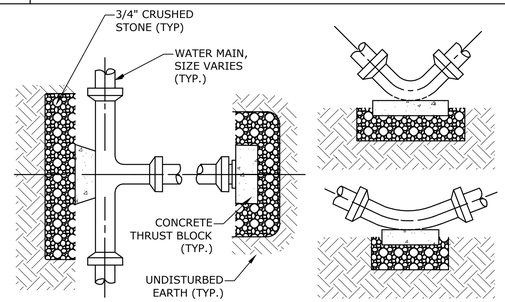


STANDARD SERVICE LATERAL CONNECTION
NO SCALE



NOTES:
1. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED FROM ANY EXISTING OR PROPOSED WATER LINE.
2. AN 18" MINIMUM EDGE TO EDGE VERTICAL SEPARATION SHALL BE PROVIDED, WITH WATER ABOVE SEWER, AT ALL CROSSINGS.
3. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.
4. WHERE AN 18" VERTICAL SEPARATION CANNOT BE PROVIDED, SEWER PIPE SHALL BE CONSTRUCTED USING A SDR 26 PVC PIPE MEETING THE REQUIREMENTS OF SEWER FORCE MAIN STANDARDS. THE SDR26 PIPE SHALL BE USED FOR THE ENTIRE RUN BETWEEN MANHOLES ON EITHER SIDE OF CROSSING.
5. CROSSINGS SHALL CONFORM TO THE CITY OF PORTSMOUTH STANDARDS AND SPECIFICATIONS.
6. ALL FUTURE SEWER CONNECTIONS SHALL MEET THE ABOVE REQUIREMENTS.

WATER & SEWER CROSSING
NO SCALE



SQUARE FEET OF MINIMUM BEARING AREA						
NOMINAL DIA. (in)	PIPE SIZE					
	4"	6"	8"	10"	12"	16"
PIPE FITTINGS	*	*	5.18	7.96	11.43	20.29
A 90°	*	4.11	7.33	11.26	16.17	28.69
C 45°	*	*	*	6.10	8.75	15.53
D 22-1/2°	*	*	*	*	4.46	7.92
E 11-1/4°	*	*	*	*	*	*
*SEE NOTE 2	SYSTEM PRESSURE: 125 psi SAFETY FACTOR: 1.5 SOIL BEARING CAPACITY: 2,000 psf					

NOTES:
1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4 SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
6. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
7. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
8. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
9. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
10. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE WITH CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.

THRUST BLOCKING DETAIL
NO SCALE

Tighe&Bond

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C-808

Last Saved: 6/14/2024
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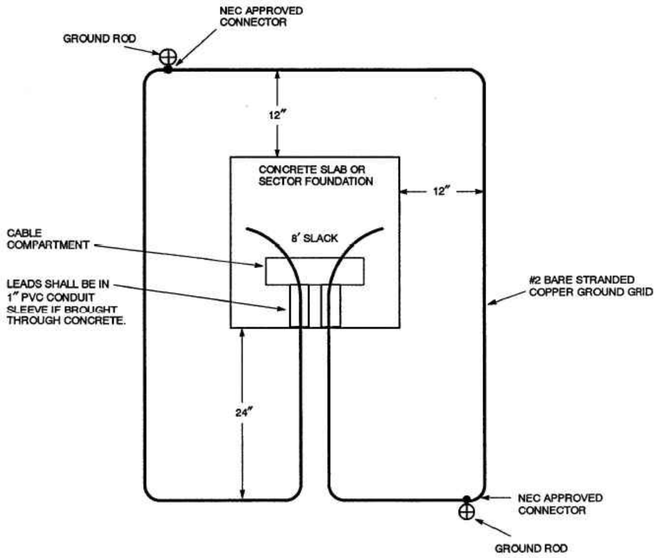
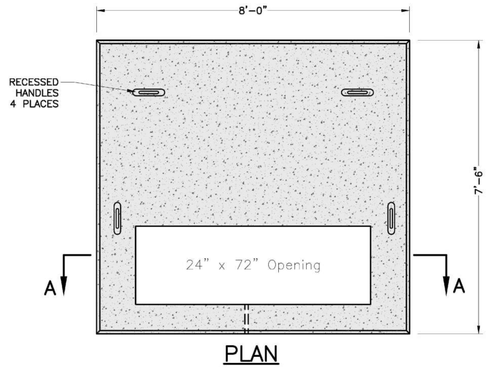


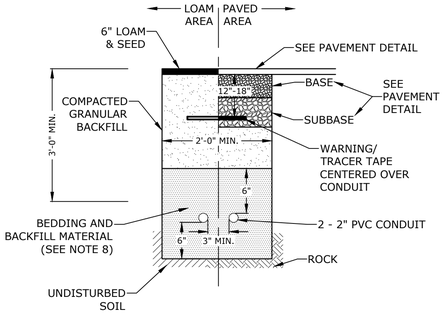
NOTES:
THE GROUND GRID SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AND IS TO BE BURIED AT LEAST 12 INCHES BELOW GRADE. EIGHT FEET OF EXTRA WIRE FOR EACH GROUND GRID LEG SHALL BE LEFT EXPOSED IN THE CABLE COMPARTMENT TO ALLOW FOR THE CONNECTION TO THE TRANSFORMER. THE TWO 8-FOOT GROUND RODS MAY 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



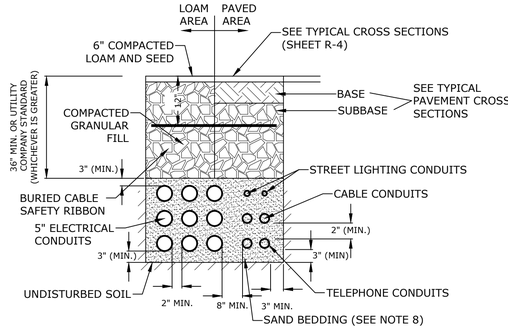
NOTES:
1. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
2. CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
3. STEEL REINFORCEMENT - ASTM A615, GRADE 60
4. PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS

3-PHASE TRANSFORMER PAD
NO SCALE



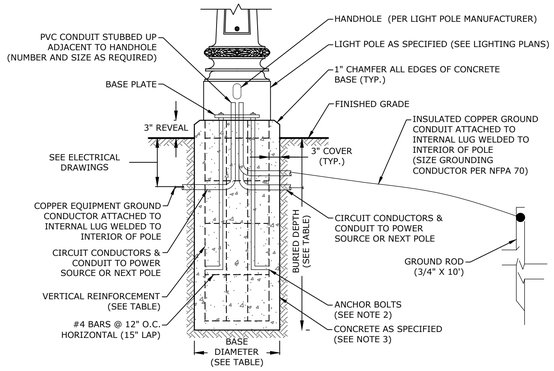
NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.
9. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW CONDUIT UP TO 6" ABOVE TOP OF CONDUIT.

LIGHTING CONDUIT TRENCH
NO SCALE



NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.

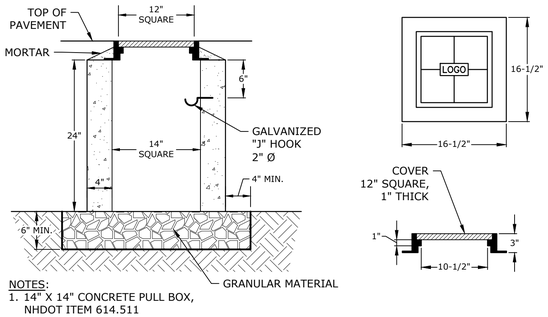
ELECTRICAL AND COMMUNICATION CONDUIT
NO SCALE



POLE HEIGHT	DEPTH (BURIED)	BASE DIAMETER	VERTICAL REINFORCEMENT
<16'	72" (MIN.)	18"	6 - #6
>16'	72" (MIN.)	24"	6 - #8

NOTES:
1. ALL LIGHT POLES, LUMINARIES AND WIRE TO BE FURNISHED BY THE CONTRACTOR UNLESS OTHERWISE DIRECTED.
2. CONTRACTOR SHALL VERIFY BOLT TEMPLATE AND ANCHOR BOLT SIZE WITH POLE MANUFACTURER PRIOR TO CONSTRUCTION.
3. CONCRETE SHALL BE 4,000 PSI CLASS A, PRE-CAST CONCRETE.
4. REINFORCEMENT SHALL BE ASTM A615, GRADE 60.
5. FOR LIGHT POLES GREATER THAN 20' IN HEIGHT, THE LIGHT POLE BASE SHALL BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.

TYPICAL LIGHT POLE BASE
NO SCALE



NOTES:
1. 14" X 14" CONCRETE PULL BOX, NHDOT ITEM 614.511

CONCRETE PULL BOX
NO SCALE

Tighe&Bond

PATRICK CRIMMINS — STATE OF NEW HAMPSHIRE — No. 12378 — LICENSED PROFESSIONAL ENGINEER
6/17/24

NEIL A HANSEN — STATE OF NEW HAMPSHIRE — No. 15227 — LICENSED PROFESSIONAL ENGINEER
06/17/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DTLS.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-809

LAYOUT AND MATERIALS NOTES

1. REVIEW CONTRACT DOCUMENTS AND FIELD CONDITIONS BEFORE COMMENCING WORK. REPORT ERRORS, OMISSIONS, OR INCONSISTENCIES PROMPTLY TO THE LANDSCAPE ARCHITECT.
2. CONTACT UTILITY COMPANIES AS REQUIRED BY STATE AND LOCAL REGULATIONS BEFORE DIGGING. LOCATE AND MARK EXISTING UTILITIES.
3. THE CONTRACTOR SHALL OBTAIN ALL PERMITS WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK.
4. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
5. DIMENSIONS REFERRED TO AS "EQUAL" INDICATE SPACING WHICH IS EQUIDISTANT MEASURED TO THE CENTERLINES.
6. MEASUREMENTS ARE TO THE FINISHED FACE OF BUILDINGS, WALLS, OR OTHER FIXED SITE IMPROVEMENTS. DIMENSIONS TO CENTERLINES ARE IDENTIFIED.
7. INSTALL INTERSECTING ELEMENTS AT 90-DEGREE ANGLES, UNLESS OTHERWISE NOTED.
8. PROVIDE EXPANSION JOINTS WHERE FLATWORK MEETS VERTICAL STRUCTURES, SUCH AS WALLS, CURBS, STEPS, AND OTHER HARDSCAPE.
9. CONTROL JOINTS SHOULD BE SPACED NO GREATER THAN TEN (10) LINEAR FEET MAXIMUM, UNLESS OTHERWISE SPECIFIED.
10. CONTROL JOINT RECOMMENDATIONS TO MINIMIZE CRACKING SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL.
11. ALL TOP OF WALLS AND FENCES ARE TO BE HELD LEVEL, UNLESS OTHERWISE SPECIFIED.
12. SAMPLES OF SPECIFIED MATERIALS SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO ORDERING.
13. THE CONTRACTOR SHALL PROVIDE A FULL-SCALE MOCKUP AND RECEIVE APPROVAL FROM THE LANDSCAPE ARCHITECT BEFORE BEGINNING CONSTRUCTION OF PAVEMENT.
14. ALL SITE FURNITURE LOCATIONS ARE TO BE STAKED BY CONTRACTOR AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

PLANTING NOTES

1. CONTACT UTILITY COMPANIES AS REQUIRED BY STATE AND LOCAL REGULATIONS BEFORE DIGGING. LOCATE AND MARK EXISTING UTILITIES.
2. REFER TO CIVIL ENGINEER'S GRADING PLANS FOR FINAL GRADING AND UTILITY LOCATIONS.
3. THE CONTRACTOR SHALL OBTAIN ALL PERMITS WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK.
4. LANDSCAPE ARCHITECT TO REVIEW PLANT MATERIALS AT SOURCE OR BY PHOTOGRAPHS PRIOR TO DIGGING OR SHIPPING OF PLANT MATERIAL.
5. CONTRACTOR IS TO VERIFY ALL QUANTITIES. IF QUANTITIES ON PLANT LIST DIFFER FROM GRAPHIC INDICATIONS, GRAPHICS SHALL PREVAIL.
6. EXACT LOCATIONS OF TREES AND B&B SHRUBS ARE TO BE STAKED BY THE CONTRACTOR FOR LANDSCAPE ARCHITECT REVIEW AND APPROVAL PRIOR TO INSTALLATION. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO ADJUST PLANTS TO EXACT LOCATION IN THE FIELD.
7. PLANT MATERIAL NOT MEETING THE STANDARDS CONTAINED WITHIN CONTRACT DOCUMENTS SHALL BE REPLACED AT NO COST TO THE OWNER.
8. PROVIDE MATCHING SIZES AND FORMS FOR EACH PLANT OF THE SAME SPECIES DESIGNATED ON THE DRAWINGS UNLESS OTHERWISE INDICATED.
9. ALL PLANT MATERIAL IS TO BE INSTALLED PLUMB/PER THE SPECIFICATIONS CONTAINED WITHIN THE CONTRACT DOCUMENTS.
10. PRUNE EXISTING AND/OR NEWLY PLANTED TREES ONLY AS DIRECTED BY THE LANDSCAPE ARCHITECT.
11. PLANT MATERIAL SHALL HAVE ALL WIRE, TWINE, BASKETS, BURLAP, AND ALL OTHER NON-BIODEGRADABLE CONTAINMENT MATERIAL REMOVED FROM THE TRUNK AND/OR ROOT BALL OF THE PLANT PRIOR TO PLANTING. ROOT BALLS SHALL BE FREE OF WEEDS.
12. FINISH GRADE OF PLANTING BEDS SHALL BE ONE (1) INCH BELOW ADJACENT PAVER OR HEADER, UNLESS OTHERWISE SPECIFIED.
13. MULCH OR PLANTING BED DRESSING SHALL BE PLACED IN ALL PLANTING AREAS AS SPECIFIED. MULCH OR PLANTING BED DRESSING SHALL NOT BE PLACED WITHIN SIX (6) INCHES OF TREE TRUNKS. MULCHING SHOULD BE REPEATED ANNUALLY DURING THE AUTUMN TO A 3" DEPTH, SOIL PEP MULCH SHALL BE USED UNLESS OTHERWISE SPECIFIED..
14. ALL PLANT MATERIAL SHOULD RECEIVE AN ORGANIC FERTILIZER IN LIMITED APPLICATION FOLLOWING INSTALLATION. TYPE AND APPLICATION RATE AND METHOD OF APPLICATION TO BE SPECIFIED BY THE CONTRACTOR & APPROVED BY THE LANDSCAPE ARCHITECT.
15. STOCKPILED PLANT MATERIAL TO BE PLACED IN THE SHADE AND PROPERLY HAND-WATERED UNTIL PLANTED.
16. PRESERVE & PROTECT ALL EXISTING VEGETATION INDICATED TO REMAIN AT ALL TIMES.
17. TO THE GREATEST EXTENT POSSIBLE, TOPSOIL THAT IS REMOVED DURING CONSTRUCTION SHALL BE STOCKPILED FOR LATER USE IN AREAS REQUIRING REVEGETATION/PLANTING.
18. ALL MATERIALS USED SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARDS FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
19. ALL DISTURBED AREAS ARE TO BE REVEGETATED

SEEDING NOTES

1. REVEGETATED AREAS ARE TO BE HYRO-SEEDED, FOLLOWED BY THE APPLICATION OF STRAW MULCH.
2. APPLY STRAW MULCH AT A MINIMUM RATE OF 1.5 TONS PER ACRE OF AIR DRY MATERIAL. SPREAD STRAW MULCH UNIFORMLY OVER THE AREA WITH MECHANICAL MULCH SPREADER/CRIMPER. DO NOT MULCH WHEN WIND VELOCITY EXCEEDS 10 MPH.
3. IMMEDIATELY UPON COMPLETION OF THE MULCHING AND BINDING OPERATION, THE SEEDED AREAS SHALL BE IRRIGATED, KEEPING THE TOP 2 INCHES OF SOIL EVENLY MOIST UNTIL SEED HAS UNIFORMLY GERMINATED AND GROWN TO A HEIGHT OF 2 INCHES.
4. WATERING APPLICATION SHALL BE DONE IN A MANNER WHICH WILL PROVIDE UNIFORM COVERAGE BUT WHICH WILL NOT CAUSE EROSION, MOVEMENT, OR DAMAGE TO THE FINISHED SURFACE.

GRADING AND DRAINAGE NOTES

1. MATERIALS/WASTE CREATED BY REMOVAL PROCEDURES SHALL BE LEGALLY DISPOSED OF AWAY FROM THE JOB SITE.
2. NOTIFY LOCAL UNDERGROUND SERVICE COMPANIES FOR UTILITY FINDS 48 HOURS PRIOR TO ANY EXCAVATION.
3. THE CONTRACTOR IS TO REVIEW ARCHITECTURAL DRAWINGS FOR THE VERIFICATION OF CONNECTIONS TO DRAINS OVER STRUCTURE.
4. THE CONTRACTOR IS TO REVIEW ARCHITECTURAL DRAWINGS FOR THE VERIFICATION OF WATERPROOFING OF SLAB PENETRATIONS.
5. THE CONTRACTOR IS TO REVIEW CIVIL ENGINEER'S DRAWINGS FOR THE VERIFICATION OF CONNECTIONS TO DRAINS.
6. GRADING AND EXCAVATION WORK SHALL BE COMPLETED DURING DRY AND NON-FREEZING CONDITIONS.
7. POSITIVE DRAINAGE SHALL BE PROVIDED AWAY FROM ALL STRUCTURES.
8. SOIL COMPACTION SHALL BE 95% PROCTOR DENSITY MINIMUM BENEATH PAVEMENTS, STEPS, WALLS AND LIGHT FOUNDATIONS, UNLESS OTHERWISE SPECIFIED.

ABBREVIATIONS TABLE

APPROX	APPROXIMATE
ARCH	ARCHITECT
AVG	AVERAGE
B+B	BALED AND BURLAPPED
BF	BOTTOM OF FOOTING
BLDG	BUILDING
BM	BENCHMARK
BOC	BACK OF CURB
BR	BOTTOM OF RAMP
BS	BOTTOM OF STEP
BW	BOTTOM OF WAL
CAL	CALIPER
CAP	CAPACITY
CF	CUBIC FEET
CHAM	CHAMFER
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLR	CLEARANCE
CM	CENTIMETER
CO	CLEAN OUT
COMP	COMPACTED
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CU	CUBIC
CY	CUBIC YARD
DEMO	DEMOLISH, DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DTL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ENG	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
E.W.	EACH WAY
EXIST	EXISTING
EXP	EXPANSION, EXPOSED
FFE	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FIN	FINISH
FL	FLOW LINE
FOW	FACE OF WAL
FT	FOOT (FEET)
FTG	FOOTING
GA	GAUGE
GAL	GALVANIZED
GEN	GENERAL
HORIZ	HORIZONTAL
HP	HIGH POINT
HT	HEIGHT
ID	INSIDE DIAMETER
INV	INVERT ELEVATION
IN	INCH(ES)
INCL	INCLUDE(D)
IRR	IRRIGATION
JT	JOINT
LIN	LINEAR
LF	LINEAR FEET
LP	LOW POINT
LT	LIGHT
MATL	MATERIAL
MAX	MAXIMUM
MEMB	MEMBRANE
MD	MAIN DISCONNECT SWITCH
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPP	OPPOSITE
PAR	PARALLEL
PC	POINT OF CURVATURE
PE	POLYURETHANE
PERF	PERFORATED
PED	PEDESTRIAN
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PT	POINT, POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PVR	PAVER
QTY	QUANTITY
R	RADIUS
REF	REFERENCE
REINF	REINFORCE(D)
REQ'D	REQUIRED
REV	REVISION, REVISED
ROW	RIGHT OF WAY
RT	RIGHT
S	SOUTH
SS	SANITARY SEWER
SCH	SCHEDULE
SD	STORM DRAIN
SEC	SECTION
SF	SQUARE FOOT (FEET)
SHT	SHEET
SIM	SIMILAR
SNT	SEALANT
SPECS	SPECIFICATIONS
SQ	SQUARE
ST	STORM SEWER
SY	SQUARE YARD
STA	STATION
STD	STANDARD
STL	STEEL
STRL	STRUCTURAL
SYM	SYMMETRICAL
T&B	TOP AND BOTTOM
TBC	TOP OF BACK CURB
TC	TOP OF CURB
TF	TOP OF FOOTING
TRANS	ELECTRIC TRANSFORMER
TOC	TOP OF CONCRETE
TOPO	TOPOGRAPHY
TSL	TOP OF SLAB
TR	TOP OF RAMP
TS	TOP OF STEP
TW	TOP OF WAL
TYP	TYPICAL
VAR	VARIES
VERT	VERTICAL
VEH	VEHICLE
VOL	VOLUME
W/	WITH
W/O	WITHOUT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
YD	YARD
@	AT

ACETO LANDSCAPE ARCHITECTS
207.221.3390 | ACETOLA.COM

SEAL

PROJECT TITLE:

100 Durgin Ln

PREPARED FOR

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS | DATE:

ISSUE DATE:

June 17, 2024

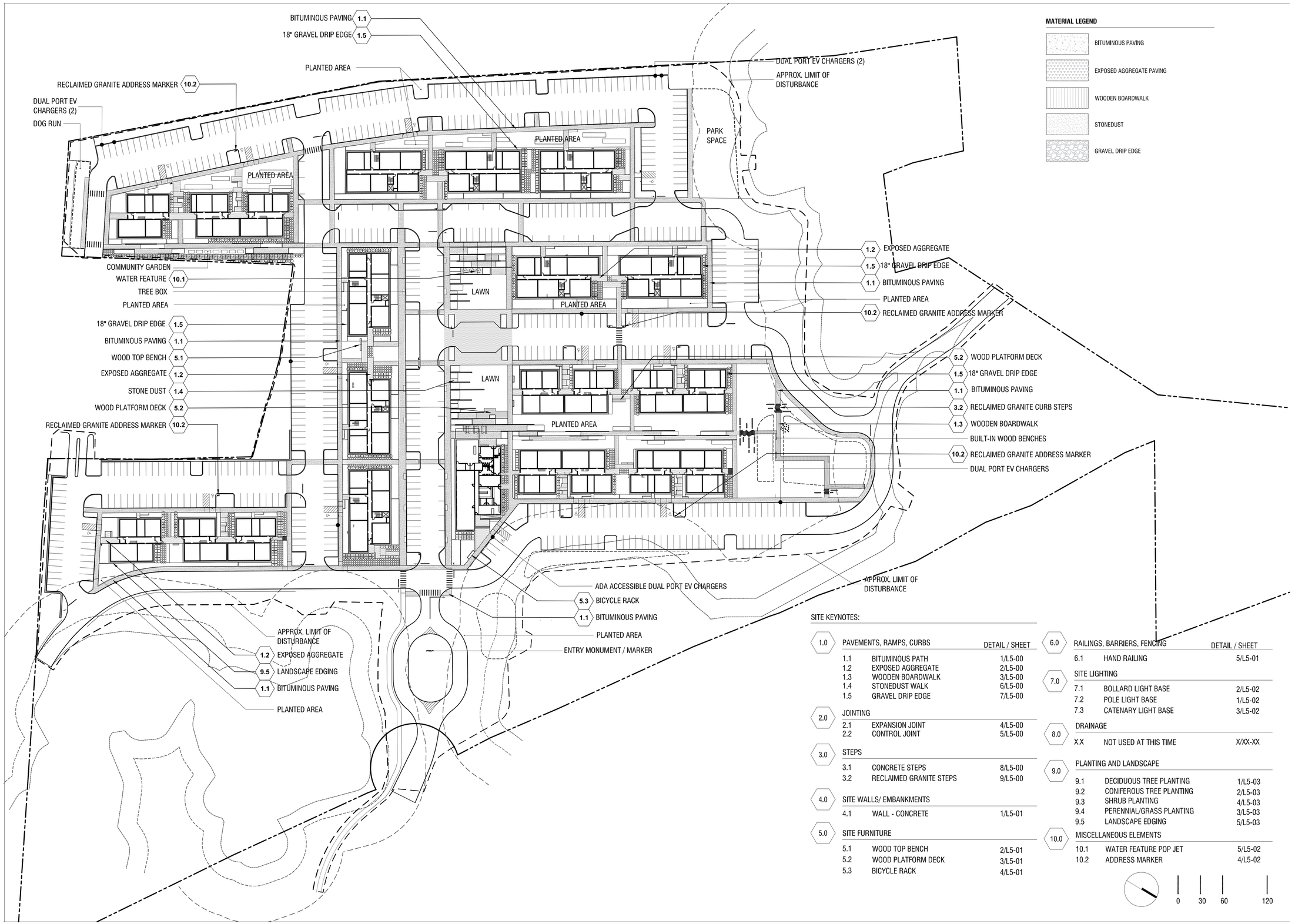
SHEET TITLE:

NOTES

SHEET INFORMATION

L0-01

NOT FOR CONSTRUCTION



SITE KEYNOTES:

1.0	PAVEMENTS, RAMPS, CURBS		DETAIL / SHEET
	1.1	BITUMINOUS PATH	1/L5-00
	1.2	EXPOSED AGGREGATE	2/L5-00
	1.3	WOODEN BOARDWALK	3/L5-00
	1.4	STONEDUST WALK	6/L5-00
	1.5	GRAVEL DRIP EDGE	7/L5-00
2.0	JOINTING		
	2.1	EXPANSION JOINT	4/L5-00
	2.2	CONTROL JOINT	5/L5-00
3.0	STEPS		
	3.1	CONCRETE STEPS	8/L5-00
	3.2	RECLAIMED GRANITE STEPS	9/L5-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	WALL - CONCRETE	1/L5-01
5.0	SITE FURNITURE		
	5.1	WOOD TOP BENCH	2/L5-01
	5.2	WOOD PLATFORM DECK	3/L5-01
	5.3	BICYCLE RACK	4/L5-01
6.0	RAILINGS, BARRIERS, FENCING		DETAIL / SHEET
	6.1	HAND RAILING	5/L5-01
7.0	SITE LIGHTING		
	7.1	BOLLARD LIGHT BASE	2/L5-02
	7.2	POLE LIGHT BASE	1/L5-02
	7.3	CATENARY LIGHT BASE	3/L5-02
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L5-03
	9.2	CONIFEROUS TREE PLANTING	2/L5-03
	9.3	SHRUB PLANTING	4/L5-03
	9.4	PERENNIAL/GRASS PLANTING	3/L5-03
	9.5	LANDSCAPE EDGING	5/L5-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	WATER FEATURE POP JET	5/L5-02
	10.2	ADDRESS MARKER	4/L5-02

0 30 60 120

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SEAL

PROJECT TITLE:

100 Durgin Ln

PREPARED FOR

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS DATE

ISSUE DATE:

June 17, 2024

SHEET TITLE:

LAYOUT AND MATERIALS PLAN

SHEET INFORMATION

L2-00

NOT FOR CONSTRUCTION

POTENTIAL PLANT SCHEDULE

SYMB.	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	SPACING
TREES					
QP	QUERCUS PALUSTRIS	PIN OAK	X	3" CAL. MIN.	PER PLAN
AR	ACER RUBRUM 'BOWHALL'	BOWHALL MAPLE	X	3" CAL. MIN.	PER PLAN
QR	QUERCUS ROBUR X BICOLOR 'LONG'	REGAL PRINCE OAK	X	3" CAL. MIN.	PER PLAN
AS	ACER SACCHARUM	SUGAR MAPLE	X	3" CAL. MIN.	PER PLAN
BP	BETULA PAPYRIFERA	PAPER BIRCH (SINGLE-STEM)	X	3" CAL. MIN.	PER PLAN
AC	AMELANCHIER CANADENSIS	SERVICEBERRY (MULTI-STEM)	X	8' HT. B&B	PER PLAN
TREES - EVERGREEN					
AB	ABIES BALSAMEA 'COOKS'	'BALSAM FIR 'COOKS'	X	#2	PER PLAN
TC	TSUGA CANADENSIS	EASTERN HEMLOCK	X	#2	PER PLAN
TO	THUJA OCCIDENTALIS	ARBORVITAE	X	7-8'	PER PLAN
SHRUBS					
MP	MYRICA PENSYLVANICA	BAYBERRY	X	#5	PER PLAN
CA	CLETHRA ALNIFOLIA	SUMMER SWEET	X	#2	PER PLAN
VA	VIBURNUM ACERIFOLIUM	MAPLELEAF VIBURNUM	X	#2	PER PLAN
RA	RHUS AROMATICA	LOW-GRO SUMAC	X	#2	PER PLAN
MG	MYRICA GALE	SWEETGALE	X	#2	PER PLAN
PERENNIALS, ORNAMENTAL GRASSES AND GROUNDCOVER					
AU	TIARELLA CORDIFOLIA	FOAMFLOWER	X	#1	12" O.C.
N	NEPETA	CATMINT	X	#1	12" O.C.
SY	SALVIA YANGII	RUSSIAN SAGE	X	#1	12" O.C.
SS	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	X	#1	24" O.C.
CAC	CALAMAGROSTIS X ACUTIFLORA	KARL FOERSTER GRASS	X	#1	18" O.C.
BG	BOUTELOUA GRACILIS	BLUE GRAMA	X	#1	18" O.C.
P	PANICUM	SWITCHGRASS	X	#1	12" O.C.
CP	CAREX PENSYLVANICA	PENNSYLVANIA SEDGE	X	#1	12" O.C.
PA	POLYSTICHUM ACROSTICHOIDES	CHRISTMAS FERN	X	#1	12" O.C.
SP	SITOBOLIUM PUNCTILOBULUM	HAY SCENTED FERN	X	#1	12" O.C.

LAWN & SEEDING

LOAM & SEED	XX SF		TURF GRASS MIX PER PLAN, SEE SEED SUPPLIER SPEC. FOR APPLICATION RATE
NATIVE WETLAND GRASSES MIX SEED	XX SF	FOX SEDGE (CAREX VULPINOIDEA), LURID SEDGE (CAREX LURIDA), BLUNT BROOM SEDGE (CAREX SCOPARIA), BLUE VERVAIN (VERBENA HASTATA), FOWL BLUEGRASS (POA PALUSTRIS), HOP SEDGE (CAREX LUPULINA), GREEN BULRUSH (SCIRPUS ATROVIRENS), CREEPING SPIKE RUSH (ELEOCHARIS PALUSTRIS), FRINGED SEDGE (CAREX CRINITA), SOFT RUSH (JUNCUS EFFUSUS), SPOTTED JOE PYE WEED (EUPATORIUM MACULATUM), RATTLESNAKE GRASS (GLYCERIA CANADENSIS), SWAMP ASTER (ASTER PUNICEUS), BLUEFLAG (IRIS VERSICOLOR), SWAMP MILKWEED (ASCLEPIAS INCARNATA), SQUARE STEMMED MONKEY FLOWER (MIMULUS RINGENS)	NATIVE WETLAND GRASSES MIX PER PLAN, SEE SEED SUPPLIER SPEC. FOR APPLICATION RATE
NATIVE MEADOW MIX SEED	XX SF	VIRGINIA WILD RYE (ELYMUS VIRGINICUS), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), RED FESCUE (FESTUCA RUBRA), SWITCH GRASS (PANICUM VIRGATUM), PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), PANICLEDLEAF TICK TREFOIL (DESMODIUM PANICULATUM), INDIAN GRASS (SORGHASTRUM NUTANS), BLUE VERVAIN (VERBENA HASTATA), BUTTERFLY MILKWEED (ASCLEPIAS TUBEROSA), BLACK EYED SUSAN (RUDBECKIA HIRTA), COMMON SNEEZEWEED (HELENIUM AUTUNALE), HEATH ASTER (ASTERPILOSUS/SYMPHYOTRICHUM PILOSUM), EARLY GOLDENROD (SOLIDAGO JUNCEA), UPLAND BENTGRASS (AGROSTIS PERENNANS).	MEADOW MIX PER PLAN, SEE SEED SUPPLIER SPEC. FOR APPLICATION RATE

NOTES:
1. LANDSCAPED AREAS SHALL PRIORITIZE NATIVE DROUGHT TOLERANT SPECIES TO MINIMIZE IRRIGATION.
2. ALL IRRIGATION SHALL COMPLY WITH SECTION 6.11 OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS

SITE KEYNOTES:

1.0	PAVEMENTS, RAMPS, CURBS		DETAIL / SHEET
	1.1	BITUMINOUS PATH	1/L5-00
	1.2	EXPOSED AGGREGATE	2/L5-00
	1.3	WOODEN BOARDWALK	3/L5-00
	1.4	STONEDUST WALK	6/L5-00
	1.5	GRAVEL DRIP EDGE	7/L5-00
2.0	JOINTING		
	2.1	EXPANSION JOINT	4/L5-00
	2.2	CONTROL JOINT	5/L5-00
3.0	STEPS		
	3.1	CONCRETE STEPS	8/L5-00
	3.2	RECLAIMED GRANITE STEPS	9/L5-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	WALL - CONCRETE	1/L5-01
5.0	SITE FURNITURE		
	5.1	WOOD TOP BENCH	2/L5-01
	5.2	WOOD PLATFORM DECK	3/L5-01
	5.3	BICYCLE RACK	4/L5-01
6.0	RAILINGS, BARRIERS, FENCING		DETAIL / SHEET
	6.1	HAND RAILING	5/L5-01
7.0	SITE LIGHTING		
	7.1	BOLLARD LIGHT BASE	2/L5-02
	7.2	POLE LIGHT BASE	1/L5-02
	7.3	CATENARY LIGHT BASE	3/L5-02
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L5-03
	9.2	CONIFEROUS TREE PLANTING	2/L5-03
	9.3	SHRUB PLANTING	4/L5-03
	9.4	PERENNIAL/GRASS PLANTING	3/L5-03
	9.5	LANDSCAPE EDGING	5/L5-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	WATER FEATURE POP JET	5/L5-02
	10.2	ADDRESS MARKER	4/L5-02

0 30 60 120

ACETO LANDSCAPE ARCHITECTS
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SEAL

PROJECT TITLE:

100 Durgin Ln

PREPARED FOR

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS DATE

ISSUE DATE

June 17, 2024

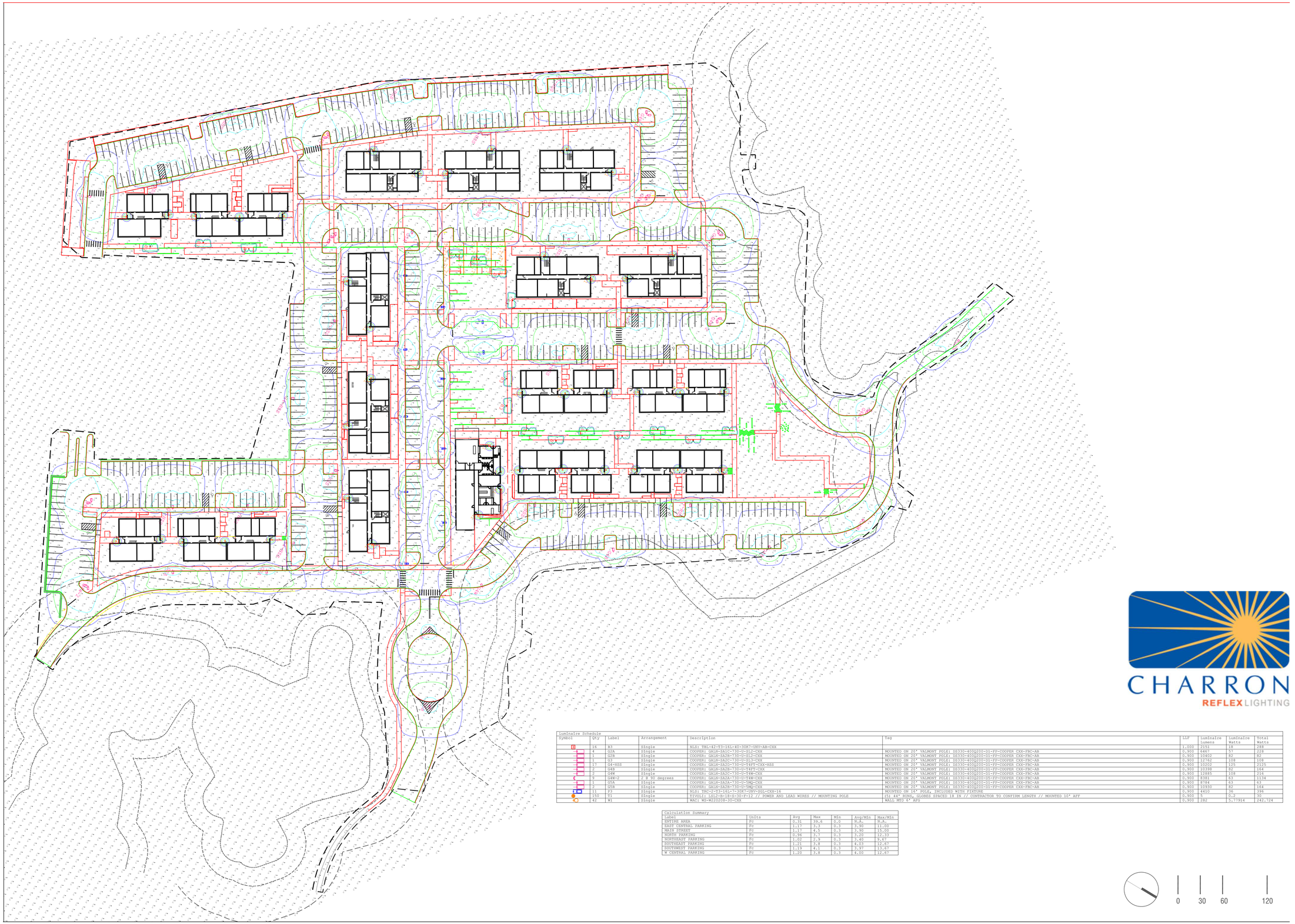
SHEET TITLE

PLANTING PLAN

SHEET INFORMATION

L3-00

NOT FOR CONSTRUCTION



Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	16	B3	Single	NLS: TBL-42-T3-16L-40-30K7-UNV-AB-CXX		1.000	2151	18	288
	4	G2A	Single	COOPER: GALN-SA1C-730-U-SLS-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	6467	57	228
	1	G2B	Single	COOPER: GALN-SA2B-730-U-SLS-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	10402	82	82
	1	G3	Single	COOPER: GALN-SA2C-730-U-SLS-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	12762	108	108
	17	G4-HSS	Single	COOPER: GALN-SA2D-730-U-T4FT-CXX-HSS	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	10202	125	2125
	2	G4B	Single	COOPER: GALN-SA2B-730-U-T4FT-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	10398	82	164
	2	G4W	Single	COOPER: GALN-SA2C-730-U-T4W-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	12885	108	216
	9	G4W-2	2 @ 90 degrees	COOPER: GALN-SA2A-730-U-T4W-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D5-FP-COOPER CXX-FBC-AB	0.900	8381	63	1134
	1	G5A	Single	COOPER: GALN-SA3A-730-U-5MQ-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	8784	63	63
	2	G5B	Single	COOPER: GALN-SA2B-730-U-5MQ-CXX	MOUNTED ON 20' VALMONT POLE: DS330-400Q200-D1-FP-COOPER CXX-FBC-AB	0.900	10930	82	164
	11	P3	Single	NLS: PC-12-P3-16L-7-30K7-UNV-SGL-CXX-16	MOUNTED ON 16' POLE, INCLUDED WITH FIXTURE	0.900	4410	36	396
	150	T1	Single	TIVOLI: LS12-B-18-S-30-F-12 // POWER AND LEAD WIRES // MOUNTING POLE	(5) 44" RUNS, GLOBES SPACED 18 IN // CONTRACTOR TO CONFIRM LENGTH // MOUNTED 10" AFF	0.900	5	0.2	30
	42	W1	Single	WAC: WS-W22020-30-CXX	WALL MTD 6' AFG	0.900	282	3.77914	242.724

Calculation Summary

Label	Units	Avg	Max	Min	Avg/Min	Max/Min
ENTIRE AREA	Fc	0.31	39.6	0.0	N.A.	N.A.
EAST CENTRAL PARKING	Fc	1.17	3.3	0.3	3.90	11.00
MAIN STREET	Fc	1.17	4.5	0.3	3.90	15.00
NORTH PARKING	Fc	0.96	3.7	0.3	3.20	12.33
NORTHEAST PARKING	Fc	1.02	2.9	0.3	3.40	9.67
SOUTHEAST PARKING	Fc	1.21	3.8	0.3	4.03	12.67
SOUTHWEST PARKING	Fc	1.19	4.1	0.3	3.97	13.67
W CENTRAL PARKING	Fc	1.20	3.8	0.3	4.00	12.67

0 30 60 120

CHARRON REFLEX LIGHTING

ACETO LANDSCAPE ARCHITECTS
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SEAL

PROJECT TITLE:

100 Durgin Ln

PREPARED FOR:

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS DATE:

ISSUE DATE:

June 17, 2024

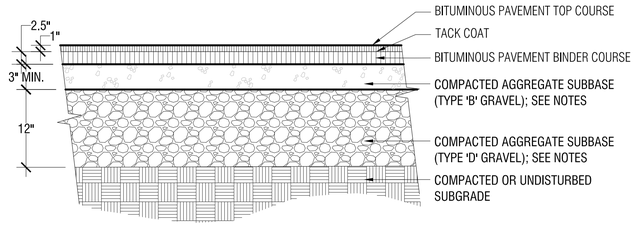
SHEET TITLE:

PHOTOMETRIC PLAN

SHEET INFORMATION

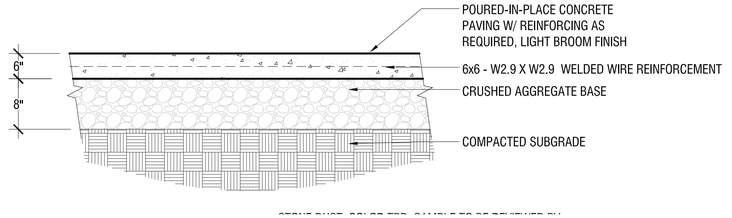
L-4-00

NOT FOR CONSTRUCTION



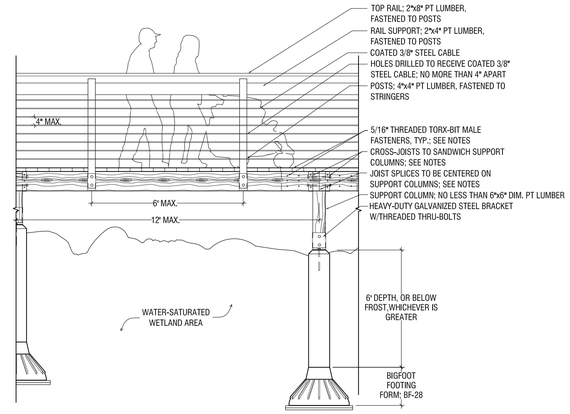
1 Bituminous Paving 1.1

1":1'-0"



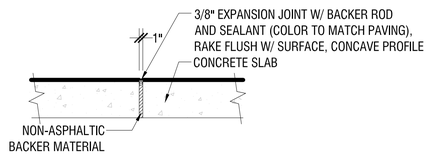
2 Exposed Aggregate 1.2

1":1'-0"



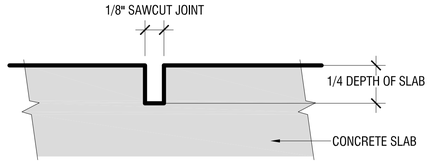
3 Wooden Boardwalk 1.3

1":1'-0"



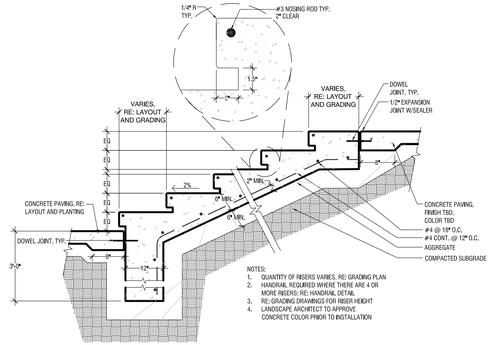
4 Expansion Joint 2.1

NTS



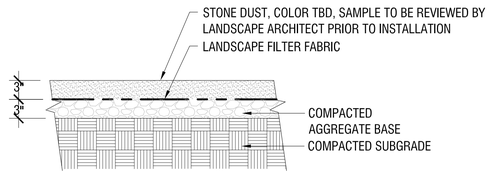
5 Control Joint 2.2

NTS



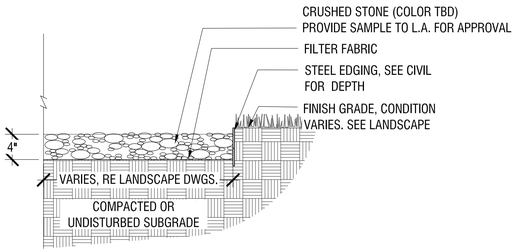
8 Concrete Steps 3.1

1":2'-0"



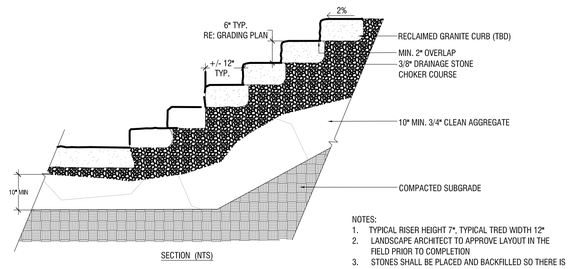
6 Stone Dust 1.4

1":1'-0"



7 Gravel Drip Edge 1.5

1/4":1'-0"



9 Reclaimed Granite Steps 3.2

1":2'-0"

SITE KEYNOTES:

1.0	PAVEMENTS, RAMPS, CURBS		DETAIL / SHEET
	1.1	BITUMINOUS PATH	1/L5-00
	1.2	EXPOSED AGGREGATE	2/L5-00
	1.3	WOODEN BOARDWALK	3/L5-00
	1.4	STONEDUST WALK	6/L5-00
	1.5	GRAVEL DRIP EDGE	7/L5-00
2.0	JOINTING		
	2.1	EXPANSION JOINT	4/L5-00
	2.2	CONTROL JOINT	5/L5-00
3.0	STEPS		
	3.1	CONCRETE STEPS	8/L5-00
	3.2	RECLAIMED GRANITE STEPS	9/L5-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	WALL - CONCRETE	1/L5-01
5.0	SITE FURNITURE		
	5.1	WOOD TOP BENCH	2/L5-01
	5.2	WOOD PLATFORM DECK	3/L5-01
	5.3	BICYCLE RACK	4/L5-01
6.0	RAILINGS, BARRIERS, FENCING		DETAIL / SHEET
	6.1	HAND RAILING	5/L5-01
7.0	SITE LIGHTING		
	7.1	BOLLARD LIGHT BASE	2/L5-02
	7.2	POLE LIGHT BASE	1/L5-02
	7.3	CATENARY LIGHT BASE	3/L5-02
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L5-03
	9.2	CONIFEROUS TREE PLANTING	2/L5-03
	9.3	SHRUB PLANTING	4/L5-03
	9.4	PERENNIAL/GRASS PLANTING	3/L5-03
	9.5	LANDSCAPE EDGING	5/L5-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	WATER FEATURE POP JET	5/L5-02
	10.2	ADDRESS MARKER	4/L5-02

ACETO LANDSCAPE ARCHITECTS
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SEAL

PROJECT TITLE

100 Durgin Ln

PREPARED FOR

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS | DATE

ISSUE DATE

June 17, 2024

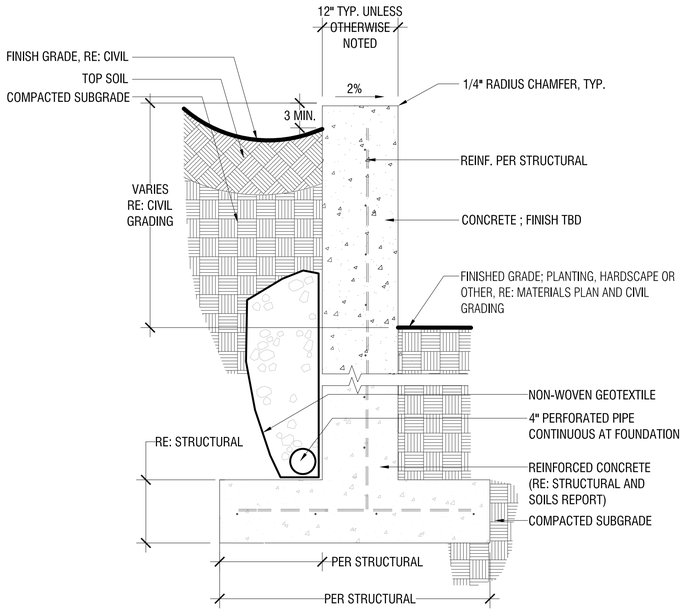
SHEET TITLE

SITE DETAILS

SHEET INFORMATION

L5-00

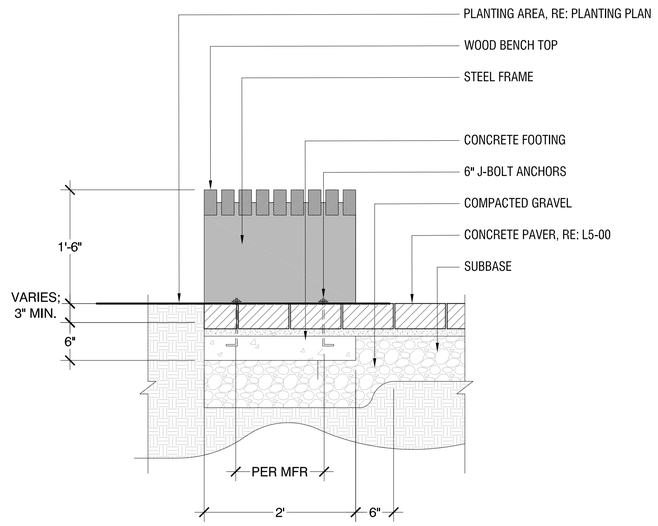
NOT FOR CONSTRUCTION



1 Wall - Concrete

1":1'-0"

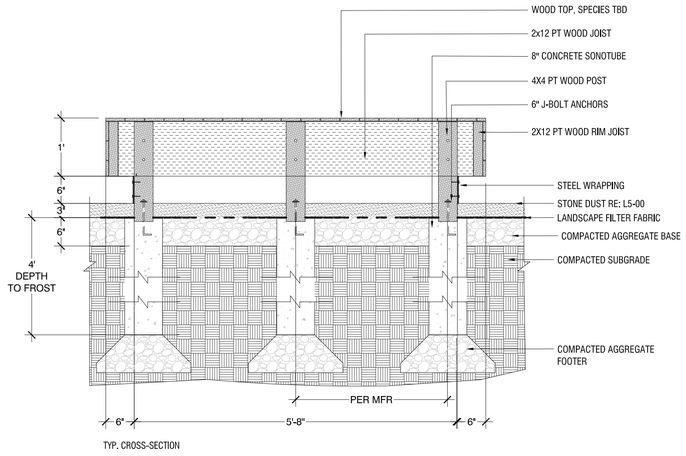
4.1



2 Wood Top Bench

1":1'-0"

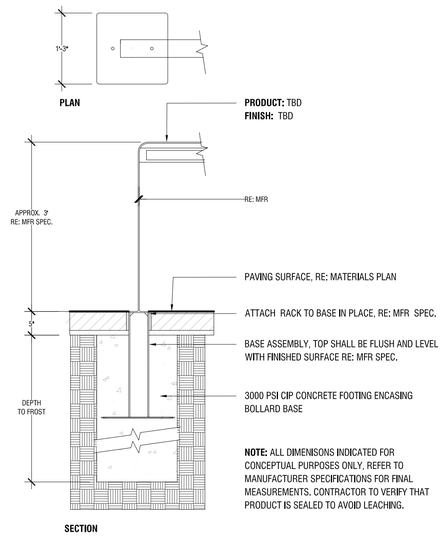
5.1



3 Wood Platform Deck

3/4":1'-0"

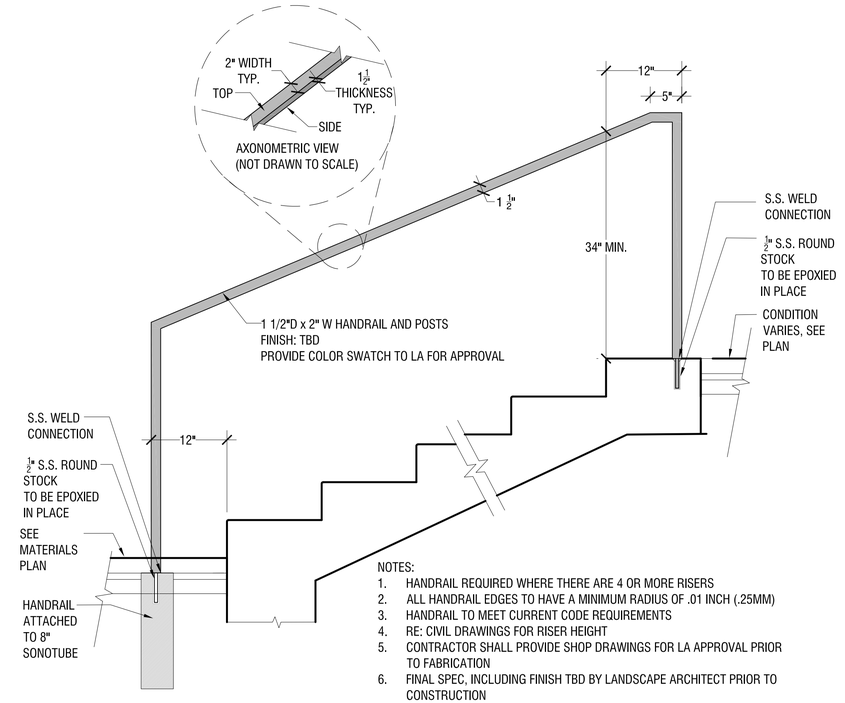
5.2



4 Bicycle Rack

3/4":1'-0"

5.3



NOTES:

1. HANDRAIL REQUIRED WHERE THERE ARE 4 OR MORE RISERS
2. ALL HANDRAIL EDGES TO HAVE A MINIMUM RADIUS OF .01 INCH (.25MM)
3. HANDRAIL TO MEET CURRENT CODE REQUIREMENTS
4. RE: CIVIL DRAWINGS FOR RISER HEIGHT
5. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR LA APPROVAL PRIOR TO FABRICATION
6. FINAL SPEC, INCLUDING FINISH TBD BY LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION

5 Hand Railing

1/2":1'-0"

6.1

SITE KEYNOTES:

1.0	PAVEMENTS, RAMPS, CURBS		DETAIL / SHEET
	1.1	BITUMINOUS PATH	1/L5-00
	1.2	EXPOSED AGGREGATE	2/L5-00
	1.3	WOODEN BOARDWALK	3/L5-00
	1.4	STONEDUST WALK	6/L5-00
	1.5	GRAVEL DRIP EDGE	7/L5-00
2.0	JOINTING		
	2.1	EXPANSION JOINT	4/L5-00
	2.2	CONTROL JOINT	5/L5-00
3.0	STEPS		
	3.1	CONCRETE STEPS	8/L5-00
	3.2	RECLAIMED GRANITE STEPS	9/L5-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	WALL - CONCRETE	1/L5-01
5.0	SITE FURNITURE		
	5.1	WOOD TOP BENCH	2/L5-01
	5.2	WOOD PLATFORM DECK	3/L5-01
	5.3	BICYCLE RACK	4/L5-01
6.0	RAILINGS, BARRIERS, FENCING		DETAIL / SHEET
	6.1	HAND RAILING	5/L5-01
7.0	SITE LIGHTING		
	7.1	BOLLARD LIGHT BASE	2/L5-02
	7.2	POLE LIGHT BASE	1/L5-02
	7.3	CATENARY LIGHT BASE	3/L5-02
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L5-03
	9.2	CONIFEROUS TREE PLANTING	2/L5-03
	9.3	SHRUB PLANTING	4/L5-03
	9.4	PERENNIAL/GRASS PLANTING	3/L5-03
	9.5	LANDSCAPE EDGING	5/L5-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	WATER FEATURE POP JET	5/L5-02
	10.2	ADDRESS MARKER	4/L5-02

ACETO LANDSCAPE ARCHITECTS
207 221 3390 | ACETOLA.COM

SEAL

PROJECT TITLE

100 Durgin Ln

PREPARED FOR

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS DATE

ISSUE DATE

June 17, 2024

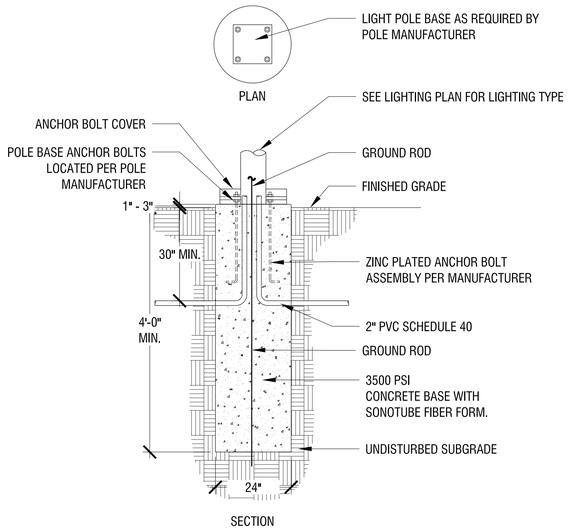
SHEET TITLE

SITE DETAILS

SHEET INFORMATION

L5-01

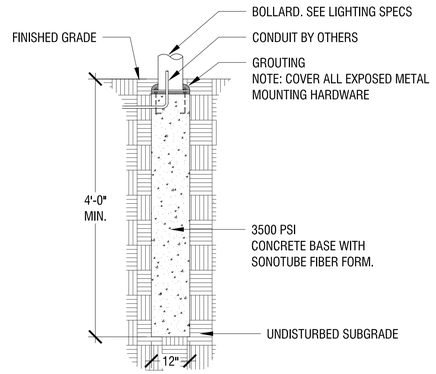
NOT FOR CONSTRUCTION



1 Pole Light Base

1/2":1'-0"

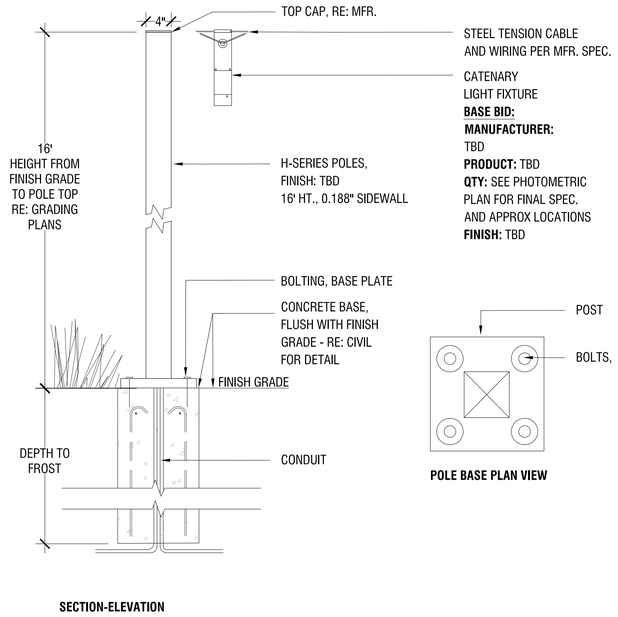
7.2



2 Bollard Light Base

1/2":1'-0"

7.1

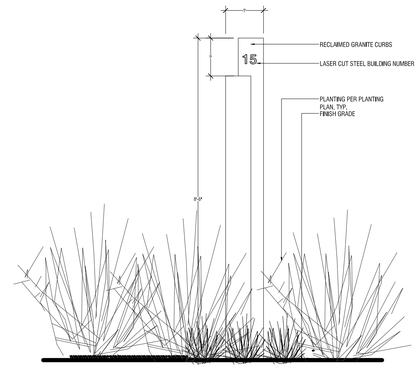


SECTION-ELEVATION

3 Catenary Light Base

1":1'-0"

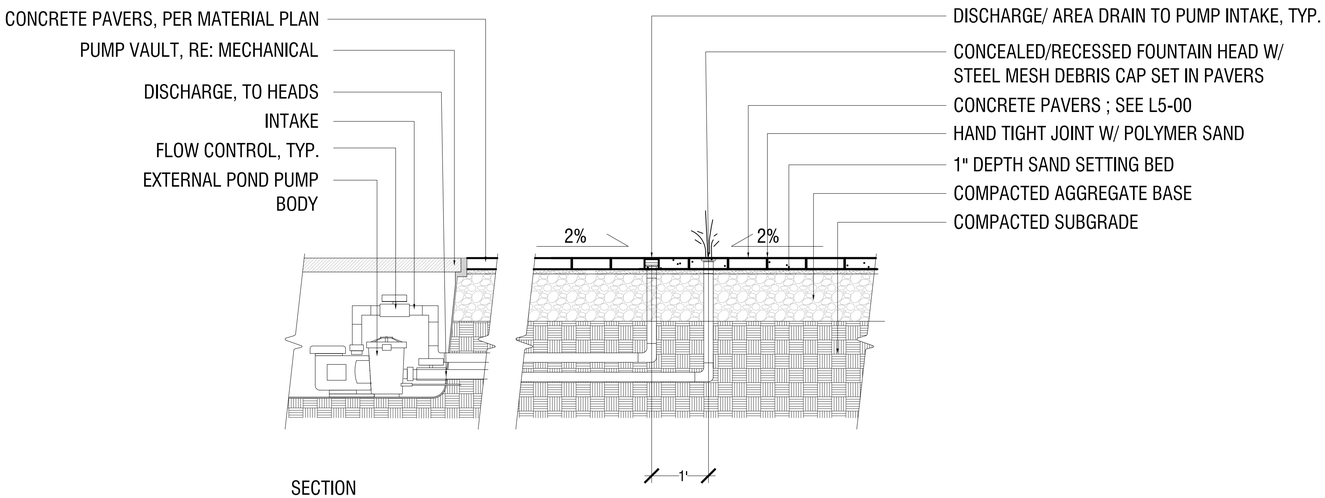
7.3



4 Address Marker

1":2'-0"

10.2



SECTION

NOTE:

1. LOCATIONS AND QUANTITIES PER LAYOUT PLAN ; SEE L 1-00
2. MECHANICAL VAULT LOCATION TBD
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF SPECIFICATION AND ASSEMBLY FOR LANDSCAPE ARCHITECT REVIEW

5 Water Feature Pop Jets

1":1'-0"

10.1

SITE KEYNOTES:

1.0	PAVEMENTS, RAMPS, CURBS	DETAIL / SHEET	
	1.1	BITUMINOUS PATH	1/L5-00
	1.2	EXPOSED AGGREGATE	2/L5-00
	1.3	WOODEN BOARDWALK	3/L5-00
	1.4	STONEDUST WALK	6/L5-00
	1.5	GRAVEL DRIP EDGE	7/L5-00
2.0	JOINTING		
	2.1	EXPANSION JOINT	4/L5-00
	2.2	CONTROL JOINT	5/L5-00
3.0	STEPS		
	3.1	CONCRETE STEPS	8/L5-00
	3.2	RECLAIMED GRANITE STEPS	9/L5-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	WALL - CONCRETE	1/L5-01
5.0	SITE FURNITURE		
	5.1	WOOD TOP BENCH	2/L5-01
	5.2	WOOD PLATFORM DECK	3/L5-01
	5.3	BICYCLE RACK	4/L5-01
6.0	RAILINGS, BARRIERS, FENCING	DETAIL / SHEET	
	6.1	HAND RAILING	5/L5-01
7.0	SITE LIGHTING		
	7.1	BOLLARD LIGHT BASE	2/L5-02
	7.2	POLE LIGHT BASE	1/L5-02
	7.3	CATENARY LIGHT BASE	3/L5-02
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L5-03
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	9.5	LANDSCAPE EDGING	5/L5-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	WATER FEATURE POP JET	5/L5-02
	10.2	ADDRESS MARKER	4/L5-02

ACETO LANDSCAPE ARCHITECTS
207 221 3390 | ACETOLA.COM

SEAL

PROJECT TITLE

100 Durgin Ln

PREPARED FOR

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS | DATE

ISSUE DATE

June 17, 2024

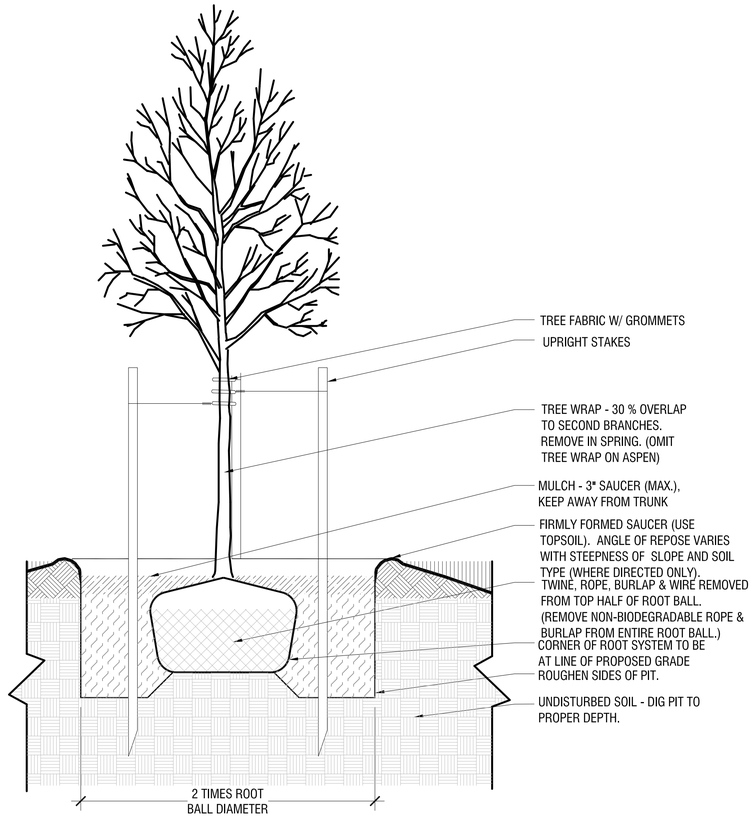
SHEET TITLE

SITE DETAILS

SHEET INFORMATION

L5-02

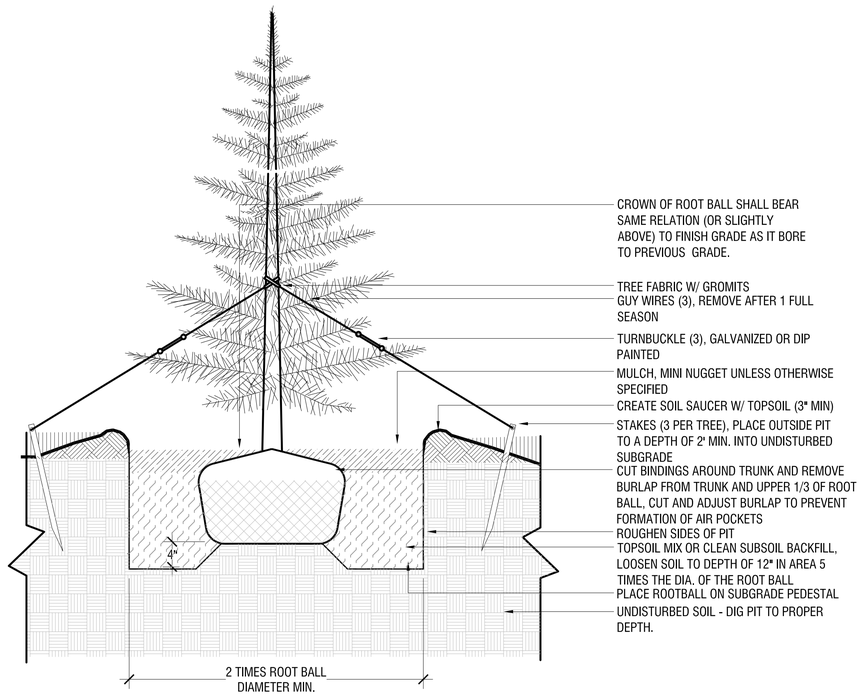
NOT FOR CONSTRUCTION



1 Deciduous Tree Planting

9.1

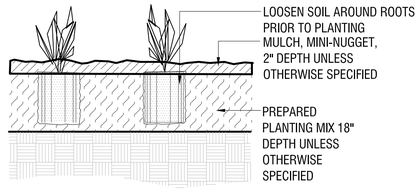
1":1'-0"



2 Conifer Tree Planting

9.2

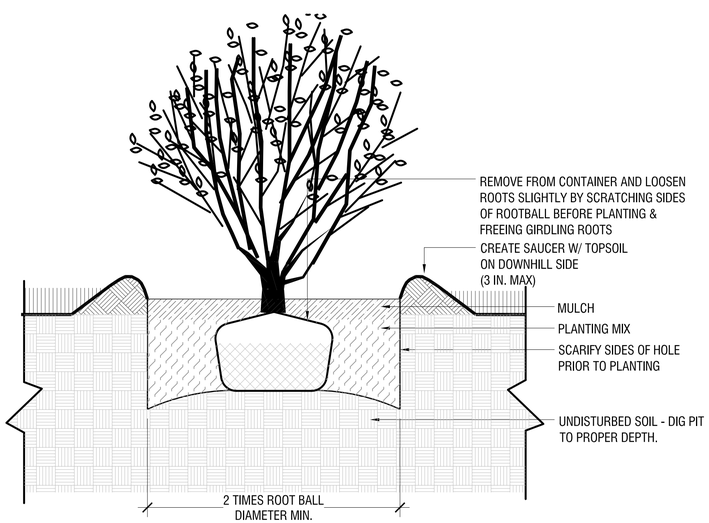
1":1'-0"



3 Perennial / Ornamental Grass Planting

9.4

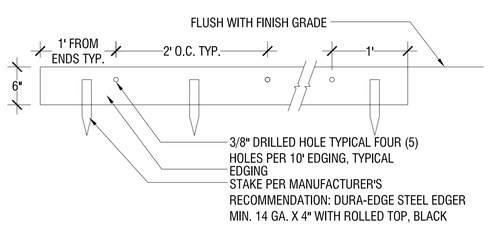
1":1'-0"



4 Shrub Planting

9.3

1":1'-0"



5 Steel Edging

9.5

1":1'-0"

SITE KEYNOTES:

1.0	PAVEMENTS, RAMPS, CURBS		DETAIL / SHEET
	1.1	BITUMINOUS PATH	1/L5-00
	1.2	EXPOSED AGGREGATE	2/L5-00
	1.3	WOODEN BOARDWALK	3/L5-00
	1.4	STONEDUST WALK	6/L5-00
	1.5	GRAVEL DRIP EDGE	7/L5-00
2.0	JOINTING		
	2.1	EXPANSION JOINT	4/L5-00
	2.2	CONTROL JOINT	5/L5-00
3.0	STEPS		
	3.1	CONCRETE STEPS	8/L5-00
	3.2	RECLAIMED GRANITE STEPS	9/L5-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	WALL - CONCRETE	1/L5-01
5.0	SITE FURNITURE		
	5.1	WOOD TOP BENCH	2/L5-01
	5.2	WOOD PLATFORM DECK	3/L5-01
	5.3	BICYCLE RACK	4/L5-01
6.0	RAILINGS, BARRIERS, FENCING		DETAIL / SHEET
	6.1	HAND RAILING	5/L5-01
7.0	SITE LIGHTING		
	7.1	BOLLARD LIGHT BASE	2/L5-02
	7.2	POLE LIGHT BASE	1/L5-02
	7.3	CATENARY LIGHT BASE	3/L5-02
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L5-03
	9.2	CONIFEROUS TREE PLANTING	2/L5-03
	9.3	SHRUB PLANTING	4/L5-03
	9.4	PERENNIAL/GRASS PLANTING	3/L5-03
	9.5	LANDSCAPE EDGING	5/L5-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	WATER FEATURE POP JET	5/L5-02
	10.2	ADDRESS MARKER	4/L5-02

ACETO LANDSCAPE ARCHITECTS
207 221 3390 | ACETOLA.COM

SEAL

PROJECT TITLE

100 Durgin Ln

PREPARED FOR

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS | DATE

ISSUE DATE

June 17, 2024

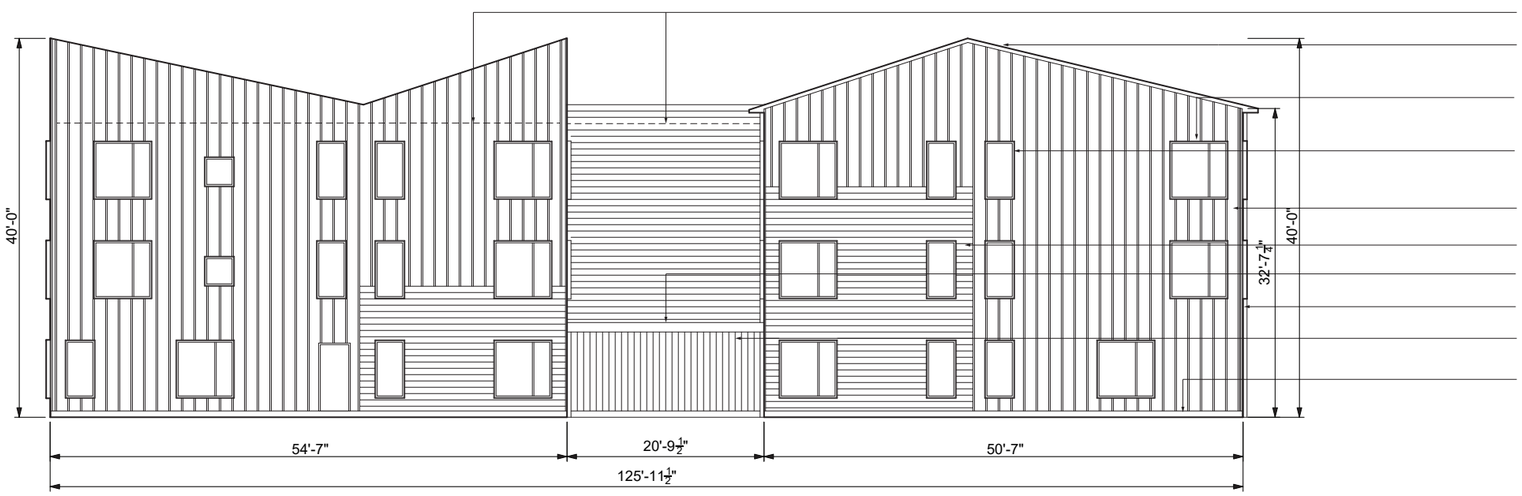
SHEET TITLE

PLANTING DETAILS

SHEET INFORMATION

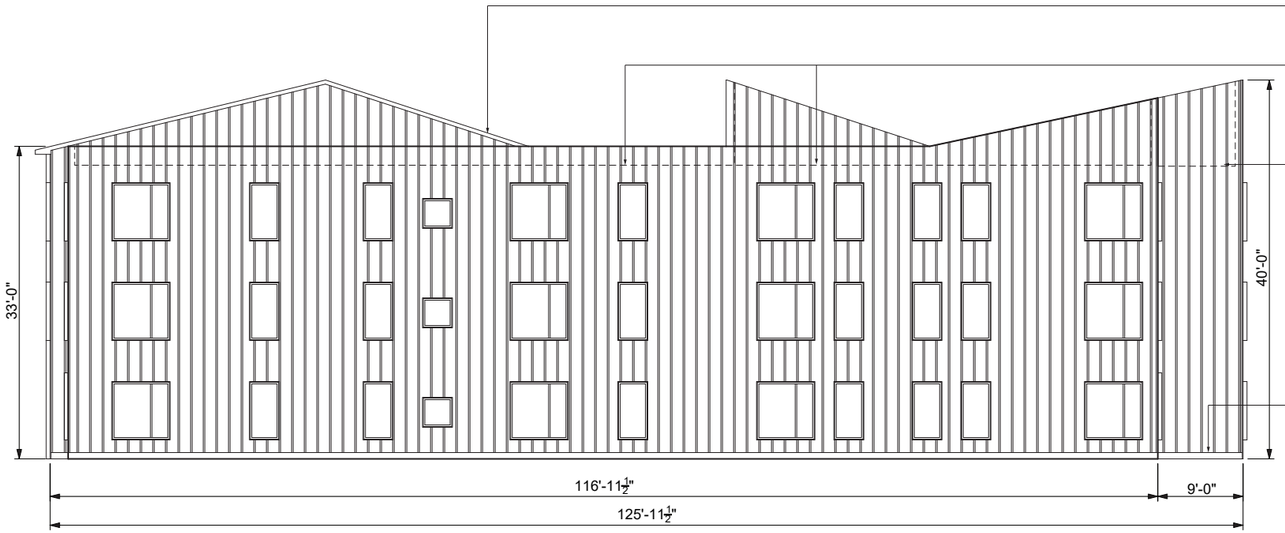
L 5.03

NOT FOR CONSTRUCTION



Membrane Roofing
Standing Seam Metal Roofing (only on gabled portion)
Double-glazed Fiberglass Fixed and Casement Mulled Window, Typ.
Double-glazed Fiberglass Casement Window, Typ.
Fiber Cement Board & Batten
Fiber Cement Shiplap Board
Corrugated Polycarbonate Canopy Over Wood Trellis
Gutter, Downspout
Natural Cedar Cladding
Fiber Cement Board over Concrete Stem Wall, Parged

FRONT SIDE



Standing Seam Metal Roofing (only on gabled portion)
Membrane Roofing
Fiber Cement Board & Batten
Fiber Cement Board over Concrete Stem Wall, Parged

BACK SIDE

DISCLAIMER: These plans are conceptual only. They have not been subject to a comprehensive code and regulatory review, nor have they been tested against any as-built surveys. Discoveries in such an analysis may result in fundamental changes to the original concept.

0 5’ 10’ 20’

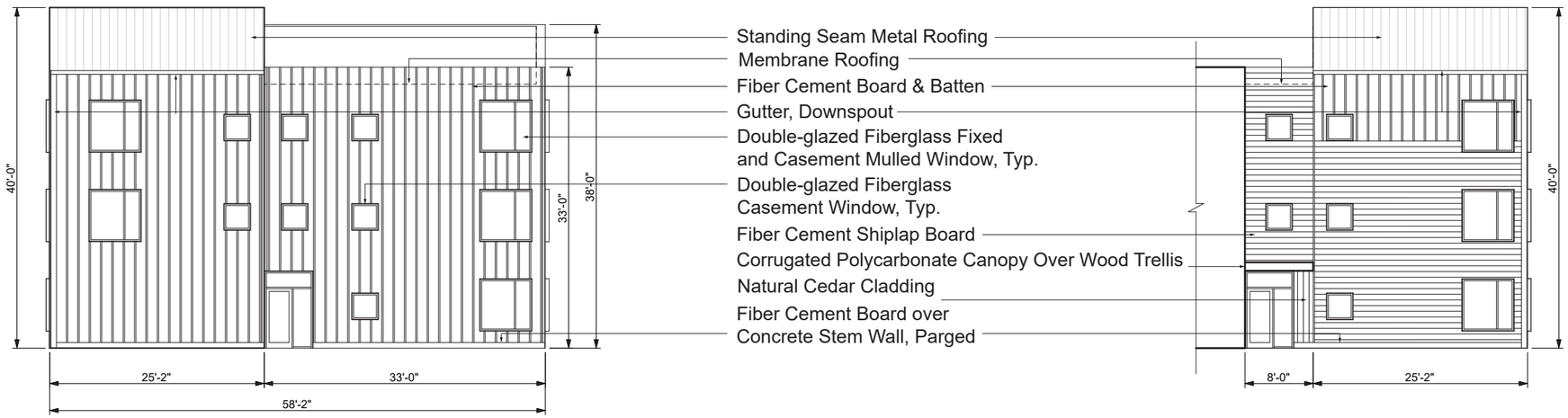
100 Durgin Lane
Portsmouth, NH

3 Story Building Elevations
June 14, 2024

Scale: 1/16” = 1’-0”

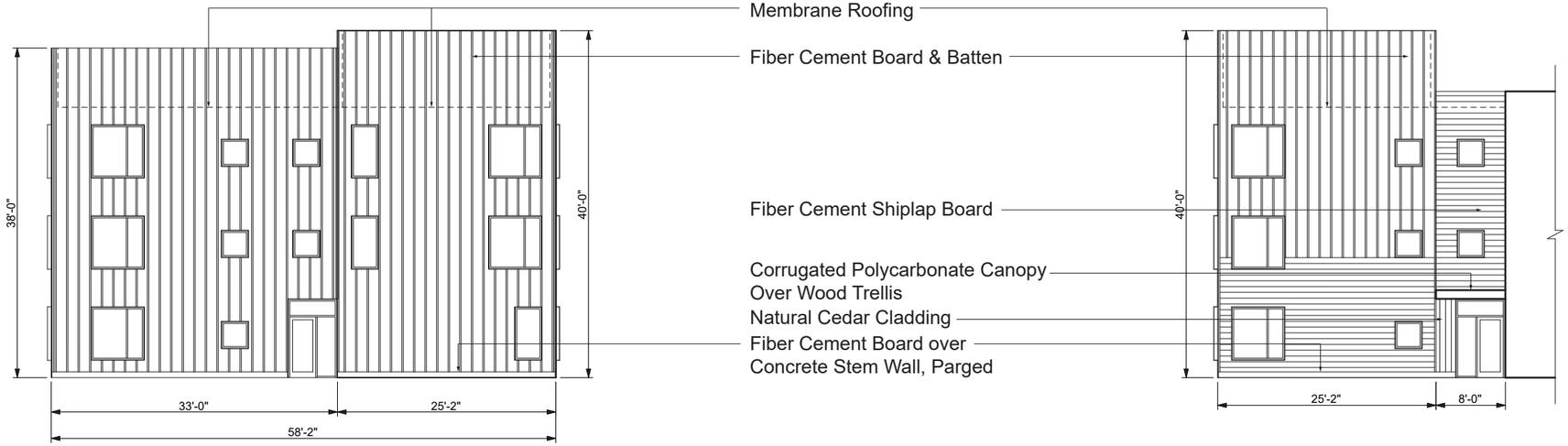
Architecture & Planning

utile



RIGHT SIDE

COURTYARD RIGHT SIDE



LEFT SIDE

COURTYARD LEFT SIDE

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0 5’ 10’ 20’

100 Durgin Lane
Portsmouth, NH

3 Story Building Elevations
June 14, 2024

Scale: 1/16” = 1’-0”

Architecture
& Planning

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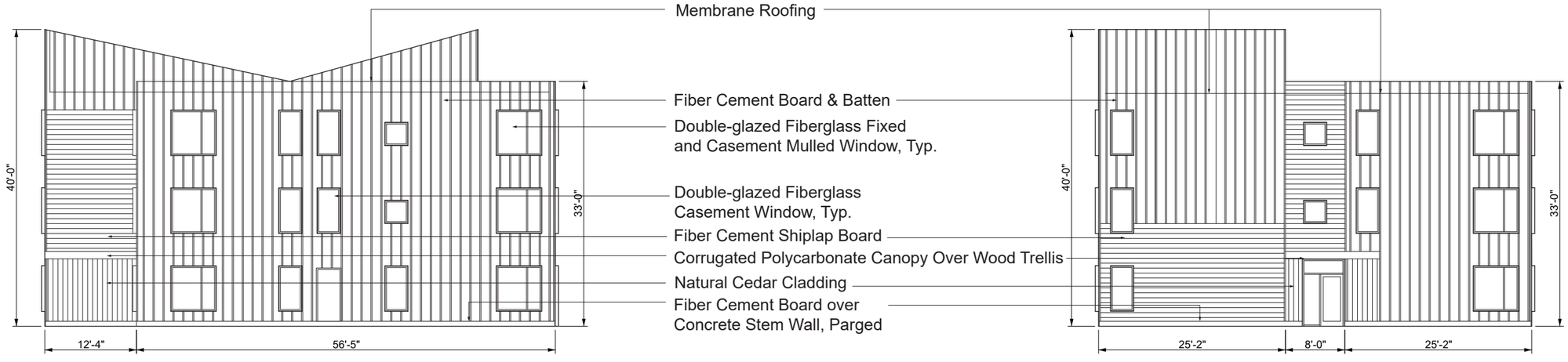
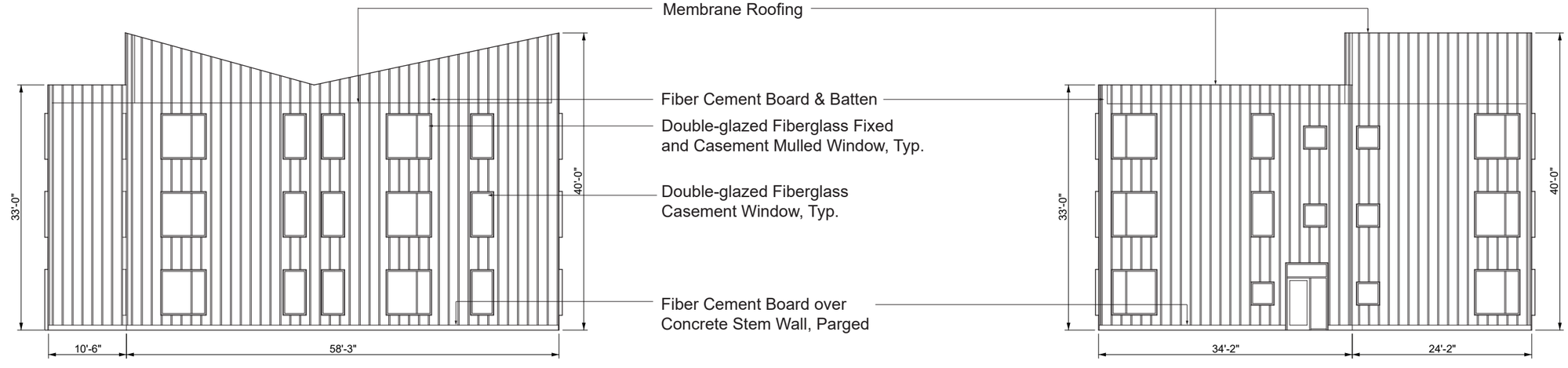


FRONT SIDE

LEFT SIDE



BACK SIDE

RIGHT SIDE

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0 5’ 10’ 20’

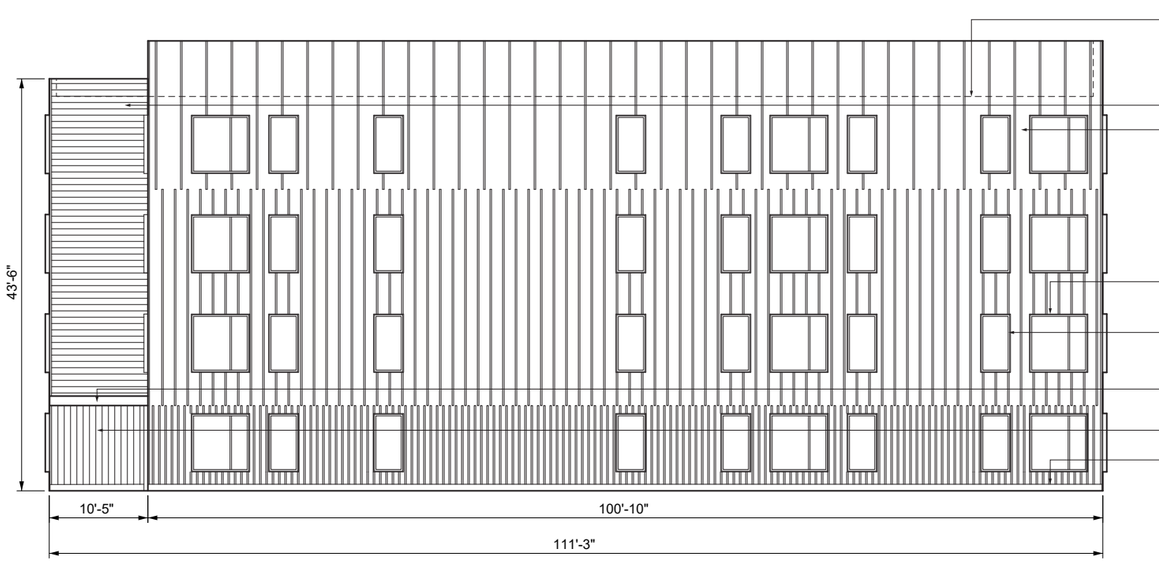
100 Durgin Lane
Portsmouth, NH

3 Story Building (Small) Elevations
June 14, 2024

Scale: 1/16” = 1’-0”

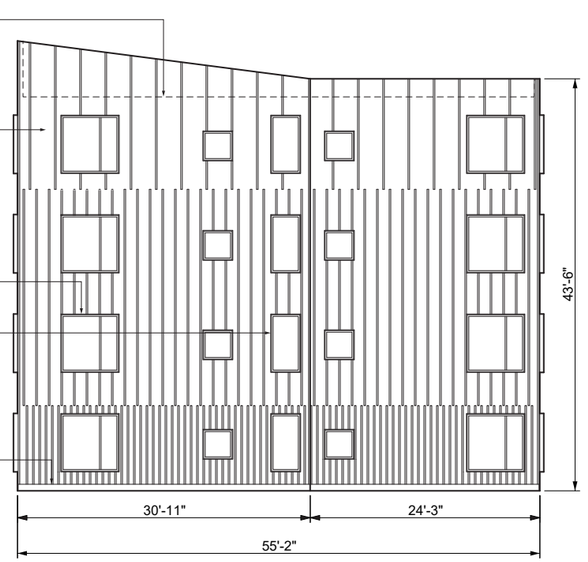
Architecture
& Planning

utile

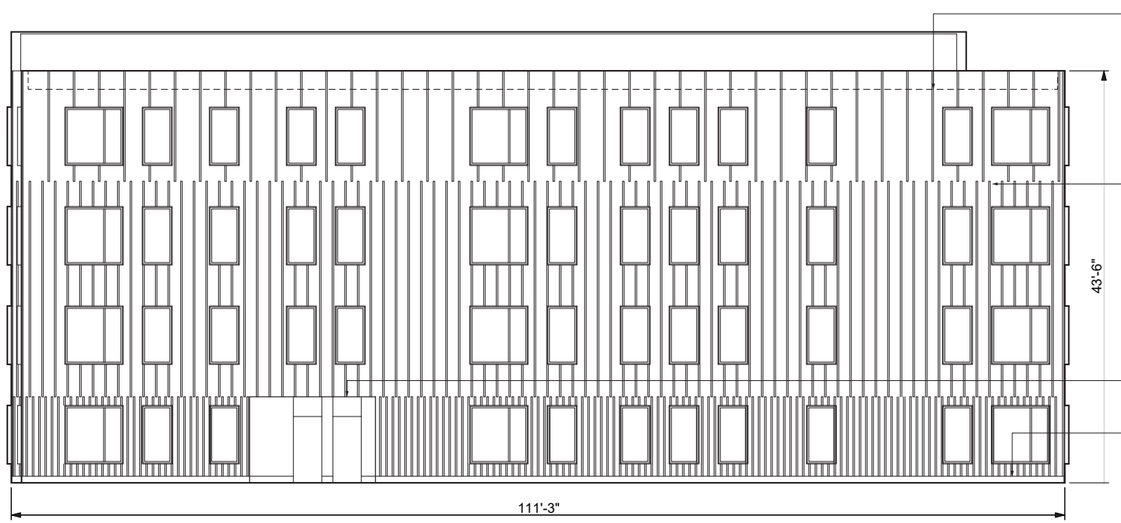


FRONT SIDE

Membrane Roofing
Fiber Cement Shiplap Board
Fiber Cement Board & Batten
Double-glazed Fiberglass Fixed and Casement Mulled Window, Typ.
Double-glazed Fiberglass Casement Window, Typ.
Corrugated Polycarbonate Canopy Over Wood Trellis
Natural Cedar Cladding
Fiber Cement Board over Concrete Stem Wall, Parged

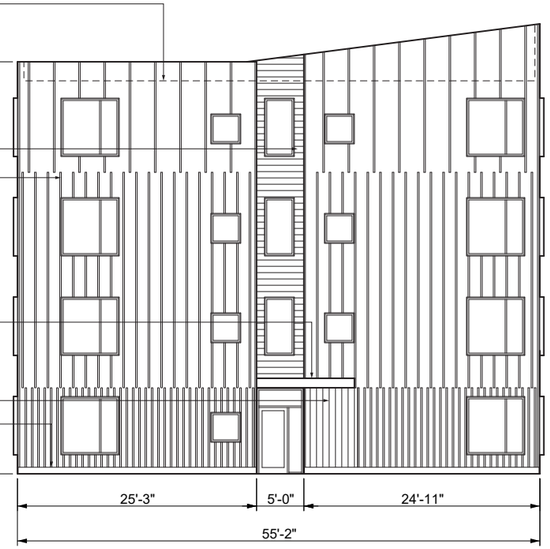


RIGHT SIDE



BACK SIDE

Membrane Roofing
Fiber Cement Shiplap Board
Fiber Cement Board & Batten
Corrugated Polycarbonate Canopy Over Wood Trellis
Fiber Cement Flat Panel
Natural Cedar Cladding
Fiber Cement Board over Concrete Stem Wall, Parged



LEFT SIDE

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0 5’ 10’ 20’

100 Durgin Lane
Portsmouth, NH

4 Story Building Elevations
April 17, 2024

Scale: 1/16” = 1’-0”

Architecture & Planning

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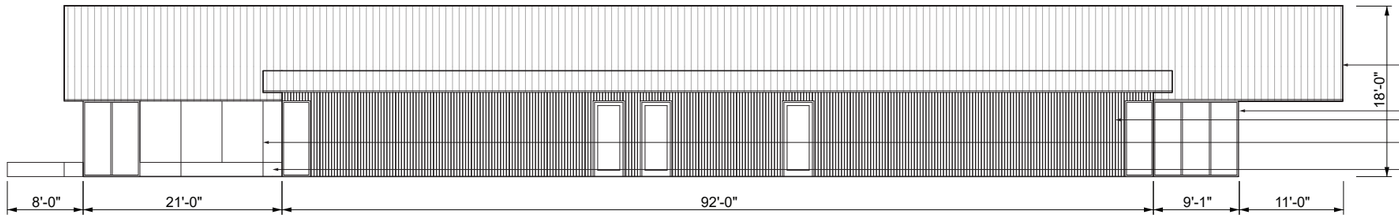
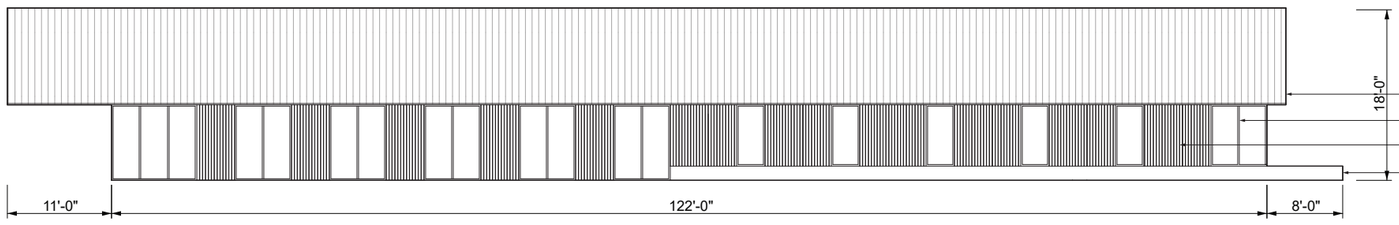
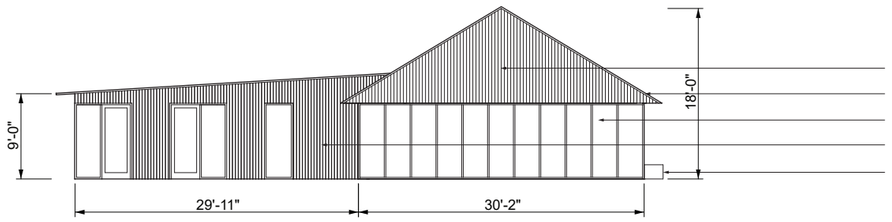


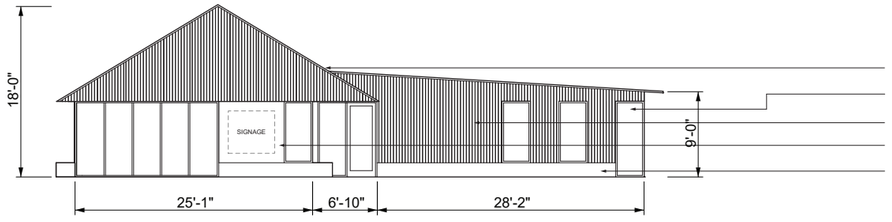
Standing Seam Metal Roofing
Double-glazed Curtain Wall, Typ.
Natural Cedar Cladding
Fiber Cement Board, Parged
Fiber Cement Board over Concrete Stem Wall, Parged, Typ.



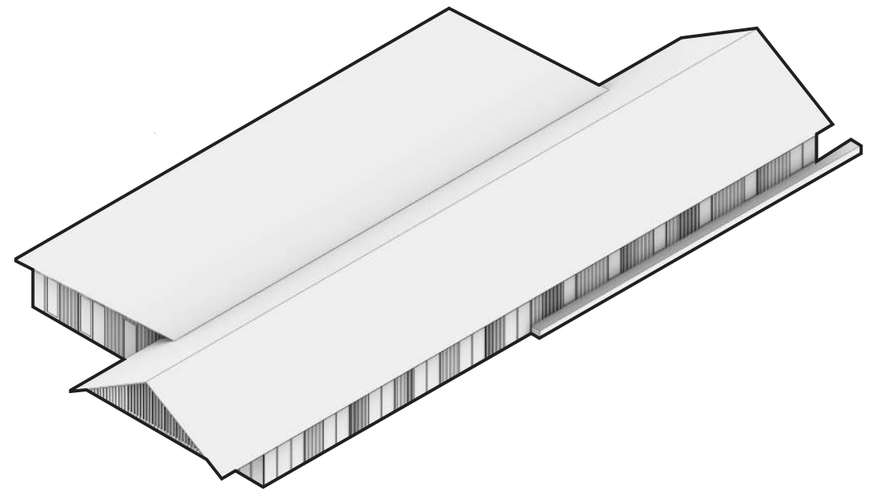
Standing Seam Metal Roofing
Double-glazed Curtain Wall, Typ.
Natural Cedar Cladding
Fiber Cement Board over Concrete Stem Wall, Parged, Typ.



Cedar Slat Screen
Standing Seam Metal Roofing
Double-glazed Operable Partition
Natural Cedar Cladding
Fiber Cement Board over Concrete Stem Wall, Parged, Typ.



Standing Seam Metal Roofing
Double-glazed Curtain Wall, Typ.
Natural Cedar Cladding
Fiber Cement Board, Parged
Fiber Cement Board over Concrete Stem Wall, Parged, Typ.



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0 5’ 10’ 20’

100 Durgin Lane
Portsmouth, NH

Community Building Elevations
June 14, 2024

Scale: 1/16” = 1’-0”

Architecture
& Planning

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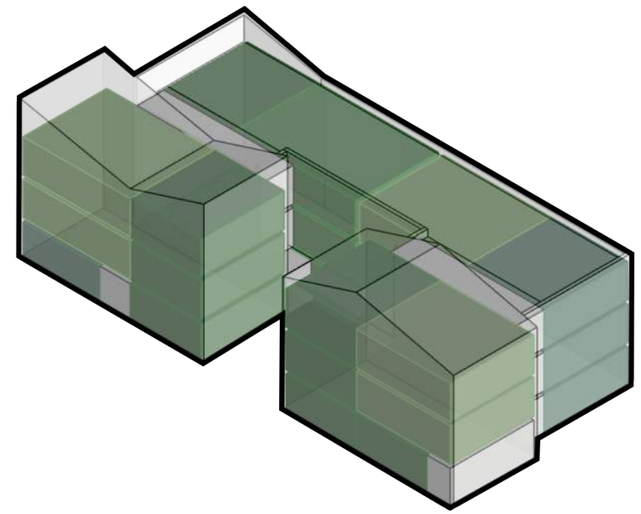
TYPICAL FLOOR
6,126 GSF

GROUND FLOOR
6,244 GSF



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0 5’ 10’ 20’

100 Durgin Lane
Portsmouth, NH

3 Story Building Plans
June 14, 2024

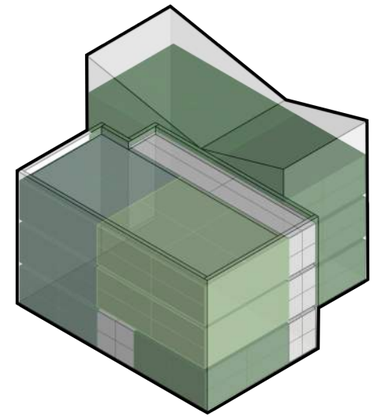
Scale: 1/16” = 1’-0”

Architecture & Planning

utile

TYPICAL FLOOR
3,278 GSF

GROUND FLOOR
3,334 GSF



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0 5’ 10’ 20’

100 Durgin Lane
Portsmouth, NH

3 Story Building (Small) Plans
June 14, 2024

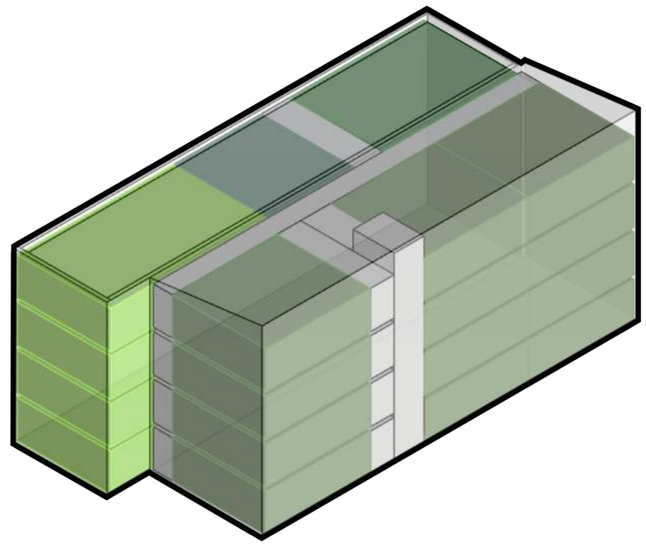
Scale: 1/16” = 1’-0”

Architecture
& Planning

utile

TYPICAL FLOOR
5,705 GSF

GROUND FLOOR
5,729 GSF



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0 5’ 10’ 20’

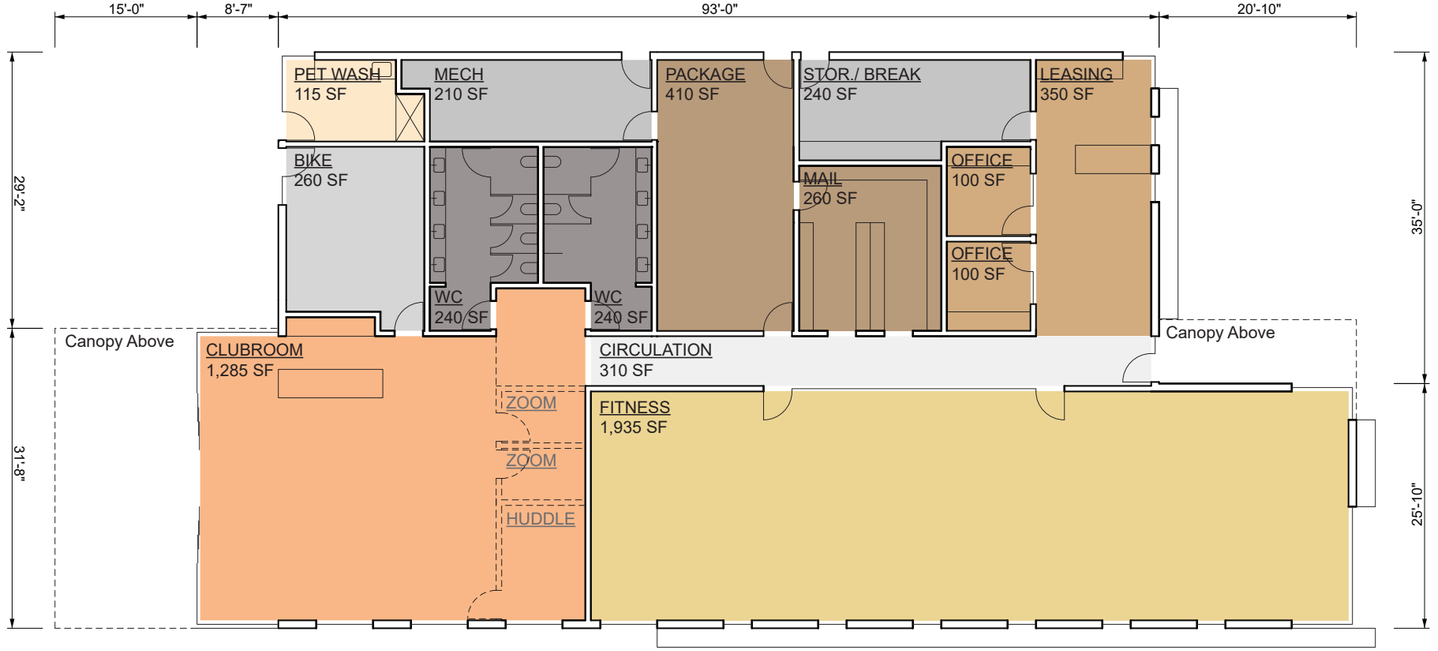
100 Durgin Lane
Portsmouth, NH

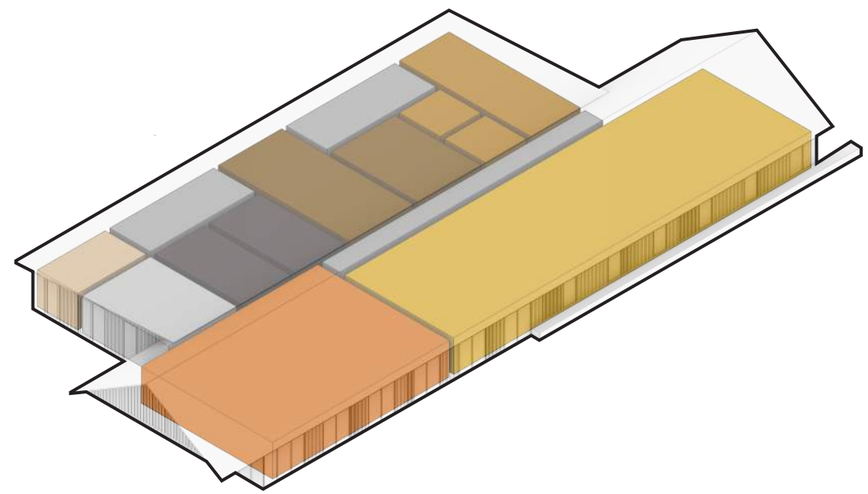
4 Story Building Elevations
June 14, 2024

Scale: 1/16” = 1’-0”

Architecture
& Planning

utile





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0 5’ 10’ 20’

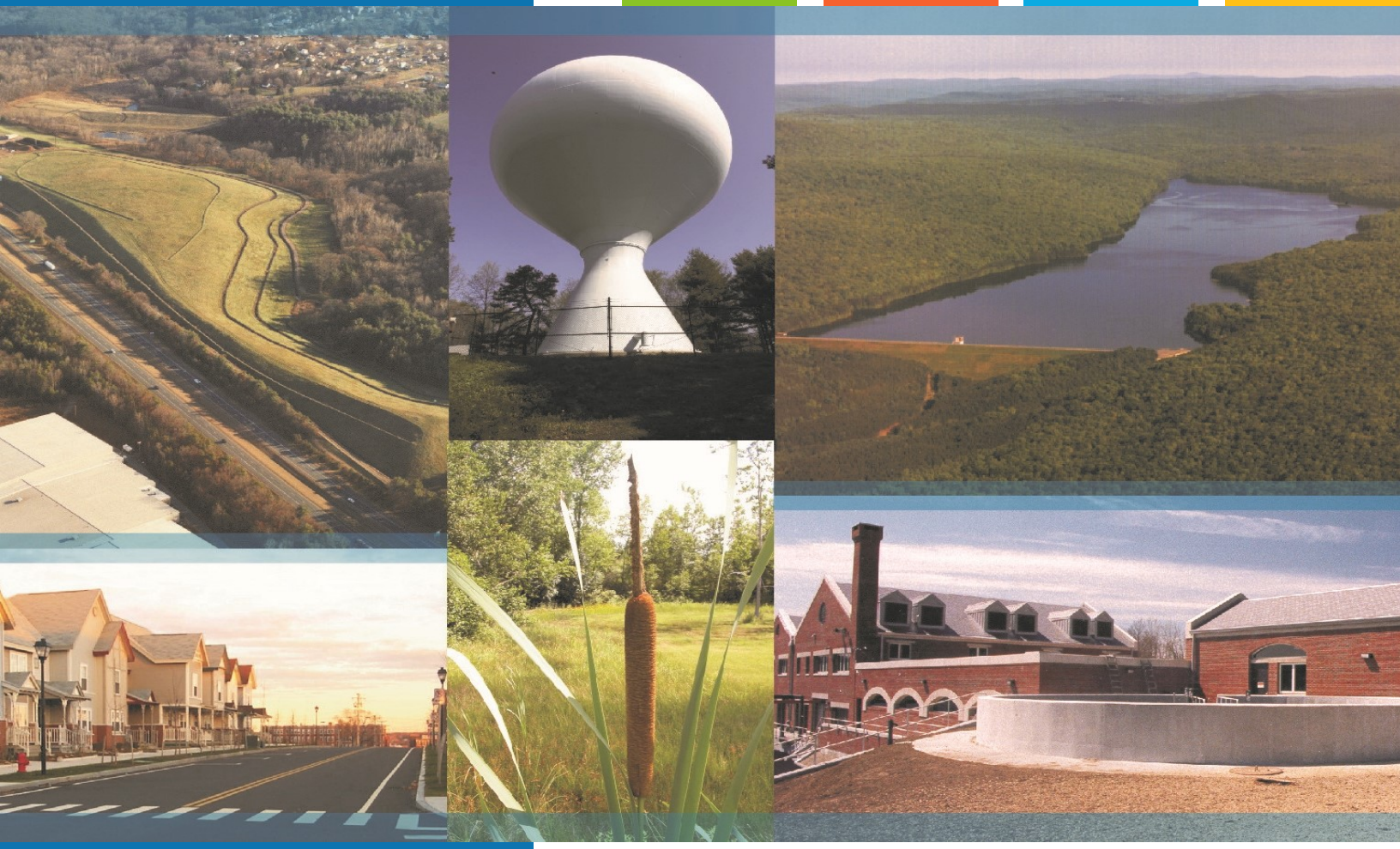
100 Durgin Lane
Portsmouth, NH

Community Building Plan
June 14, 2024

Scale: 1/16” = 1’-0”

Architecture
& Planning

utile



Proposed Multi-Family Development
100 Durgin Lane
Portsmouth, NH

Drainage Analysis

100 Durgin Lane Owner, LLC

June 17, 2024

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
6/17/24

STATE OF NEW HAMPSHIRE
NEIL A HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
06/17/2024

Tighe&Bond

100% Recyclable

Table of Contents

Section 1
Project Description

The proposed project is located at 100 Durgin Lane and includes lots identified as Map 239 Lots 13-2, 16 & 18 on the City of Portsmouth Tax Maps. The site was previously home to Christmas Tree Shops and Bed, Bath and Beyond locations which are no longer in operation. The properties are a combined 26.1 acres of land and are bound to the west by Route 16, to the north by the Motel 6 property and Gosling Road, to the south by the Hampton Inn and Home Depot properties, and to the east by an Eversource easement, Pep Boys and Durgin Plaza.

The proposed project consists of the demolition of the existing Christmas Tree Shops and Bed, Bath and Beyond building and the construction of approximately 360 rental housing units in a mix of 3-story and 4-story buildings. The proposed project will include a community building and associated site improvements such as parking, pedestrian access, community spaces, utilities, stormwater management, lighting, and landscaping. The proposed project also includes a reduction in overall impervious surface on the development lot.

1.1 On-Site Soil Description

Based on the site-specific soil survey completed by Gove Environmental Services, Inc (attached as Appendix B), the site is largely composed of Udorthents and Canton soils with a Hydrologic Soil Group (HSG) rating of HSG B. Additionally, wetland areas are defined as Scitico soils with a HSG C rating (to remain untouched). The ground cover within the area of study consists mostly of paved surfaces, building, and landscaped islands. There are two (2) wetland systems that drain into two (2) separate unnamed brooks that eventually join together before flowing into the Piscataqua River. The site slopes generally from the center of the parcel to either the eastern or western wetlands.

Infiltration testing was completed where feasible, limited by accessibility of ideal testing locations that did not impact existing paved areas of the site. Soil infiltration testing (included under Appendix B) shows that soils may allow for some level of infiltration, however to remain conservative in the site design, infiltration was not claimed in the drainage model.

1.2 Pre- and Post-Development Comparison

The pre-development and post-development watershed areas have been analyzed at five (5) distinct points of analysis (PA-1 through PA-5). While the points of analysis have 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.

Point of Analysis 1 (PA-1) is located to the northwest end of the site, and assesses flows discharging to an existing wetland adjacent to NH Route 16. **Point of Analysis 2 (PA-2)** is located to the northeast end of the site, and assesses flows to another delineated wetland on the other side of the access road connecting the subject property to its northwesterly neighboring abutter. **Point of Analysis 3 (PA-3)** is located along the eastern corner of the site, and assesses flows to an existing wetland located on the south side of Durgin Lane. **Point of Analysis 4 (PA-4)** is located at the southern corner of the site, and assesses flows that discharge down a slope to an abutting property. **Point of Analysis 5 (PA-5)** is located along the southeastern edge of the site, a smaller point of analysis to assess flows exiting the property down the access road connecting to the neighboring abutter.

The peak discharge rates at these points of analysis were determined by analyzing Type III, 24-hour storm events. The rainfall data for these storm events were obtained from the data published by the Northeast Regional Climate Center at Cornell University, which can be found in Appendix B.

Furthermore, the site is located within a Coastal and Great Bay Community, therefore an added factor of safety of 15% was included as required by Env-Wq 1503.08(l).

1.3 Calculation Methods

The design storms analyzed in this study are the 1-year, 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 were 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 modeled utilizing the five (5) distinct points of analysis described in Section 1. These points of analysis and watersheds are depicted on the plan entitled "Pre-Development Watershed Plan", Sheet C-801.

The point of analysis and its contributing watershed areas under the *pre-development conditions* are described below:

Point of Analysis 1 (PA-1)

Point of Analysis One (PA-1) is comprised of a single subcatchment area (PRE-1.0) that consists of runoff from the existing retail building roof, as well as a combination of impervious loading areas behind the building and grassed and wooded areas to the north. Runoff generally discharges through an existing 24" drainage outlet to an unnamed wetland after flowing through a water quality unit ("Downstream Defender" hydrodynamic separator, capable of meeting contemporary pre-treatment standards only).

Point of Analysis 2 (PA-2)

Point of Analysis Two (PA-2) is composed of two (2) subcatchment areas (PRE-2.0 and PRE-2.1). PRE-2.0 is comprised primarily of paved parking and access areas, in addition to some vegetated slopes and wooded areas within the limits of analysis. A portion of this subcatchment area directs primarily impervious runoff through underground closed drainage to a water quality unit ("Downstream Defender" hydrodynamic separator, capable of meeting contemporary pre-treatment standards only) prior to discharge to the adjacent wetland. Remaining portions of this subcatchment include the access road extension off of Durgin Lane, adjacent parking lot to the east, and the access road at the north end of the side that discharge directly to the wetlands without treatment.

PRE-2.1 is comprised exclusively of paved parking areas and small landscaped islands. Flows from this subcatchment travel via overland flow to a bioretention cell (RG-1) located along the eastern edge of the site. Curb returns and small rip-rap aprons inlet flows into the cell for a level of treatment prior to discharging to the adjacent wetland via a 24" reinforced concrete pipe outlet.

Point of Analysis 3 (PA-3)

Point of Analysis Three (PA-3) is composed of three (3) subcatchment areas (PRE-3.0, PRE-3.1, and PRE-3.10).

PRE-3.0 is comprised primarily of paved parking and access areas, in addition to some vegetated slopes and wooded areas within the limits of analysis. A large portion of impervious runoff within this watershed are conveyed via closed drainage to a water quality unit ("Downstream Defender" hydrodynamic separator, capable of meeting contemporary pre-treatment standards only) prior to discharge to the adjacent wetland through a 36" reinforced concrete outlet pipe. The water quality unit is shared with and receives flows from an abutting property (Hampton Inn).

PRE-3.1 is comprised exclusively of parking areas and small landscaped islands. Flows from this subcatchment travel via overland flow to a bioretention cell (RG-2) tucked into the eastern corner of the primary parking lot. A curb return and small rip-rap apron inlets flows into the cell for a level of treatment prior to connecting to the same 36" outlet pipe described under PRE-3.0.

PRE-3.10 represents an off-site subcatchment area on an abutting property whose drainage connects upstream of the water quality unity described under PRE-3.0. This subcatchment area is comprised mostly of paved parking and building roof areas, with a small amount of pervious vegetated and wooded areas along the edges and corners of its respective lot.

Point of Analysis 4 (PA-4)

Point of Analysis Four (PA-4) is composed of a single subcatchment area (PRE-4.0, comprised of mostly paved parking surfaces. Flows from this watershed travel via overland flow off the edge of pavement and down the adjacent slopes to an abutting property without treatment.

Point of Analysis 5 (PA-5)

Point of Analysis Five (PA-5) is composed of a single subcatchment area (PRE-5.0), representative of impervious runoff from the southern access road that flows downhill to a couple of off-site catch basins, and ultimately to a separate closed off-site drainage system.

2.1 Pre-Development Watershed Plan

2.2 Pre-Development Calculations

Tighe&Bond

PA-4
PRE 4.0
PRE 3.0
200Bcaabb
PRE 3.10
140B
PRE 1.0
200Bcaabb
500Bdcabb
33B
PA-1
500Ddcabb
33B
200Ecaabb
500Bdcabb
PRE 3.1
200Bcaabb
PRE 2.0
500Bdcabb
42C
PRE 3.0
PRE 2.1
PRE POND RG-1
42B
200Bcaabb
PRE POND RG-2
PRE 2.0
200Ccaabb
500Bdcabb
200Dcaabb
PRE 5.0
200Ecaabb
33B
33B
PA-2
33B
500Bdcabb
PA-5
PA-3
33B
500Bdcabb

LEGEND

- PRE-DEVELOPMENT WATERSHED BOUNDARY
- SITE-SPECIFIC SOIL SURVEY BOUNDARIES
- LONGEST FLOW PATH
- PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- PRE POND 1 — PRE-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS

N

0 60' 120'
GRAPHIC SCALE

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

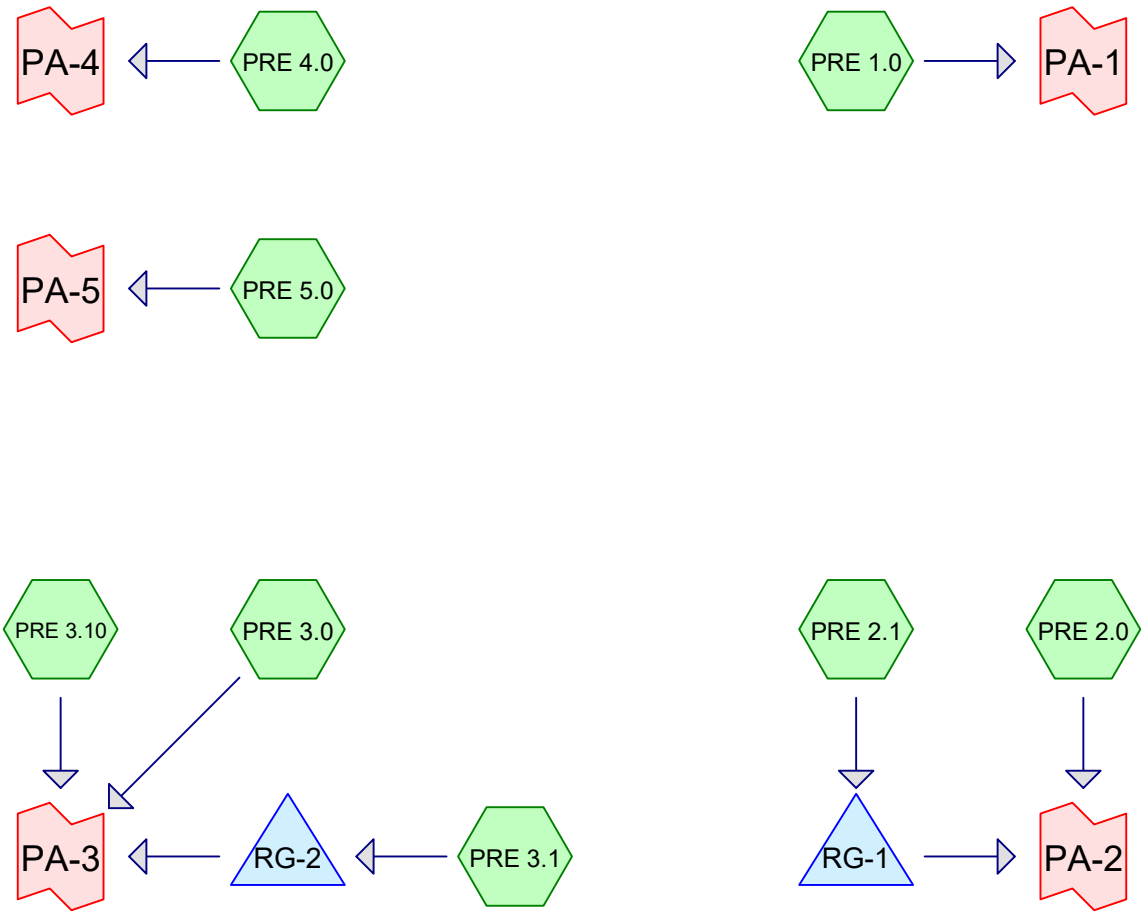
PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-HYDRO.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Last Saved: 6/13/2024
Plotted: 6/13/2024 3:32pm By: BCurcio
Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-HYDRO.dwg



Subcat Reach Pond Link

Routing Diagram for E-5071-001_PRE
Prepared by Tighe & Bond, Printed 6/14/2024

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
182,331	61	>75% Grass cover, Good, HSG B (PRE 1.0, PRE 2.0, PRE 2.1, PRE 3.0, PRE 3.1, PRE 3.10, PRE 4.0)
63	74	>75% Grass cover, Good, HSG C (PRE 2.0)
414,642	98	Paved parking, HSG B (PRE 1.0, PRE 2.0, PRE 2.1, PRE 3.0, PRE 3.1, PRE 3.10, PRE 4.0, PRE 5.0)
93,676	98	Unconnected roofs, HSG B (PRE 1.0, PRE 3.10)
102,513	55	Woods, Good, HSG B (PRE 1.0, PRE 2.0, PRE 3.0)
5,088	70	Woods, Good, HSG C (PRE 3.0)
798,313	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
793,162	HSG B	PRE 1.0, PRE 2.0, PRE 2.1, PRE 3.0, PRE 3.1, PRE 3.10, PRE 4.0, PRE 5.0
5,151	HSG C	PRE 2.0, PRE 3.0
0	HSG D	
0	Other	
798,313		**TOTAL AREA**

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

Subcatchment PRE 1.0: Runoff Area=207,577 sf 57.69% Impervious Runoff Depth>1.42"
Flow Length=999' Tc=6.8 min CN=82 Runoff=7.56 cfs 24,508 cf

Subcatchment PRE 2.0: Runoff Area=143,416 sf 69.16% Impervious Runoff Depth>1.70"
Flow Length=500' Tc=5.0 min CN=86 Runoff=6.59 cfs 20,368 cf

Subcatchment PRE 2.1: Runoff Area=58,945 sf 77.01% Impervious Runoff Depth>1.94"
Flow Length=360' Slope=0.0150 '/' Tc=5.0 min CN=89 Runoff=3.07 cfs 9,548 cf

Subcatchment PRE 3.0: Runoff Area=267,552 sf 54.51% Impervious Runoff Depth>1.28"
Flow Length=420' Tc=10.7 min CN=80 Runoff=7.73 cfs 28,647 cf

Subcatchment PRE 3.1: Runoff Area=16,036 sf 66.20% Impervious Runoff Depth>1.63"
Flow Length=155' Slope=0.0150 '/' Tc=5.0 min CN=85 Runoff=0.70 cfs 2,177 cf

Subcatchment PRE 3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>2.21"
Tc=5.0 min CN=92 Runoff=4.66 cfs 14,627 cf

Subcatchment PRE 4.0: Runoff Area=16,868 sf 71.31% Impervious Runoff Depth>1.78"
Flow Length=115' Tc=5.0 min CN=87 Runoff=0.81 cfs 2,504 cf

Subcatchment PRE 5.0: Runoff Area=8,392 sf 100.00% Impervious Runoff Depth>2.82"
Flow Length=145' Slope=0.0170 '/' Tc=5.0 min CN=98 Runoff=0.57 cfs 1,970 cf

Pond RG-1: Peak Elev=60.03' Storage=1,883 cf Inflow=3.07 cfs 9,548 cf
Outflow=1.38 cfs 9,450 cf

Pond RG-2: Peak Elev=62.15' Storage=347 cf Inflow=0.70 cfs 2,177 cf
Outflow=0.47 cfs 2,140 cf

Link PA-1: Inflow=7.56 cfs 24,508 cf
Primary=7.56 cfs 24,508 cf

Link PA-2: Inflow=7.74 cfs 29,818 cf
Primary=7.74 cfs 29,818 cf

Link PA-3: Inflow=11.84 cfs 45,414 cf
Primary=11.84 cfs 45,414 cf

Link PA-4: Inflow=0.81 cfs 2,504 cf
Primary=0.81 cfs 2,504 cf

Link PA-5: Inflow=0.57 cfs 1,970 cf
Primary=0.57 cfs 1,970 cf

Total Runoff Area = 798,313 sf Runoff Volume = 104,349 cf Average Runoff Depth = 1.57"
36.33% Pervious = 289,995 sf 63.67% Impervious = 508,318 sf

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

Subcatchment PRE 1.0: Runoff Area=207,577 sf 57.69% Impervious Runoff Depth>1.93"
Flow Length=999' Tc=6.8 min CN=82 Runoff=10.36 cfs 33,388 cf

Subcatchment PRE 2.0: Runoff Area=143,416 sf 69.16% Impervious Runoff Depth>2.26"
Flow Length=500' Tc=5.0 min CN=86 Runoff=8.69 cfs 26,973 cf

Subcatchment PRE 2.1: Runoff Area=58,945 sf 77.01% Impervious Runoff Depth>2.52"
Flow Length=360' Slope=0.0150 '/' Tc=5.0 min CN=89 Runoff=3.98 cfs 12,391 cf

Subcatchment PRE 3.0: Runoff Area=267,552 sf 54.51% Impervious Runoff Depth>1.78"
Flow Length=420' Tc=10.7 min CN=80 Runoff=10.82 cfs 39,615 cf

Subcatchment PRE 3.1: Runoff Area=16,036 sf 66.20% Impervious Runoff Depth>2.17"
Flow Length=155' Slope=0.0150 '/' Tc=5.0 min CN=85 Runoff=0.94 cfs 2,903 cf

Subcatchment PRE 3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>2.81"
Tc=5.0 min CN=92 Runoff=5.86 cfs 18,608 cf

Subcatchment PRE 4.0: Runoff Area=16,868 sf 71.31% Impervious Runoff Depth>2.34"
Flow Length=115' Tc=5.0 min CN=87 Runoff=1.06 cfs 3,294 cf

Subcatchment PRE 5.0: Runoff Area=8,392 sf 100.00% Impervious Runoff Depth>3.44"
Flow Length=145' Slope=0.0170 '/' Tc=5.0 min CN=98 Runoff=0.69 cfs 2,409 cf

Pond RG-1: Peak Elev=60.33' Storage=2,678 cf Inflow=3.98 cfs 12,391 cf
Outflow=1.47 cfs 12,282 cf

Pond RG-2: Peak Elev=62.29' Storage=449 cf Inflow=0.94 cfs 2,903 cf
Outflow=0.59 cfs 2,862 cf

Link PA-1: Inflow=10.36 cfs 33,388 cf
Primary=10.36 cfs 33,388 cf

Link PA-2: Inflow=10.04 cfs 39,255 cf
Primary=10.04 cfs 39,255 cf

Link PA-3: Inflow=15.97 cfs 61,084 cf
Primary=15.97 cfs 61,084 cf

Link PA-4: Inflow=1.06 cfs 3,294 cf
Primary=1.06 cfs 3,294 cf

Link PA-5: Inflow=0.69 cfs 2,409 cf
Primary=0.69 cfs 2,409 cf

Total Runoff Area = 798,313 sf Runoff Volume = 139,580 cf Average Runoff Depth = 2.10"
36.33% Pervious = 289,995 sf 63.67% Impervious = 508,318 sf

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

Subcatchment PRE 1.0: Runoff Area=207,577 sf 57.69% Impervious Runoff Depth>3.60"
Flow Length=999' Tc=6.8 min CN=82 Runoff=19.19 cfs 62,259 cf

Subcatchment PRE 2.0: Runoff Area=143,416 sf 69.16% Impervious Runoff Depth>4.01"
Flow Length=500' Tc=5.0 min CN=86 Runoff=15.27 cfs 47,915 cf

Subcatchment PRE 2.1: Runoff Area=58,945 sf 77.01% Impervious Runoff Depth>4.33"
Flow Length=360' Slope=0.0150 '/' Tc=5.0 min CN=89 Runoff=6.66 cfs 21,255 cf

Subcatchment PRE 3.0: Runoff Area=267,552 sf 54.51% Impervious Runoff Depth>3.40"
Flow Length=420' Tc=10.7 min CN=80 Runoff=20.75 cfs 75,774 cf

Subcatchment PRE 3.1: Runoff Area=16,036 sf 66.20% Impervious Runoff Depth>3.91"
Flow Length=155' Slope=0.0150 '/' Tc=5.0 min CN=85 Runoff=1.67 cfs 5,219 cf

Subcatchment PRE 3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>4.65"
Tc=5.0 min CN=92 Runoff=9.45 cfs 30,847 cf

Subcatchment PRE 4.0: Runoff Area=16,868 sf 71.31% Impervious Runoff Depth>4.11"
Flow Length=115' Tc=5.0 min CN=87 Runoff=1.83 cfs 5,783 cf

Subcatchment PRE 5.0: Runoff Area=8,392 sf 100.00% Impervious Runoff Depth>5.34"
Flow Length=145' Slope=0.0170 '/' Tc=5.0 min CN=98 Runoff=1.06 cfs 3,734 cf

Pond RG-1: Peak Elev=61.22' Storage=5,022 cf Inflow=6.66 cfs 21,255 cf
Outflow=4.01 cfs 21,117 cf

Pond RG-2: Peak Elev=62.92' Storage=815 cf Inflow=1.67 cfs 5,219 cf
Outflow=0.96 cfs 5,166 cf

Link PA-1: Inflow=19.19 cfs 62,259 cf
Primary=19.19 cfs 62,259 cf

Link PA-2: Inflow=16.81 cfs 69,032 cf
Primary=16.81 cfs 69,032 cf

Link PA-3: Inflow=29.06 cfs 111,787 cf
Primary=29.06 cfs 111,787 cf

Link PA-4: Inflow=1.83 cfs 5,783 cf
Primary=1.83 cfs 5,783 cf

Link PA-5: Inflow=1.06 cfs 3,734 cf
Primary=1.06 cfs 3,734 cf

Total Runoff Area = 798,313 sf Runoff Volume = 252,786 cf Average Runoff Depth = 3.80"
36.33% Pervious = 289,995 sf 63.67% Impervious = 508,318 sf

Summary for Subcatchment PRE 1.0:

[47] Hint: Peak is 703% of capacity of segment #3

Runoff = 19.19 cfs @ 12.10 hrs, Volume= 62,259 cf, Depth> 3.60"
Routed to Link PA-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

	Area (sf)	CN	Description
	59,833	61	>75% Grass cover, Good, HSG B
	40,628	98	Paved parking, HSG B
	27,983	55	Woods, Good, HSG B
	79,133	98	Unconnected roofs, HSG B
	0	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
*	0	98	Roofs, HGC C
	0	70	Woods, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	0	98	Paved parking, HSG D
	0	77	Woods, Good, HSG D
	207,577	82	Weighted Average
	87,816		42.31% Pervious Area
	119,761		57.69% Impervious Area
	79,133		66.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.85		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
1.5	220	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	679	0.0050	3.47	2.73	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Corrugated PP, smooth interior
6.8	999	Total			

Summary for Subcatchment PRE 2.0:

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 606% of capacity of segment #3

Runoff = 15.27 cfs @ 12.07 hrs, Volume= 47,915 cf, Depth> 4.01"
Routed to Link PA-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
36,387	61	>75% Grass cover, Good, HSG B
99,191	98	Paved parking, HSG B
7,775	55	Woods, Good, HSG B
63	74	>75% Grass cover, Good, HSG C
143,416	86	Weighted Average
44,225		30.84% Pervious Area
99,191		69.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
1.2	200	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	200	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.3	500	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE 2.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 6.66 cfs @ 12.07 hrs, Volume= 21,255 cf, Depth> 4.33"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
13,550	61	>75% Grass cover, Good, HSG B
45,395	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
58,945	89	Weighted Average
13,550		22.99% Pervious Area
45,395		77.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.31		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
1.7	260	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	360	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE 3.0:

[47] Hint: Peak is 823% of capacity of segment #3

Runoff = 20.75 cfs @ 12.15 hrs, Volume= 75,774 cf, Depth> 3.40"
Routed to Link PA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
49,876	61	>75% Grass cover, Good, HSG B
145,833	98	Paved parking, HSG B
66,755	55	Woods, Good, HSG B
5,088	70	Woods, Good, HSG C
267,552	80	Weighted Average
121,719		45.49% Pervious Area
145,833		54.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	25	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.68"
5.0	300	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	55	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.9	40	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	420	Total			

Summary for Subcatchment PRE 3.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.67 cfs @ 12.07 hrs, Volume= 5,219 cf, Depth> 3.91"
Routed to Pond RG-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
5,420	61	>75% Grass cover, Good, HSG B
10,616	98	Paved parking, HSG B
16,036	85	Weighted Average
5,420		33.80% Pervious Area
10,616		66.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.31		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.4	55	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	155	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE 3.10:

*Web Soil Survey data used for off-site analysis.

[49] Hint: Tc<2dt may require smaller dt

Runoff = 9.45 cfs @ 12.07 hrs, Volume= 30,847 cf, Depth> 4.65"
Routed to Link PA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
12,426	61	>75% Grass cover, Good, HSG B
52,558	98	Paved parking, HSG B
14,543	98	Unconnected roofs, HSG B
79,527	92	Weighted Average
12,426		15.62% Pervious Area
67,101		84.38% Impervious Area
14,543		21.67% Unconnected

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

Summary for Subcatchment PRE 4.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.83 cfs @ 12.07 hrs, Volume= 5,783 cf, Depth> 4.11"
Routed to Link PA-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
4,839	61	>75% Grass cover, Good, HSG B
12,029	98	Paved parking, HSG B
16,868	87	Weighted Average
4,839		28.69% Pervious Area
12,029		71.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0270	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	115	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment PRE 5.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.06 cfs @ 12.07 hrs, Volume= 3,734 cf, Depth> 5.34"
Routed to Link PA-5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
8,392	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
8,392	98	Weighted Average
8,392		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0170	1.38		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.68"
0.3	45	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	145	Total, Increased to minimum Tc = 5.0 min			

Summary for Pond RG-1:

[92] Warning: Device #3 is above defined storage
[93] Warning: Storage range exceeded by 0.22'
[58] Hint: Peaked 0.79' above defined flood level

Inflow Area = 58,945 sf, 77.01% Impervious, Inflow Depth > 4.33" for 10-Yr event
Inflow = 6.66 cfs @ 12.07 hrs, Volume= 21,255 cf
Outflow = 4.01 cfs @ 12.25 hrs, Volume= 21,117 cf, Atten= 40%, Lag= 10.7 min
Primary = 4.01 cfs @ 12.25 hrs, Volume= 21,117 cf
Routed to Link PA-2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 61.22' @ 12.25 hrs Surf.Area= 4,110 sf Storage= 5,022 cf
Flood Elev= 60.43' Surf.Area= 3,078 sf Storage= 2,973 cf

Plug-Flow detention time= 28.5 min calculated for 21,073 cf (99% of inflow)

Center-of-Mass det. time= 24.5 min (813.8 - 789.3)

Volume	Invert	Avail.Storage	Storage Description
#1	57.65'	5,022 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
57.65	2,300	0.0	0	0
58.50	2,300	40.0	782	782
60.00	2,300	30.0	1,035	1,817
61.00	4,110	100.0	3,205	5,022

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**24.0" Round Culvert** L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 54.00' / 52.19' S= 0.0953 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	57.65'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	61.15'	**4.5" x 2.5" Horiz. Orifice/Grate X 4.00 columns** X 8 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.00 cfs @ 12.25 hrs HW=61.22' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 4.00 cfs of 37.73 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 1.72 cfs @ 8.77 fps)
—**3=Orifice/Grate** (Weir Controls 2.28 cfs @ 0.87 fps)

Summary for Pond RG-2:

Inflow Area = 16,036 sf, 66.20% Impervious, Inflow Depth > 3.91" for 10-Yr event
Inflow = 1.67 cfs @ 12.07 hrs, Volume= 5,219 cf
Outflow = 0.96 cfs @ 12.19 hrs, Volume= 5,166 cf, Atten= 43%, Lag= 7.2 min
Primary = 0.96 cfs @ 12.19 hrs, Volume= 5,166 cf
Routed to Link PA-3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 62.92' @ 12.19 hrs Surf.Area= 1,745 sf Storage= 815 cf
Flood Elev= 64.25' Surf.Area= 2,000 sf Storage= 1,847 cf

Plug-Flow detention time= 21.2 min calculated for 5,155 cf (99% of inflow)
Center-of-Mass det. time= 15.0 min (817.1 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	61.65'	1,847 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.65	1,745	0.0	0	0
62.50	1,745	40.0	593	593
64.00	1,745	30.0	785	1,379
64.25	2,000	100.0	468	1,847

Device	Routing	Invert	Outlet Devices
#1	Primary	61.60'	**12.0" Round Culvert** L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 61.60' / 61.00' S= 0.0046 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	61.65'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	63.95'	**4.5" x 2.5" Horiz. Orifice/Grate X 4.00 columns** X 8 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.96 cfs @ 12.19 hrs HW=62.92' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.96 cfs of 2.80 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.96 cfs @ 4.86 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link PA-1:

Inflow Area = 207,577 sf, 57.69% Impervious, Inflow Depth > 3.60" for 10-Yr event
Inflow = 19.19 cfs @ 12.10 hrs, Volume= 62,259 cf
Primary = 19.19 cfs @ 12.10 hrs, Volume= 62,259 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2:

Inflow Area = 202,361 sf, 71.45% Impervious, Inflow Depth > 4.09" for 10-Yr event
Inflow = 16.81 cfs @ 12.07 hrs, Volume= 69,032 cf
Primary = 16.81 cfs @ 12.07 hrs, Volume= 69,032 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-3:

Inflow Area = 363,115 sf, 61.56% Impervious, Inflow Depth > 3.69" for 10-Yr event
Inflow = 29.06 cfs @ 12.12 hrs, Volume= 111,787 cf
Primary = 29.06 cfs @ 12.12 hrs, Volume= 111,787 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-4:

Inflow Area = 16,868 sf, 71.31% Impervious, Inflow Depth > 4.11" for 10-Yr event
Inflow = 1.83 cfs @ 12.07 hrs, Volume= 5,783 cf
Primary = 1.83 cfs @ 12.07 hrs, Volume= 5,783 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-5:

Inflow Area = 8,392 sf,100.00% Impervious, Inflow Depth > 5.34" for 10-Yr event
Inflow = 1.06 cfs @ 12.07 hrs, Volume= 3,734 cf
Primary = 1.06 cfs @ 12.07 hrs, Volume= 3,734 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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

Subcatchment PRE 1.0: Runoff Area=207,577 sf 57.69% Impervious Runoff Depth>4.98"
Flow Length=999' Tc=6.8 min CN=82 Runoff=26.26 cfs 86,097 cf

Subcatchment PRE 2.0: Runoff Area=143,416 sf 69.16% Impervious Runoff Depth>5.43"
Flow Length=500' Tc=5.0 min CN=86 Runoff=20.40 cfs 64,896 cf

Subcatchment PRE 2.1: Runoff Area=58,945 sf 77.01% Impervious Runoff Depth>5.77"
Flow Length=360' Slope=0.0150 '/' Tc=5.0 min CN=89 Runoff=8.75 cfs 28,359 cf

Subcatchment PRE 3.0: Runoff Area=267,552 sf 54.51% Impervious Runoff Depth>4.75"
Flow Length=420' Tc=10.7 min CN=80 Runoff=28.79 cfs 105,933 cf

Subcatchment PRE 3.1: Runoff Area=16,036 sf 66.20% Impervious Runoff Depth>5.32"
Flow Length=155' Slope=0.0150 '/' Tc=5.0 min CN=85 Runoff=2.24 cfs 7,105 cf

Subcatchment PRE 3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>6.12"
Tc=5.0 min CN=92 Runoff=12.23 cfs 40,564 cf

Subcatchment PRE 4.0: Runoff Area=16,868 sf 71.31% Impervious Runoff Depth>5.54"
Flow Length=115' Tc=5.0 min CN=87 Runoff=2.44 cfs 7,793 cf

Subcatchment PRE 5.0: Runoff Area=8,392 sf 100.00% Impervious Runoff Depth>6.83"
Flow Length=145' Slope=0.0170 '/' Tc=5.0 min CN=98 Runoff=1.35 cfs 4,775 cf

Pond RG-1: Peak Elev=61.45' Storage=5,022 cf Inflow=8.75 cfs 28,359 cf
Outflow=8.56 cfs 28,202 cf

Pond RG-2: Peak Elev=63.54' Storage=1,140 cf Inflow=2.24 cfs 7,105 cf
Outflow=1.21 cfs 7,044 cf

Link PA-1: Inflow=26.26 cfs 86,097 cf
Primary=26.26 cfs 86,097 cf

Link PA-2: Inflow=25.58 cfs 93,097 cf
Primary=25.58 cfs 93,097 cf

Link PA-3: Inflow=39.54 cfs 153,541 cf
Primary=39.54 cfs 153,541 cf

Link PA-4: Inflow=2.44 cfs 7,793 cf
Primary=2.44 cfs 7,793 cf

Link PA-5: Inflow=1.35 cfs 4,775 cf
Primary=1.35 cfs 4,775 cf

Total Runoff Area = 798,313 sf Runoff Volume = 345,520 cf Average Runoff Depth = 5.19"
36.33% Pervious = 289,995 sf 63.67% Impervious = 508,318 sf

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

Subcatchment PRE 1.0: Runoff Area=207,577 sf 57.69% Impervious Runoff Depth>6.29"
Flow Length=999' Tc=6.8 min CN=82 Runoff=32.86 cfs 108,839 cf

Subcatchment PRE 2.0: Runoff Area=143,416 sf 69.16% Impervious Runoff Depth>6.77"
Flow Length=500' Tc=5.0 min CN=86 Runoff=25.15 cfs 80,962 cf

Subcatchment PRE 2.1: Runoff Area=58,945 sf 77.01% Impervious Runoff Depth>7.13"
Flow Length=360' Slope=0.0150 '/' Tc=5.0 min CN=89 Runoff=10.69 cfs 35,047 cf

Subcatchment PRE 3.0: Runoff Area=267,552 sf 54.51% Impervious Runoff Depth>6.05"
Flow Length=420' Tc=10.7 min CN=80 Runoff=36.34 cfs 134,844 cf

Subcatchment PRE 3.1: Runoff Area=16,036 sf 66.20% Impervious Runoff Depth>6.65"
Flow Length=155' Slope=0.0150 '/' Tc=5.0 min CN=85 Runoff=2.78 cfs 8,892 cf

Subcatchment PRE 3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>7.50"
Tc=5.0 min CN=92 Runoff=14.81 cfs 49,674 cf

Subcatchment PRE 4.0: Runoff Area=16,868 sf 71.31% Impervious Runoff Depth>6.89"
Flow Length=115' Tc=5.0 min CN=87 Runoff=2.99 cfs 9,691 cf

Subcatchment PRE 5.0: Runoff Area=8,392 sf 100.00% Impervious Runoff Depth>8.22"
Flow Length=145' Slope=0.0170 '/' Tc=5.0 min CN=98 Runoff=1.61 cfs 5,746 cf

Pond RG-1: Peak Elev=62.14' Storage=5,022 cf Inflow=10.69 cfs 35,047 cf
Outflow=14.00 cfs 34,873 cf

Pond RG-2: Peak Elev=64.00' Storage=1,382 cf Inflow=2.78 cfs 8,892 cf
Outflow=1.95 cfs 8,826 cf

Link PA-1: Inflow=32.86 cfs 108,839 cf
Primary=32.86 cfs 108,839 cf

Link PA-2: Inflow=38.42 cfs 115,835 cf
Primary=38.42 cfs 115,835 cf

Link PA-3: Inflow=49.51 cfs 193,343 cf
Primary=49.51 cfs 193,343 cf

Link PA-4: Inflow=2.99 cfs 9,691 cf
Primary=2.99 cfs 9,691 cf

Link PA-5: Inflow=1.61 cfs 5,746 cf
Primary=1.61 cfs 5,746 cf

Total Runoff Area = 798,313 sf Runoff Volume = 433,694 cf Average Runoff Depth = 6.52"
36.33% Pervious = 289,995 sf 63.67% Impervious = 508,318 sf

Section 3
Post-Development Conditions

To analyze the post-development condition, the site has been modeled utilizing the same five (5) distinct points of analysis as the Pre-Development condition with revised watershed areas to reflect the post-construction conditions.

The points of analysis and their sub-catchment areas are depicted on the plan entitled "Post-Development Watershed Plan," Sheet C-802.

Point of Analysis 1 (PA-1)

Point of Analysis One (PA-1) is comprised of two (2) subcatchment areas (POST-1.0 and POST-1.1).

POST-1.0 is composed of paved parking areas, sidewalks, roof, and landscaped area runoff that is collected via a proposed closed drainage system and conveyed to a treatment train (Contech CDS unit for pre-treatment, Contech Jellyfish Filter unit for treatment) prior to connecting to the existing 24" RCP outlet. Additional area from PA-4 is conveyed through this watershed for treatment of the previously untreated runoff in the pre-development condition (of PA-4).

POST-1.1 is composed of pervious grassed and wooded areas outside of the impervious site improvements along the northwestern edge of the site. Runoff from these areas travels via overland flow to the adjacent wetland.

Point of Analysis 2 (PA-2)

Point of Analysis Two (PA-2) is comprised of five (5) subcatchment areas (POST-2.1, POST-2.2, POST-2.3, POST-2.4, and POST-2.5).

POST-2.1 is a large watershed composed of paved parking areas, sidewalks, roof, and landscaped area runoff within the redevelopment area that is collected via a proposed closed drainage system and conveyed to a large rain garden (RG-1) at the north end of the site. Flows are pre-treated by a sediment forebay. Effluent from this rain garden is metered by an outlet control structure, and discharged via a proposed 24" outlet to the adjacent wetland. A rip-rap apron is proposed to mitigate erosion from flows under larger storm events.

POST-2.2 is composed of paved parking areas, sidewalks, and landscaped area runoff within the redevelopment area that is conveyed via overland flow to a series of Rain Guardian Turrets (for pre-treatment) built into the curbline along the edge of a proposed rain garden (RG-2). This rain garden effectively is reconstruction of the existing rain garden in this location, taking advantage of the same 24" existing outlet pipe but with a revised outlet control structure to ensure sufficient treatment and storage to contemporary standards for the revised post-development subcatchment area.

POST-2.3 is composed of planted, grassed, buffer areas and a small amount of impervious surfaces generally located outside the limits of the proposed site improvements. Runoff

from these areas travels via overland flow or closed drainage (for existing impervious areas to remain) to the adjacent wetland.

POST-2.4 is composed of paved parking areas, sidewalks, roof, and landscaped area runoff within the redevelopment area that is collected via a proposed closed drainage system and conveyed to a rain garden (RG-3) along the eastern edge of the site. Flows are pre-treated by a sediment forebay. Effluent from this rain garden is metered by an outlet control structure and discharged via a proposed 18" outlet to the adjacent wetland. A rip-rap apron is proposed to the extent practical to mitigate erosion from flows under larger storm events.

POST-2.5 is composed of the impervious surface from the proposed turnaround island off of Durgin Lane, in addition to associated surrounding grassed areas .Runoff from this subcatchment is directed to the same rain garden described under POST 2.4 (RG-3) for treatment.

Point of Analysis 3 (PA-3)

Point of Analysis Three (PA-3) is comprised of three (3) subcatchment areas (POST-3.0, POST-3.1, and POST-3.10).

POST-3.0 is composed of paved parking areas, sidewalks, roof, and landscaped area runoff that is collected via a proposed closed drainage system and conveyed to a treatment train (Contech CDS unit for pre-treatment, Contech Jellyfish Filter unit for treatment) prior to connecting to the existing 36" RCP outlet.

POST-3.1 is composed of pervious grassed and wooded areas outside of the impervious site improvements along the southern edge of the site. Runoff from these areas travels via overland flow to the adjacent wetland.

POST-3.2 is a small subcatchment area composed of pervious grassed areas below the retaining wall proposed along the southeastern edge of the site. Runoff from this subcatchment is conveyed through an existing 12" culvert under the adjacent access road to the wetland (PA-3). Runoff area to this culvert has been reduced in comparison to the existing condition.

POST-3.10 represents the same off-site subcatchment area on the abutting Hampton Inn property as described under the pre-development condition of PRE-3.10. Drainage from this lot is proposed to be reconnected to the revised closed drainage system on the subject property, for conveyance to the same treatment train (Contech CDS unit for pre-treatment, Contech Jellyfish Filter unit for treatment) described under POST-3.0.

Point of Analysis 4 (PA-4)

The watershed area in the post-development condition (POST-4.0) to Point of Analysis 4 (PA-4) is proposed to be reduced, as to ultimately reduce off-site flows to the abutter to the extent practical. There are no impervious areas proposed within this watershed in the post-development condition, and all revised impervious areas in this general vicinity are proposed to be directed to the subject property's closed drainage system for proper treatment.

Point of Analysis 5 (PA-5)

The watershed area in the post-development condition (POST-5.0) to Point of Analysis 5 (PA-5) is proposed to be reduced, as to ensure that the revised access road alignment and grading does not increase off-site flows down the road in comparison to the pre-development condition.

3.1 Post-Development Watershed Plan

3.2 Post-Development Calculations

POST 1.1
500Bdcabb
33B
POST 4.0
PA-4
POST 1.0
200Bcaabb
200Bcaabb
PA-1
500Ddcabb
33B
POST 3.10
140B
200Ecaabb
500Bdcabb
POST 2.1
POST 2.4
200Bcaabb
POST 3.0
POST POND RG-2
POST 2.2
500Bdcabb
42C
33B
POST POND FP-1
42B
POST 3.2
200Bcaabb
POST 2.3
POST 5.0
POST 3.1
33B
200Ccaabb
500Bdcabb
200Dcaabb
200Ecaabb
33B
PA-2
PA-5
PA-3
500Bdcabb
33B
POST POND RG-3
33B
POST 2.5
500Bdcabb
33B

LEGEND

- POST-DEVELOPMENT WATERSHED BOUNDARY
- SITE-SPECIFIC SOIL SURVEY BOUNDARIES
- LONGEST FLOW PATH
- POST 1.0 — POST-DEVELOPMENT WATERSHED AREA DESIGNATION
- POST POND 1 — POST-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS

N

0 60' 120'

GRAPHIC SCALE

Tighe&Bond

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
B	6/17/2024	TAC SUBMISSION
A	4/22/2024	TAC SUBMISSION

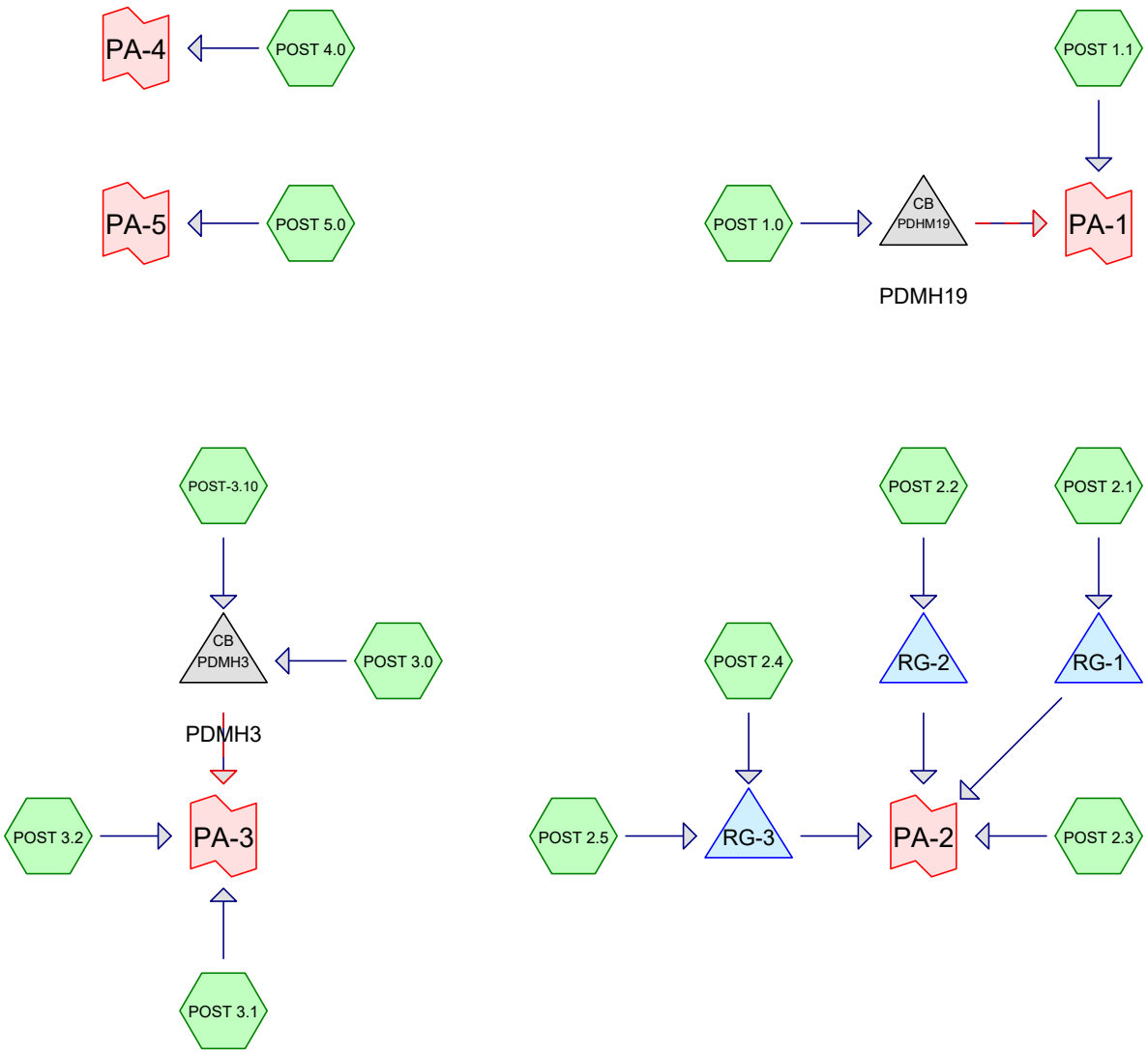
PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-HYDRO.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Saved: 6/13/2024
Printed: Jun 14, 2024 - 3:41pm By: ROurcio
Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-HYDRO.dwg



Routing Diagram for E-5071-001_POST
Prepared by Tighe & Bond, Printed 6/14/2024

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
280,226	61	>75% Grass cover, Good, HSG B (POST 1.0, POST 1.1, POST 2.1, POST 2.2, POST 2.3, POST 2.4, POST 2.5, POST 3.0, POST 3.1, POST 3.2, POST 4.0, POST 5.0, POST-3.10)
63	74	>75% Grass cover, Good, HSG C (POST 2.3)
368,400	98	Paved parking, HSG B (POST 1.0, POST 2.1, POST 2.2, POST 2.3, POST 2.4, POST 2.5, POST 3.0, POST 3.2, POST 5.0, POST-3.10)
95,714	98	Roofs, HSG B (POST 1.0, POST 2.1, POST 2.4, POST 3.0)
14,543	98	Unconnected roofs, HSG B (POST-3.10)
34,279	55	Woods, Good, HSG B (POST 1.1, POST 2.3, POST 3.1)
5,088	70	Woods, Good, HSG C (POST 3.1)
798,313	**83**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
793,162	HSG B	POST 1.0, POST 1.1, POST 2.1, POST 2.2, POST 2.3, POST 2.4, POST 2.5, POST 3.0, POST 3.1, POST 3.2, POST 4.0, POST 5.0, POST-3.10
5,151	HSG C	POST 2.3, POST 3.1
0	HSG D	
0	Other	
798,313		**TOTAL AREA**

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

Subcatchment POST 1.0: Runoff Area=122,107 sf 73.90% Impervious Runoff Depth>1.86"
Flow Length=950' Tc=5.6 min CN=88 Runoff=6.03 cfs 18,939 cf

Subcatchment POST 1.1: Runoff Area=48,417 sf 0.00% Impervious Runoff Depth>0.32"
Flow Length=75' Slope=0.0400 '/' Tc=5.5 min CN=59 Runoff=0.19 cfs 1,289 cf

Subcatchment POST 2.1: Runoff Area=205,803 sf 66.37% Impervious Runoff Depth>1.70"
Flow Length=772' Tc=9.4 min CN=86 Runoff=8.28 cfs 29,202 cf

Subcatchment POST 2.2: Runoff Area=29,115 sf 64.53% Impervious Runoff Depth>1.63"
Flow Length=185' Slope=0.0150 '/' Tc=5.4 min CN=85 Runoff=1.27 cfs 3,952 cf

Subcatchment POST 2.3: Runoff Area=48,214 sf 33.27% Impervious Runoff Depth>0.84"
Flow Length=70' Tc=5.0 min CN=72 Runoff=1.00 cfs 3,364 cf

Subcatchment POST 2.4: Runoff Area=48,688 sf 66.49% Impervious Runoff Depth>1.70"
Flow Length=400' Tc=7.7 min CN=86 Runoff=2.08 cfs 6,911 cf

Subcatchment POST 2.5: Runoff Area=25,828 sf 38.28% Impervious Runoff Depth>0.99"
Flow Length=190' Tc=5.7 min CN=75 Runoff=0.65 cfs 2,136 cf

Subcatchment POST 3.0: Runoff Area=134,990 sf 74.05% Impervious Runoff Depth>1.86"
Flow Length=700' Tc=8.8 min CN=88 Runoff=6.05 cfs 20,925 cf

Subcatchment POST 3.1: Runoff Area=39,622 sf 0.00% Impervious Runoff Depth>0.38"
Flow Length=80' Tc=5.4 min CN=61 Runoff=0.24 cfs 1,267 cf

Subcatchment POST 3.2: Runoff Area=3,972 sf 11.48% Impervious Runoff Depth>0.53"
Flow Length=135' Tc=5.0 min CN=65 Runoff=0.04 cfs 175 cf

Subcatchment POST 4.0: Runoff Area=4,581 sf 0.00% Impervious Runoff Depth>0.38"
Tc=5.0 min CN=61 Runoff=0.03 cfs 146 cf

Subcatchment POST 5.0: Runoff Area=7,449 sf 97.11% Impervious Runoff Depth>2.71"
Flow Length=230' Slope=0.0200 '/' Tc=5.0 min CN=97 Runoff=0.50 cfs 1,680 cf

Subcatchment POST-3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>2.21"
Tc=5.0 min CN=92 Runoff=4.66 cfs 14,627 cf

Pond PDHM19: PDMH19 Peak Elev=60.35' Inflow=6.03 cfs 18,939 cf
Primary=5.33 cfs 18,718 cf Secondary=0.71 cfs 222 cf Outflow=6.03 cfs 18,939 cf

Pond PDMH3: PDMH3 Peak Elev=61.19' Inflow=10.34 cfs 35,552 cf
Primary=6.02 cfs 31,930 cf Secondary=4.32 cfs 3,622 cf Outflow=10.34 cfs 35,552 cf

Pond RG-1: Peak Elev=51.17' Storage=7,027 cf Inflow=8.28 cfs 29,202 cf
Outflow=2.72 cfs 29,016 cf

Pond RG-2: Peak Elev=57.52' Storage=249 cf Inflow=1.27 cfs 3,952 cf
Outflow=1.01 cfs 3,952 cf

Pond RG-3: Peak Elev=58.21' Storage=908 cf Inflow=2.72 cfs 9,047 cf
Outflow=1.72 cfs 9,018 cf

Link PA-1: Inflow=6.18 cfs 20,229 cf
Primary=6.18 cfs 20,229 cf

Link PA-2: Inflow=5.85 cfs 45,349 cf
Primary=5.85 cfs 45,349 cf

Link PA-3: Inflow=10.61 cfs 36,993 cf
Primary=10.61 cfs 36,993 cf

Link PA-4: Inflow=0.03 cfs 146 cf
Primary=0.03 cfs 146 cf

Link PA-5: Inflow=0.50 cfs 1,680 cf
Primary=0.50 cfs 1,680 cf

Total Runoff Area = 798,313 sf Runoff Volume = 104,614 cf Average Runoff Depth = 1.57"
40.04% Pervious = 319,656 sf 59.96% Impervious = 478,657 sf

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

Subcatchment POST 1.0: Runoff Area=122,107 sf 73.90% Impervious Runoff Depth>2.43"
Flow Length=950' Tc=5.6 min CN=88 Runoff=7.83 cfs 24,743 cf

Subcatchment POST 1.1: Runoff Area=48,417 sf 0.00% Impervious Runoff Depth>0.57"
Flow Length=75' Slope=0.0400 '/' Tc=5.5 min CN=59 Runoff=0.51 cfs 2,287 cf

Subcatchment POST 2.1: Runoff Area=205,803 sf 66.37% Impervious Runoff Depth>2.26"
Flow Length=772' Tc=9.4 min CN=86 Runoff=10.94 cfs 38,674 cf

Subcatchment POST 2.2: Runoff Area=29,115 sf 64.53% Impervious Runoff Depth>2.17"
Flow Length=185' Slope=0.0150 '/' Tc=5.4 min CN=85 Runoff=1.69 cfs 5,271 cf

Subcatchment POST 2.3: Runoff Area=48,214 sf 33.27% Impervious Runoff Depth>1.24"
Flow Length=70' Tc=5.0 min CN=72 Runoff=1.55 cfs 4,979 cf

Subcatchment POST 2.4: Runoff Area=48,688 sf 66.49% Impervious Runoff Depth>2.26"
Flow Length=400' Tc=7.7 min CN=86 Runoff=2.75 cfs 9,152 cf

Subcatchment POST 2.5: Runoff Area=25,828 sf 38.28% Impervious Runoff Depth>1.43"
Flow Length=190' Tc=5.7 min CN=75 Runoff=0.96 cfs 3,076 cf

Subcatchment POST 3.0: Runoff Area=134,990 sf 74.05% Impervious Runoff Depth>2.43"
Flow Length=700' Tc=8.8 min CN=88 Runoff=7.86 cfs 27,337 cf

Subcatchment POST 3.1: Runoff Area=39,622 sf 0.00% Impervious Runoff Depth>0.65"
Flow Length=80' Tc=5.4 min CN=61 Runoff=0.54 cfs 2,162 cf

Subcatchment POST 3.2: Runoff Area=3,972 sf 11.48% Impervious Runoff Depth>0.85"
Flow Length=135' Tc=5.0 min CN=65 Runoff=0.08 cfs 280 cf

Subcatchment POST 4.0: Runoff Area=4,581 sf 0.00% Impervious Runoff Depth>0.65"
Tc=5.0 min CN=61 Runoff=0.06 cfs 250 cf

Subcatchment POST 5.0: Runoff Area=7,449 sf 97.11% Impervious Runoff Depth>3.33"
Flow Length=230' Slope=0.0200 '/' Tc=5.0 min CN=97 Runoff=0.61 cfs 2,068 cf

Subcatchment POST-3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>2.81"
Tc=5.0 min CN=92 Runoff=5.86 cfs 18,608 cf

Pond PDHM19: PDMH19 Peak Elev=60.52' Inflow=7.83 cfs 24,743 cf
Primary=6.23 cfs 24,060 cf Secondary=1.60 cfs 683 cf Outflow=7.83 cfs 24,743 cf

Pond PDMH3: PDMH3 Peak Elev=61.40' Inflow=13.26 cfs 45,945 cf
Primary=6.93 cfs 39,839 cf Secondary=6.33 cfs 6,106 cf Outflow=13.26 cfs 45,945 cf

Pond RG-1: Peak Elev=51.95' Storage=10,454 cf Inflow=10.94 cfs 38,674 cf
Outflow=3.06 cfs 38,468 cf

Pond RG-2: Peak Elev=58.22' Storage=367 cf Inflow=1.69 cfs 5,271 cf
Outflow=1.31 cfs 5,271 cf

Pond RG-3: Peak Elev=58.83' Storage=1,548 cf Inflow=3.70 cfs 12,229 cf
Outflow=1.95 cfs 12,196 cf

Link PA-1: Inflow=8.31 cfs 27,030 cf
Primary=8.31 cfs 27,030 cf

Link PA-2: Inflow=6.98 cfs 60,913 cf
Primary=6.98 cfs 60,913 cf

Link PA-3: Inflow=13.87 cfs 48,388 cf
Primary=13.87 cfs 48,388 cf

Link PA-4: Inflow=0.06 cfs 250 cf
Primary=0.06 cfs 250 cf

Link PA-5: Inflow=0.61 cfs 2,068 cf
Primary=0.61 cfs 2,068 cf

Total Runoff Area = 798,313 sf Runoff Volume = 138,888 cf Average Runoff Depth = 2.09"
40.04% Pervious = 319,656 sf 59.96% Impervious = 478,657 sf

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

Subcatchment POST 1.0: Runoff Area=122,107 sf 73.90% Impervious Runoff Depth>4.22"
Flow Length=950' Tc=5.6 min CN=88 Runoff=13.28 cfs 42,937 cf

Subcatchment POST 1.1: Runoff Area=48,417 sf 0.00% Impervious Runoff Depth>1.57"
Flow Length=75' Slope=0.0400 '/' Tc=5.5 min CN=59 Runoff=1.88 cfs 6,352 cf

Subcatchment POST 2.1: Runoff Area=205,803 sf 66.37% Impervious Runoff Depth>4.01"
Flow Length=772' Tc=9.4 min CN=86 Runoff=19.10 cfs 68,706 cf

Subcatchment POST 2.2: Runoff Area=29,115 sf 64.53% Impervious Runoff Depth>3.91"
Flow Length=185' Slope=0.0150 '/' Tc=5.4 min CN=85 Runoff=2.99 cfs 9,475 cf

Subcatchment POST 2.3: Runoff Area=48,214 sf 33.27% Impervious Runoff Depth>2.65"
Flow Length=70' Tc=5.0 min CN=72 Runoff=3.44 cfs 10,653 cf

Subcatchment POST 2.4: Runoff Area=48,688 sf 66.49% Impervious Runoff Depth>4.01"
Flow Length=400' Tc=7.7 min CN=86 Runoff=4.81 cfs 16,259 cf

Subcatchment POST 2.5: Runoff Area=25,828 sf 38.28% Impervious Runoff Depth>2.92"
Flow Length=190' Tc=5.7 min CN=75 Runoff=2.01 cfs 6,295 cf

Subcatchment POST 3.0: Runoff Area=134,990 sf 74.05% Impervious Runoff Depth>4.22"
Flow Length=700' Tc=8.8 min CN=88 Runoff=13.36 cfs 47,441 cf

Subcatchment POST 3.1: Runoff Area=39,622 sf 0.00% Impervious Runoff Depth>1.73"
Flow Length=80' Tc=5.4 min CN=61 Runoff=1.73 cfs 5,706 cf

Subcatchment POST 3.2: Runoff Area=3,972 sf 11.48% Impervious Runoff Depth>2.05"
Flow Length=135' Tc=5.0 min CN=65 Runoff=0.21 cfs 678 cf

Subcatchment POST 4.0: Runoff Area=4,581 sf 0.00% Impervious Runoff Depth>1.73"
Tc=5.0 min CN=61 Runoff=0.20 cfs 660 cf

Subcatchment POST 5.0: Runoff Area=7,449 sf 97.11% Impervious Runoff Depth>5.22"
Flow Length=230' Slope=0.0200 '/' Tc=5.0 min CN=97 Runoff=0.94 cfs 3,242 cf

Subcatchment POST-3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>4.65"
Tc=5.0 min CN=92 Runoff=9.45 cfs 30,847 cf

Pond PDHM19: PDMH19 Peak Elev=61.07' Inflow=13.28 cfs 42,937 cf
Primary=7.93 cfs 39,602 cf Secondary=5.35 cfs 3,335 cf Outflow=13.28 cfs 42,937 cf

Pond PDMH3: PDMH3 Peak Elev=61.99' Inflow=22.07 cfs 78,288 cf
Primary=8.39 cfs 62,731 cf Secondary=13.68 cfs 15,557 cf Outflow=22.07 cfs 78,288 cf

Pond RG-1: Peak Elev=53.49' Storage=18,934 cf Inflow=19.10 cfs 68,706 cf
Outflow=8.08 cfs 68,447 cf

Pond RG-2: Peak Elev=59.50' Storage=900 cf Inflow=2.99 cfs 9,475 cf
Outflow=1.84 cfs 9,475 cf

Pond RG-3: Peak Elev=60.54' Storage=4,129 cf Inflow=6.78 cfs 22,554 cf
Outflow=3.20 cfs 22,512 cf

Link PA-1: Inflow=15.14 cfs 49,289 cf
Primary=15.14 cfs 49,289 cf

Link PA-2: Inflow=13.80 cfs 111,088 cf
Primary=13.80 cfs 111,088 cf

Link PA-3: Inflow=24.01 cfs 84,672 cf
Primary=24.01 cfs 84,672 cf

Link PA-4: Inflow=0.20 cfs 660 cf
Primary=0.20 cfs 660 cf

Link PA-5: Inflow=0.94 cfs 3,242 cf
Primary=0.94 cfs 3,242 cf

Total Runoff Area = 798,313 sf Runoff Volume = 249,251 cf Average Runoff Depth = 3.75"
40.04% Pervious = 319,656 sf 59.96% Impervious = 478,657 sf

Summary for Subcatchment POST 1.0:

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 527% of capacity of segment #3

Runoff = 13.28 cfs @ 12.08 hrs, Volume= 42,937 cf, Depth> 4.22"
Routed to Pond PDHM19 : PDMH19

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
31,865	61	>75% Grass cover, Good, HSG B
64,295	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
25,947	98	Roofs, HSG B
122,107	88	Weighted Average
31,865		26.10% Pervious Area
90,242		73.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0200	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.3	50	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	800	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
5.6	950	Total			

Summary for Subcatchment POST 1.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.88 cfs @ 12.10 hrs, Volume= 6,352 cf, Depth> 1.57"
Routed to Link PA-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

	Area (sf)	CN	Description
	32,007	61	>75% Grass cover, Good, HSG B
	0	98	Paved parking, HSG B
	16,410	55	Woods, Good, HSG B
	0	98	Unconnected roofs, HSG B
	0	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
*	0	98	Roofs, HGC C
	0	70	Woods, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	0	98	Paved parking, HSG D
	0	77	Woods, Good, HSG D
	48,417	59	Weighted Average
	48,417		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	75	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"

Summary for Subcatchment POST 2.1:

[47] Hint: Peak is 758% of capacity of segment #3

Runoff = 19.10 cfs @ 12.13 hrs, Volume= 68,706 cf, Depth> 4.01"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

	Area (sf)	CN	Description
	69,219	61	>75% Grass cover, Good, HSG B
	100,100	98	Paved parking, HSG B
	0	55	Woods, Good, HSG B
	36,484	98	Roofs, HSG B
	0	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
*	0	98	Roofs, HGC C
	0	70	Woods, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	0	98	Paved parking, HSG D
	0	77	Woods, Good, HSG D
	205,803	86	Weighted Average
	69,219		33.63% Pervious Area
	136,584		66.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
0.6	35	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.6	687	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
9.4	772	Total			

Summary for Subcatchment POST 2.2:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.99 cfs @ 12.08 hrs, Volume= 9,475 cf, Depth> 3.91"
Routed to Pond RG-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
10,328	61	>75% Grass cover, Good, HSG B
18,787	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
0	98	Roofs, HSG B
29,115	85	Weighted Average
10,328		35.47% Pervious Area
18,787		64.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	35	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
1.0	150	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	185	Total			

Summary for Subcatchment POST 2.3:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 3.44 cfs @ 12.08 hrs, Volume= 10,653 cf, Depth> 2.65"
Routed to Link PA-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
24,337	61	>75% Grass cover, Good, HSG B
16,039	98	Paved parking, HSG B
7,775	55	Woods, Good, HSG B
0	98	Unconnected roofs, HSG B
63	74	>75% Grass cover, Good, HSG C
48,214	72	Weighted Average
32,175		66.73% Pervious Area
16,039		33.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0500	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
0.1	20	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	70	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 2.4:

[47] Hint: Peak is 191% of capacity of segment #2

Runoff = 4.81 cfs @ 12.11 hrs, Volume= 16,259 cf, Depth> 4.01"
Routed to Pond RG-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
16,316	61	>75% Grass cover, Good, HSG B
25,979	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
6,393	98	Roofs, HSG B
48,688	86	Weighted Average
16,316		33.51% Pervious Area
32,372		66.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
1.8	350	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
7.7	400	Total			

Summary for Subcatchment POST 2.5:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.01 cfs @ 12.09 hrs, Volume= 6,295 cf, Depth> 2.92"
Routed to Pond RG-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
15,942	61	>75% Grass cover, Good, HSG B
9,886	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
0	98	Roofs, HSG B
25,828	75	Weighted Average
15,942		61.72% Pervious Area
9,886		38.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	40	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
0.8	150	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
5.7	190	Total			

Summary for Subcatchment POST 3.0:

[47] Hint: Peak is 306% of capacity of segment #2

Runoff = 13.36 cfs @ 12.12 hrs, Volume= 47,441 cf, Depth> 4.22"
Routed to Pond PDMH3 : PDMH3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
35,034	61	>75% Grass cover, Good, HSG B
73,066	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
26,890	98	Roofs, HSG B
134,990	88	Weighted Average
35,034		25.95% Pervious Area
99,956		74.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
1.9	650	0.0150	5.56	4.36	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
8.8	700	Total			

Summary for Subcatchment POST 3.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.73 cfs @ 12.09 hrs, Volume= 5,706 cf, Depth> 1.73"
Routed to Link PA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
24,440	61	>75% Grass cover, Good, HSG B
0	98	Paved parking, HSG B
10,094	55	Woods, Good, HSG B
0	98	Roofs, HSG B
5,088	70	Woods, Good, HSG C
39,622	61	Weighted Average
39,622		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
0.2	30	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	80	Total			

Summary for Subcatchment POST 3.2:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 678 cf, Depth> 2.05"
Routed to Link PA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
3,516	61	>75% Grass cover, Good, HSG B
456	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
0	98	Roofs, HSG B
3,972	65	Weighted Average
3,516		88.52% Pervious Area
456		11.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	40	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	55	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.9	40	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	135	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 4.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 660 cf, Depth> 1.73"
Routed to Link PA-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
4,581	61	>75% Grass cover, Good, HSG B
0	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
0	98	Unconnected roofs, HSG B
4,581	61	Weighted Average
4,581		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**
1.0	0	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST 5.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.94 cfs @ 12.07 hrs, Volume= 3,242 cf, Depth> 5.22"
Routed to Link PA-5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
215	61	>75% Grass cover, Good, HSG B
7,234	98	Paved parking, HSG B
0	55	Woods, Good, HSG B
0	98	Unconnected roofs, HSG B
7,449	97	Weighted Average
215		2.89% Pervious Area
7,234		97.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0200	1.28		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
1.0	180	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	230	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST-3.10:

*Web Soil Survey data used for off-site analysis.

[49] Hint: Tc<2dt may require smaller dt

Runoff = 9.45 cfs @ 12.07 hrs, Volume= 30,847 cf, Depth> 4.65"
Routed to Pond PDMH3 : PDMH3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.58"

Area (sf)	CN	Description
12,426	61	>75% Grass cover, Good, HSG B
52,558	98	Paved parking, HSG B
14,543	98	Unconnected roofs, HSG B
79,527	92	Weighted Average
12,426		15.62% Pervious Area
67,101		84.38% Impervious Area
14,543		21.67% Unconnected

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

Summary for Pond PDHM19: PDMH19

Inflow Area = 122,107 sf, 73.90% Impervious, Inflow Depth > 4.22" for 10-Yr event
Inflow = 13.28 cfs @ 12.08 hrs, Volume= 42,937 cf
Outflow = 13.28 cfs @ 12.08 hrs, Volume= 42,937 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.93 cfs @ 12.08 hrs, Volume= 39,602 cf
Routed to Link PA-1 :
Secondary = 5.35 cfs @ 12.08 hrs, Volume= 3,335 cf
Routed to Link PA-1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 61.07' @ 12.08 hrs
Flood Elev= 65.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.65'	**15.0" Round Culvert** L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 58.65' / 58.60' S= 0.0062 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	60.00'	**24.0" Round Culvert** L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.75' S= 0.0313 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=7.83 cfs @ 12.08 hrs HW=61.03' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 7.83 cfs @ 6.38 fps)

Secondary OutFlow Max=5.04 cfs @ 12.08 hrs HW=61.03' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Barrel Controls 5.04 cfs @ 4.49 fps)

Summary for Pond PDMH3: PDMH3

Inflow Area = 214,517 sf, 77.88% Impervious, Inflow Depth > 4.38" for 10-Yr event
Inflow = 22.07 cfs @ 12.10 hrs, Volume= 78,288 cf
Outflow = 22.07 cfs @ 12.10 hrs, Volume= 78,288 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.39 cfs @ 12.10 hrs, Volume= 62,731 cf
Routed to Link PA-3 :
Secondary = 13.68 cfs @ 12.10 hrs, Volume= 15,557 cf
Routed to Link PA-3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 61.99' @ 12.10 hrs
Flood Elev= 65.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	59.35'	**15.0" Round Culvert** L= 9.0' Ke= 0.500 Inlet / Outlet Invert= 59.35' / 59.30' S= 0.0056 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	60.35'	**36.0" Round Culvert** L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 60.35' / 60.15' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Primary OutFlow Max=8.39 cfs @ 12.10 hrs HW=61.99' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.39 cfs @ 6.84 fps)

Secondary OutFlow Max=13.67 cfs @ 12.10 hrs HW=61.99' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Barrel Controls 13.67 cfs @ 5.00 fps)

Summary for Pond RG-1:

Inflow Area = 205,803 sf, 66.37% Impervious, Inflow Depth > 4.01" for 10-Yr event
Inflow = 19.10 cfs @ 12.13 hrs, Volume= 68,706 cf
Outflow = 8.08 cfs @ 12.41 hrs, Volume= 68,447 cf, Atten= 58%, Lag= 16.5 min
Primary = 8.08 cfs @ 12.41 hrs, Volume= 68,447 cf
Routed to Link PA-2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 53.49' @ 12.41 hrs Surf.Area= 6,264 sf Storage= 18,934 cf
Flood Elev= 55.00' Surf.Area= 7,866 sf Storage= 29,602 cf

Plug-Flow detention time= 37.7 min calculated for 68,305 cf (99% of inflow)
Center-of-Mass det. time= 35.3 min (837.9 - 802.6)

Volume	Invert	Avail.Storage	Storage Description
#1	47.40'	29,602 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
47.40	3,137	0.0	0	0
48.50	3,137	40.0	1,380	1,380
50.00	3,137	30.0	1,412	2,792
51.00	3,940	100.0	3,539	6,330
52.00	4,816	100.0	4,378	10,708
53.00	5,767	100.0	5,292	16,000
54.00	6,786	100.0	6,277	22,276
55.00	7,866	100.0	7,326	29,602

Device	Routing	Invert	Outlet Devices
#1	Primary	47.40'	**24.0" Round Culvert** L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 47.40' / 47.00' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	47.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	47.40'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 1	53.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Device 1	54.00'	**1.0" x 1.0" Horiz. Orifice/Grate** X 114 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.05 cfs @ 12.41 hrs HW=53.49' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 8.05 cfs of 34.11 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 2.28 cfs @ 11.63 fps)
  ├**3=Exfiltration** (Exfiltration Controls 1.45 cfs)
  ├**4=Sharp-Crested Rectangular Weir** (Weir Controls 4.32 cfs @ 2.28 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond RG-2:

Inflow Area = 29,115 sf, 64.53% Impervious, Inflow Depth > 3.91" for 10-Yr event
Inflow = 2.99 cfs @ 12.08 hrs, Volume= 9,475 cf
Outflow = 1.84 cfs @ 12.19 hrs, Volume= 9,475 cf, Atten= 38%, Lag= 6.4 min
Primary = 1.84 cfs @ 12.19 hrs, Volume= 9,475 cf
Routed to Link PA-2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 59.50' @ 12.19 hrs Surf.Area= 1,051 sf Storage= 900 cf
Flood Elev= 61.00' Surf.Area= 3,026 sf Storage= 3,836 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.4 min (805.7 - 802.4)

Volume	Invert	Avail.Storage	Storage Description
#1	56.40'	3,836 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.40	560	0.0	0	0
57.50	560	40.0	246	246
59.00	560	30.0	252	498
60.00	1,545	100.0	1,053	1,551
61.00	3,026	100.0	2,286	3,836

Device	Routing	Invert	Outlet Devices
#1	Primary	54.50'	**24.0" Round Culvert** L= 4.0' Ke= 0.500 Inlet / Outlet Invert= 54.50' / 54.00' S= 0.1250 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	56.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	56.40'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 1	60.50'	**1.0" x 1.0" Horiz. Orifice/Grate** X 114 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.84 cfs @ 12.19 hrs HW=59.49' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.84 cfs of 30.22 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.59 cfs @ 8.12 fps)
  ├**3=Exfiltration** (Exfiltration Controls 0.24 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond RG-3:

Inflow Area = 74,516 sf, 56.71% Impervious, Inflow Depth > 3.63" for 10-Yr event
Inflow = 6.78 cfs @ 12.10 hrs, Volume= 22,554 cf
Outflow = 3.20 cfs @ 12.31 hrs, Volume= 22,512 cf, Atten= 53%, Lag= 12.7 min
Primary = 3.20 cfs @ 12.31 hrs, Volume= 22,512 cf
Routed to Link PA-2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 60.54' @ 12.32 hrs Surf.Area= 1,894 sf Storage= 4,129 cf
Flood Elev= 62.00' Surf.Area= 2,597 sf Storage= 7,417 cf

Plug-Flow detention time= 12.2 min calculated for 22,465 cf (100% of inflow)
Center-of-Mass det. time= 11.0 min (820.0 - 809.0)

Volume	Invert	Avail.Storage	Storage Description
#1	55.40'	7,417 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.40	818	0.0	0	0
56.50	818	40.0	360	360
58.00	818	30.0	368	728
60.00	1,637	100.0	2,455	3,183
62.00	2,597	100.0	4,234	7,417

Device	Routing	Invert	Outlet Devices
#1	Primary	55.40'	**18.0" Round Culvert** L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 55.40' / 55.25' S= 0.0079 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	55.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	55.40'	**10.000 in/hr Exfiltration over Surface area**
#4	Device 1	60.50'	**1.0" x 1.0" Horiz. Orifice/Grate** X 114 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.11 cfs @ 12.31 hrs HW=60.53' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 3.11 cfs of 17.80 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 2.09 cfs @ 10.63 fps)
  - **3=Exfiltration** (Exfiltration Controls 0.44 cfs)
  - **4=Orifice/Grate** (Weir Controls 0.58 cfs @ 0.55 fps)

Summary for Link PA-1:

Inflow Area = 170,524 sf, 52.92% Impervious, Inflow Depth > 3.47" for 10-Yr event
Inflow = 15.14 cfs @ 12.08 hrs, Volume= 49,289 cf
Primary = 15.14 cfs @ 12.08 hrs, Volume= 49,289 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2:

Inflow Area = 357,648 sf, 59.74% Impervious, Inflow Depth > 3.73" for 10-Yr event
Inflow = 13.80 cfs @ 12.36 hrs, Volume= 111,088 cf
Primary = 13.80 cfs @ 12.36 hrs, Volume= 111,088 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-3:

Inflow Area = 258,111 sf, 64.90% Impervious, Inflow Depth > 3.94" for 10-Yr event
Inflow = 24.01 cfs @ 12.10 hrs, Volume= 84,672 cf
Primary = 24.01 cfs @ 12.10 hrs, Volume= 84,672 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-4:

Inflow Area = 4,581 sf, 0.00% Impervious, Inflow Depth > 1.73" for 10-Yr event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 660 cf
Primary = 0.20 cfs @ 12.09 hrs, Volume= 660 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-5:

Inflow Area = 7,449 sf, 97.11% Impervious, Inflow Depth > 5.22" for 10-Yr event
Inflow = 0.94 cfs @ 12.07 hrs, Volume= 3,242 cf
Primary = 0.94 cfs @ 12.07 hrs, Volume= 3,242 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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

Subcatchment POST 1.0: Runoff Area=122,107 sf 73.90% Impervious Runoff Depth>5.66"
Flow Length=950' Tc=5.6 min CN=88 Runoff=17.52 cfs 57,572 cf

Subcatchment POST 1.1: Runoff Area=48,417 sf 0.00% Impervious Runoff Depth>2.55"
Flow Length=75' Slope=0.0400 '/' Tc=5.5 min CN=59 Runoff=3.20 cfs 10,297 cf

Subcatchment POST 2.1: Runoff Area=205,803 sf 66.37% Impervious Runoff Depth>5.43"
Flow Length=772' Tc=9.4 min CN=86 Runoff=25.52 cfs 93,057 cf

Subcatchment POST 2.2: Runoff Area=29,115 sf 64.53% Impervious Runoff Depth>5.32"
Flow Length=185' Slope=0.0150 '/' Tc=5.4 min CN=85 Runoff=4.01 cfs 12,898 cf

Subcatchment POST 2.3: Runoff Area=48,214 sf 33.27% Impervious Runoff Depth>3.89"
Flow Length=70' Tc=5.0 min CN=72 Runoff=5.05 cfs 15,614 cf

Subcatchment POST 2.4: Runoff Area=48,688 sf 66.49% Impervious Runoff Depth>5.43"
Flow Length=400' Tc=7.7 min CN=86 Runoff=6.42 cfs 22,021 cf

Subcatchment POST 2.5: Runoff Area=25,828 sf 38.28% Impervious Runoff Depth>4.21"
Flow Length=190' Tc=5.7 min CN=75 Runoff=2.88 cfs 9,057 cf

Subcatchment POST 3.0: Runoff Area=134,990 sf 74.05% Impervious Runoff Depth>5.65"
Flow Length=700' Tc=8.8 min CN=88 Runoff=17.65 cfs 63,613 cf

Subcatchment POST 3.1: Runoff Area=39,622 sf 0.00% Impervious Runoff Depth>2.75"
Flow Length=80' Tc=5.4 min CN=61 Runoff=2.86 cfs 9,080 cf

Subcatchment POST 3.2: Runoff Area=3,972 sf 11.48% Impervious Runoff Depth>3.15"
Flow Length=135' Tc=5.0 min CN=65 Runoff=0.34 cfs 1,044 cf

Subcatchment POST 4.0: Runoff Area=4,581 sf 0.00% Impervious Runoff Depth>2.75"
Tc=5.0 min CN=61 Runoff=0.33 cfs 1,050 cf

Subcatchment POST 5.0: Runoff Area=7,449 sf 97.11% Impervious Runoff Depth>6.71"
Flow Length=230' Slope=0.0200 '/' Tc=5.0 min CN=97 Runoff=1.19 cfs 4,164 cf

Subcatchment POST-3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>6.12"
Tc=5.0 min CN=92 Runoff=12.23 cfs 40,564 cf

Pond PDHM19: PDMH19 Peak Elev=61.46' Inflow=17.52 cfs 57,572 cf
Primary=8.74 cfs 51,001 cf Secondary=8.78 cfs 6,571 cf Outflow=17.52 cfs 57,572 cf

Pond PDMH3: PDMH3 Peak Elev=62.40' Inflow=28.93 cfs 104,177 cf
Primary=9.19 cfs 79,879 cf Secondary=19.74 cfs 24,298 cf Outflow=28.93 cfs 104,177 cf

Pond RG-1: Peak Elev=53.95' Storage=21,923 cf Inflow=25.52 cfs 93,057 cf
Outflow=15.43 cfs 92,764 cf

Pond RG-2: Peak Elev=59.99' Storage=1,529 cf Inflow=4.01 cfs 12,898 cf
Outflow=2.08 cfs 12,898 cf

Pond RG-3: Peak Elev=61.05' Storage=5,167 cf Inflow=9.26 cfs 31,078 cf
Outflow=5.52 cfs 31,030 cf

Link PA-1: Inflow=20.71 cfs 67,870 cf
Primary=20.71 cfs 67,870 cf

Link PA-2: Inflow=25.33 cfs 152,306 cf
Primary=25.33 cfs 152,306 cf

Link PA-3: Inflow=32.10 cfs 114,301 cf
Primary=32.10 cfs 114,301 cf

Link PA-4: Inflow=0.33 cfs 1,050 cf
Primary=0.33 cfs 1,050 cf

Link PA-5: Inflow=1.19 cfs 4,164 cf
Primary=1.19 cfs 4,164 cf

Total Runoff Area = 798,313 sf Runoff Volume = 340,033 cf Average Runoff Depth = 5.11"
40.04% Pervious = 319,656 sf 59.96% Impervious = 478,657 sf

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

Subcatchment POST 1.0: Runoff Area=122,107 sf 73.90% Impervious Runoff Depth>7.01"
Flow Length=950' Tc=5.6 min CN=88 Runoff=21.46 cfs 71,371 cf

Subcatchment POST 1.1: Runoff Area=48,417 sf 0.00% Impervious Runoff Depth>3.56"
Flow Length=75' Slope=0.0400 '/' Tc=5.5 min CN=59 Runoff=4.55 cfs 14,373 cf

Subcatchment POST 2.1: Runoff Area=205,803 sf 66.37% Impervious Runoff Depth>6.77"
Flow Length=772' Tc=9.4 min CN=86 Runoff=31.47 cfs 116,098 cf

Subcatchment POST 2.2: Runoff Area=29,115 sf 64.53% Impervious Runoff Depth>6.65"
Flow Length=185' Slope=0.0150 '/' Tc=5.4 min CN=85 Runoff=4.96 cfs 16,144 cf

Subcatchment POST 2.3: Runoff Area=48,214 sf 33.27% Impervious Runoff Depth>5.10"
Flow Length=70' Tc=5.0 min CN=72 Runoff=6.61 cfs 20,479 cf

Subcatchment POST 2.4: Runoff Area=48,688 sf 66.49% Impervious Runoff Depth>6.77"
Flow Length=400' Tc=7.7 min CN=86 Runoff=7.92 cfs 27,474 cf

Subcatchment POST 2.5: Runoff Area=25,828 sf 38.28% Impervious Runoff Depth>5.45"
Flow Length=190' Tc=5.7 min CN=75 Runoff=3.72 cfs 11,740 cf

Subcatchment POST 3.0: Runoff Area=134,990 sf 74.05% Impervious Runoff Depth>7.01"
Flow Length=700' Tc=8.8 min CN=88 Runoff=21.63 cfs 78,862 cf

Subcatchment POST 3.1: Runoff Area=39,622 sf 0.00% Impervious Runoff Depth>3.80"
Flow Length=80' Tc=5.4 min CN=61 Runoff=4.00 cfs 12,533 cf

Subcatchment POST 3.2: Runoff Area=3,972 sf 11.48% Impervious Runoff Depth>4.27"
Flow Length=135' Tc=5.0 min CN=65 Runoff=0.46 cfs 1,412 cf

Subcatchment POST 4.0: Runoff Area=4,581 sf 0.00% Impervious Runoff Depth>3.80"
Tc=5.0 min CN=61 Runoff=0.47 cfs 1,449 cf

Subcatchment POST 5.0: Runoff Area=7,449 sf 97.11% Impervious Runoff Depth>8.10"
Flow Length=230' Slope=0.0200 '/' Tc=5.0 min CN=97 Runoff=1.43 cfs 5,026 cf

Subcatchment POST-3.10: Runoff Area=79,527 sf 84.38% Impervious Runoff Depth>7.50"
Tc=5.0 min CN=92 Runoff=14.81 cfs 49,674 cf

Pond PDHM19: PDMH19 Peak Elev=61.80' Inflow=21.46 cfs 71,371 cf
Primary=9.40 cfs 61,276 cf Secondary=12.06 cfs 10,095 cf Outflow=21.46 cfs 71,371 cf

Pond PDMH3: PDMH3 Peak Elev=62.75' Inflow=35.28 cfs 128,535 cf
Primary=9.83 cfs 95,208 cf Secondary=25.45 cfs 33,327 cf Outflow=35.28 cfs 128,535 cf

Pond RG-1: Peak Elev=54.27' Storage=24,128 cf Inflow=31.47 cfs 116,098 cf
Outflow=23.52 cfs 115,777 cf

Pond RG-2: Peak Elev=60.36' Storage=2,201 cf Inflow=4.96 cfs 16,144 cf
Outflow=2.30 cfs 16,143 cf

Pond RG-3: Peak Elev=61.61' Storage=6,448 cf Inflow=11.57 cfs 39,213 cf
Outflow=6.89 cfs 39,160 cf

Link PA-1: Inflow=25.99 cfs 85,744 cf
Primary=25.99 cfs 85,744 cf

Link PA-2: Inflow=36.34 cfs 191,559 cf
Primary=36.34 cfs 191,559 cf

Link PA-3: Inflow=39.70 cfs 142,480 cf
Primary=39.70 cfs 142,480 cf

Link PA-4: Inflow=0.47 cfs 1,449 cf
Primary=0.47 cfs 1,449 cf

Link PA-5: Inflow=1.43 cfs 5,026 cf
Primary=1.43 cfs 5,026 cf

Total Runoff Area = 798,313 sf Runoff Volume = 426,633 cf Average Runoff Depth = 6.41"
40.04% Pervious = 319,656 sf 59.96% Impervious = 478,657 sf

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. The 1-year event has been included in order to demonstrate compliance with the Channel Protection requirements of Env-Wq 1507.05 for select points of analysis.

Table 4.1

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

	1-Year Storm	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed					
PA-1	7.56	10.36	19.19	26.26	32.86
PA-2	7.74	10.4	16.81	25.58	38.42
PA-3	11.84	15.97	29.06	39.54	49.51
PA-4	0.81	1.06	1.83	2.44	2.99
PA-5	0.57	0.69	1.06	1.35	1.61
Post-Development Watershed					
PA-1	6.18	8.31	15.14	20.71	25.99
PA-2	5.85	6.98	13.80	25.33	36.34
PA-3	10.61	13.87	24.01	32.10	39.70
PA-4	0.03	0.06	0.20	0.33	0.47
PA-5	0.50	0.61	0.94	1.17	1.40

Each of the points of analysis meets the channel protection requirements of Env-Wq 105.05 as follows:

PA-1: The 2-year, 24-hour post-development runoff volume (27,030 cf) has not increased over the 2-year, 24 hour pre-development runoff volume (33,388 cf)by more than 0.1 ac-ft (or 4,356 cf).

PA-2: The 2-year, 24-hour post-development peak flow rate (6.98 cfs) is less than or equal to the 1-year, 24-hour pre-development peak flow rate (7.74 cfs).

PA-3: The 2-year, 24-hour post-development runoff volume (48,388 cf) has not increased over the 2-year, 24 hour pre-development runoff volume (61,084 cf) by more than 0.1 ac-ft (or 4,356 cf).

PA-4: The 2-year, 24-hour post-development peak flow rate (0.06 cfs) is less than or equal to the 1-year, 24-hour pre-development peak flow rate (0.81 cfs).

PA-5: The 2-year, 24-hour post-development runoff volume (2,068 cf) has not increased over the 2-year, 24 hour pre-development runoff volume (2,409 cf) by more than 0.1 ac-ft (or 4,356 cf).

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 consists of off-line deep sump catch basins, sediment forebays, Rain Guardian turrets, and Contech CDS units.

5.2 Treatment Methods for Protecting Water Quality.

The runoff from proposed impervious areas will be treated by Contech Jellyfish stormwater filtration systems as well as a Rain Garden bioretention systems. These Jellyfish and Rain Garden systems are sized to treat the Water Quality Flow of their respective sub catchment areas. The BMP worksheets for the treatment practices have been included in Section 6 of this report.

The proposed stormwater management system is required to remove 80% of the annual Total Suspended Soils (TSS) loads and 50% of the annual Total Nitrogen (TN) loads per the City of Portsmouth's Site Plan regulations, Section 7.6.2.1.a.i. As shown in Table 5.1 the pollutant removal efficiencies for the proposed treatment systems exceed the City of Portsmouth's removal requirements.

Table 5.1 – Pollutant Removal Efficiencies

BMP	Total Suspended Solids	Total Nitrogen	Total Phosphorus
Jellyfish Filter w/Pretreatment[1]	85%	50%	55%
Rain Garden w/ Pretreatment[2]	90%	65%	65%

1. Pollutant removal efficiencies from Contech Engineered Solutions, Jellyfish Filter Stormwater Treatment standard performance specifications. Pre-treatment upstream of the unit is assumed to be accounted for.
2. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix E. Per the descriptions listed in the Appendix, pre-treatment is already accounted for in the efficiencies cited.

Section 6
BMP Worksheets

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Type/Node Name: **RG-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).	
4.72	ac	A = Area draining to the practice	
3.14	ac	A_I = Impervious area draining to the practice	
0.67	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.65	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
3.06	ac-in	WQV= 1" x Rv x A	
11,115	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
2,779	cf	25% x WQV (check calc for sediment forebay volume)	
8,336	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment	Forebay	Method of Pretreatment? (not required for clean or roof runoff)	
3,085	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	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/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:			
52.35	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
3.24	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
1.91	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
48.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
47.40	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)	
1.10	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
#VALUE!	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
#VALUE!	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
54.27	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
55.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
14,620	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	: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.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Limited test pit information available due to existing site test pit access and location constraints. Rain Garden proposed to be underdrained by 6" perforated PVC, and no infiltration has been assumed or carried in the drainage design or model.

Stage-Area-Storage for Pond RG-1:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
47.40	3,137	0	47.92	3,137	652
47.41	3,137	13	47.93	3,137	665
47.42	3,137	25	47.94	3,137	678
47.43	3,137	38	47.95	3,137	690
47.44	3,137	50	47.96	3,137	703
47.45	3,137	63	47.97	3,137	715
47.46	3,137	75	47.98	3,137	728
47.47	3,137	88	47.99	3,137	740
47.48	3,137	100	48.00	3,137	753
47.49	3,137	113	48.01	3,137	765
47.50	3,137	125	48.02	3,137	778
47.51	3,137	138	48.03	3,137	791
47.52	3,137	151	48.04	3,137	803
47.53	3,137	163	48.05	3,137	816
47.54	3,137	176	48.06	3,137	828
47.55	3,137	188	48.07	3,137	841
47.56	3,137	201	48.08	3,137	853
47.57	3,137	213	48.09	3,137	866
47.58	3,137	226	48.10	3,137	878
47.59	3,137	238	48.11	3,137	891
47.60	3,137	251	48.12	3,137	903
47.61	3,137	264	48.13	3,137	916
47.62	3,137	276	48.14	3,137	929
47.63	3,137	289	48.15	3,137	941
47.64	3,137	301	48.16	3,137	954
47.65	3,137	314	48.17	3,137	966
47.66	3,137	326	48.18	3,137	979
47.67	3,137	339	48.19	3,137	991
47.68	3,137	351	48.20	3,137	1,004
47.69	3,137	364	48.21	3,137	1,016
47.70	3,137	376	48.22	3,137	1,029
47.71	3,137	389	48.23	3,137	1,041
47.72	3,137	402	48.24	3,137	1,054
47.73	3,137	414	48.25	3,137	1,067
47.74	3,137	427	48.26	3,137	1,079
47.75	3,137	439	48.27	3,137	1,092
47.76	3,137	452	48.28	3,137	1,104
47.77	3,137	464	48.29	3,137	1,117
47.78	3,137	477	48.30	3,137	1,129
47.79	3,137	489	48.31	3,137	1,142
47.80	3,137	502	48.32	3,137	1,154
47.81	3,137	514	48.33	3,137	1,167
47.82	3,137	527	48.34	3,137	1,180
47.83	3,137	540	48.35	3,137	1,192
47.84	3,137	552	48.36	3,137	1,205
47.85	3,137	565	48.37	3,137	1,217
47.86	3,137	577	48.38	3,137	1,230
47.87	3,137	590	48.39	3,137	1,242
47.88	3,137	602	48.40	3,137	1,255
47.89	3,137	615	48.41	3,137	1,267
47.90	3,137	627	48.42	3,137	1,280
47.91	3,137	640	48.43	3,137	1,292

Stage-Area-Storage for Pond RG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
48.44	3,137	1,305	48.96	3,137	1,813
48.45	3,137	1,318	48.97	3,137	1,823
48.46	3,137	1,330	48.98	3,137	1,832
48.47	3,137	1,343	48.99	3,137	1,841
48.48	3,137	1,355	49.00	3,137	1,851
48.49	3,137	1,368	49.01	3,137	1,860
48.50	3,137	1,380	49.02	3,137	1,870
48.51	3,137	1,390	49.03	3,137	1,879
48.52	3,137	1,399	49.04	3,137	1,888
48.53	3,137	1,409	49.05	3,137	1,898
48.54	3,137	1,418	49.06	3,137	1,907
48.55	3,137	1,427	49.07	3,137	1,917
48.56	3,137	1,437	49.08	3,137	1,926
48.57	3,137	1,446	49.09	3,137	1,936
48.58	3,137	1,456	49.10	3,137	1,945
48.59	3,137	1,465	49.11	3,137	1,954
48.60	3,137	1,474	49.12	3,137	1,964
48.61	3,137	1,484	49.13	3,137	1,973
48.62	3,137	1,493	49.14	3,137	1,983
48.63	3,137	1,503	49.15	3,137	1,992
48.64	3,137	1,512	49.16	3,137	2,001
48.65	3,137	1,521	49.17	3,137	2,011
48.66	3,137	1,531	49.18	3,137	2,020
48.67	3,137	1,540	49.19	3,137	2,030
48.68	3,137	1,550	49.20	3,137	2,039
48.69	3,137	1,559	49.21	3,137	2,048
48.70	3,137	1,568	49.22	3,137	2,058
48.71	3,137	1,578	49.23	3,137	2,067
48.72	3,137	1,587	49.24	3,137	2,077
48.73	3,137	1,597	49.25	3,137	2,086
48.74	3,137	1,606	49.26	3,137	2,096
48.75	3,137	1,616	49.27	3,137	2,105
48.76	3,137	1,625	49.28	3,137	2,114
48.77	3,137	1,634	49.29	3,137	2,124
48.78	3,137	1,644	49.30	3,137	2,133
48.79	3,137	1,653	49.31	3,137	2,143
48.80	3,137	1,663	49.32	3,137	2,152
48.81	3,137	1,672	49.33	3,137	2,161
48.82	3,137	1,681	49.34	3,137	2,171
48.83	3,137	1,691	49.35	3,137	2,180
48.84	3,137	1,700	49.36	3,137	2,190
48.85	3,137	1,710	49.37	3,137	2,199
48.86	3,137	1,719	49.38	3,137	2,208
48.87	3,137	1,728	49.39	3,137	2,218
48.88	3,137	1,738	49.40	3,137	2,227
48.89	3,137	1,747	49.41	3,137	2,237
48.90	3,137	1,757	49.42	3,137	2,246
48.91	3,137	1,766	49.43	3,137	2,256
48.92	3,137	1,776	49.44	3,137	2,265
48.93	3,137	1,785	49.45	3,137	2,274
48.94	3,137	1,794	49.46	3,137	2,284
48.95	3,137	1,804	49.47	3,137	2,293

Bottom of Filter Course

Stage-Area-Storage for Pond RG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
49.48	3,137	2,303	50.00	3,137	2,792
49.49	3,137	2,312	50.01	3,145	2,823
49.50	3,137	2,321	50.02	3,153	2,855
49.51	3,137	2,331	50.03	3,161	2,886
49.52	3,137	2,340	50.04	3,169	2,918
49.53	3,137	2,350	50.05	3,177	2,950
49.54	3,137	2,359	50.06	3,185	2,982
49.55	3,137	2,368	50.07	3,193	3,013
49.56	3,137	2,378	50.08	3,201	3,045
49.57	3,137	2,387	50.09	3,209	3,078
49.58	3,137	2,397	50.10	3,217	3,110
49.59	3,137	2,406	50.11	3,225	3,142
49.60	3,137	2,415	50.12	3,233	3,174
49.61	3,137	2,425	50.13	3,241	3,207
49.62	3,137	2,434	50.14	3,249	3,239
49.63	3,137	2,444	50.15	3,257	3,272
49.64	3,137	2,453	50.16	3,265	3,304
49.65	3,137	2,463	50.17	3,274	3,337
49.66	3,137	2,472	50.18	3,282	3,370
49.67	3,137	2,481	50.19	3,290	3,402
49.68	3,137	2,491	50.20	3,298	3,435
49.69	3,137	2,500	50.21	3,306	3,468
49.70	3,137	2,510	50.22	3,314	3,502
49.71	3,137	2,519	50.23	3,322	3,535
49.72	3,137	2,528	50.24	3,330	3,568
49.73	3,137	2,538	50.25	3,338	3,601
49.74	3,137	2,547	50.26	3,346	3,635
49.75	3,137	2,557	50.27	3,354	3,668
49.76	3,137	2,566	50.28	3,362	3,702
49.77	3,137	2,575	50.29	3,370	3,735
49.78	3,137	2,585	50.30	3,378	3,769
49.79	3,137	2,594	50.31	3,386	3,803
49.80	3,137	2,604	50.32	3,394	3,837
49.81	3,137	2,613	50.33	3,402	3,871
49.82	3,137	2,623	50.34	3,410	3,905
49.83	3,137	2,632	50.35	3,418	3,939
49.84	3,137	2,641	50.36	3,426	3,973
49.85	3,137	2,651	50.37	3,434	4,008
49.86	3,137	2,660	50.38	3,442	4,042
49.87	3,137	2,670	50.39	3,450	4,076
49.88	3,137	2,679	50.40	3,458	4,111
49.89	3,137	2,688	50.41	3,466	4,146
49.90	3,137	2,698	50.42	3,474	4,180
49.91	3,137	2,707	50.43	3,482	4,215
49.92	3,137	2,717	50.44	3,490	4,250
49.93	3,137	2,726	50.45	3,498	4,285
49.94	3,137	2,735	50.46	3,506	4,320
49.95	3,137	2,745	50.47	3,514	4,355
49.96	3,137	2,754	50.48	3,522	4,390
49.97	3,137	2,764	50.49	3,530	4,425
49.98	3,137	2,773	50.50	3,539	4,461
49.99	3,137	2,783	50.51	3,547	4,496

Stage-Area-Storage for Pond RG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.52	3,555	4,532	51.04	3,975	6,489
50.53	3,563	4,567	51.05	3,984	6,529
50.54	3,571	4,603	51.06	3,993	6,568
50.55	3,579	4,639	51.07	4,001	6,608
50.56	3,587	4,675	51.08	4,010	6,648
50.57	3,595	4,710	51.09	4,019	6,689
50.58	3,603	4,746	51.10	4,028	6,729
50.59	3,611	4,783	51.11	4,036	6,769
50.60	3,619	4,819	51.12	4,045	6,810
50.61	3,627	4,855	51.13	4,054	6,850
50.62	3,635	4,891	51.14	4,063	6,891
50.63	3,643	4,928	51.15	4,071	6,931
50.64	3,651	4,964	51.16	4,080	6,972
50.65	3,659	5,001	51.17	4,089	7,013
50.66	3,667	5,037	51.18	4,098	7,054
50.67	3,675	5,074	51.19	4,106	7,095
50.68	3,683	5,111	51.20	4,115	7,136
50.69	3,691	5,148	51.21	4,124	7,177
50.70	3,699	5,185	51.22	4,133	7,218
50.71	3,707	5,222	51.23	4,141	7,260
50.72	3,715	5,259	51.24	4,150	7,301
50.73	3,723	5,296	51.25	4,159	7,343
50.74	3,731	5,333	51.26	4,168	7,384
50.75	3,739	5,371	51.27	4,177	7,426
50.76	3,747	5,408	51.28	4,185	7,468
50.77	3,755	5,445	51.29	4,194	7,510
50.78	3,763	5,483	51.30	4,203	7,552
50.79	3,771	5,521	51.31	4,212	7,594
50.80	3,779	5,558	51.32	4,220	7,636
50.81	3,787	5,596	51.33	4,229	7,678
50.82	3,795	5,634	51.34	4,238	7,721
50.83	3,803	5,672	51.35	4,247	7,763
50.84	3,812	5,710	51.36	4,255	7,806
50.85	3,820	5,748	51.37	4,264	7,848
50.86	3,828	5,787	51.38	4,273	7,891
50.87	3,836	5,825	51.39	4,282	7,934
50.88	3,844	5,863	51.40	4,290	7,977
50.89	3,852	5,902	51.41	4,299	8,019
50.90	3,860	5,940	51.42	4,308	8,062
50.91	3,868	5,979	51.43	4,317	8,106
50.92	3,876	6,018	51.44	4,325	8,149
50.93	3,884	6,057	51.45	4,334	8,192
50.94	3,892	6,095	51.46	4,343	8,236
50.95	3,900	6,134	51.47	4,352	8,279
50.96	3,908	6,173	51.48	4,360	8,323
50.97	3,916	6,213	51.49	4,369	8,366
50.98	3,924	6,252	51.50	4,378	8,410
50.99	3,932	6,291	51.51	4,387	8,454
51.00	3,940	6,330	51.52	4,396	8,498
51.01	3,949	6,370	51.53	4,404	8,542
51.02	3,958	6,409	51.54	4,413	8,586
51.03	3,966	6,449	51.55	4,422	8,630

Stage-Area-Storage for Pond RG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
51.56	4,431	8,674
51.57	4,439	8,719
51.58	4,448	8,763
51.59	4,457	8,807
51.60	4,466	8,852
51.61	4,474	8,897
51.62	4,483	8,942
51.63	4,492	8,986
51.64	4,501	9,031
51.65	4,509	9,076
51.66	4,518	9,122
51.67	4,527	9,167
51.68	4,536	9,212
51.69	4,544	9,258
51.70	4,553	9,303
51.71	4,562	9,349
51.72	4,571	9,394
51.73	4,579	9,440
51.74	4,588	9,486
51.75	4,597	9,532
51.76	4,606	9,578
51.77	4,615	9,624
51.78	4,623	9,670
51.79	4,632	9,716
51.80	4,641	9,763
51.81	4,650	9,809
51.82	4,658	9,856
51.83	4,667	9,902
51.84	4,676	9,949
51.85	4,685	9,996
51.86	4,693	10,043
51.87	4,702	10,090
51.88	4,711	10,137
51.89	4,720	10,184
51.90	4,728	10,231
51.91	4,737	10,279
51.92	4,746	10,326
51.93	4,755	10,373
51.94	4,763	10,421
51.95	4,772	10,469
51.96	4,781	10,516
51.97	4,790	10,564
51.98	4,798	10,612
51.99	4,807	10,660
52.00	4,816	10,708
52.01	4,826	10,757
52.02	4,835	10,805
52.03	4,845	10,853
52.04	4,854	10,902
52.05	4,864	10,950
52.06	4,873	10,999
52.07	4,883	11,048
52.08	4,892	11,097
52.09	4,902	11,146
52.10	4,911	11,195
52.11	4,921	11,244
52.12	4,930	11,293
52.13	4,940	11,343
52.14	4,949	11,392
52.15	4,959	11,442
52.16	4,968	11,491
52.17	4,978	11,541
52.18	4,987	11,591
52.19	4,997	11,641
52.20	5,006	11,691
52.21	5,016	11,741
52.22	5,025	11,791
52.23	5,035	11,841
52.24	5,044	11,892
52.25	5,054	11,942
52.26	5,063	11,993
52.27	5,073	12,043
52.28	5,082	12,094
52.29	5,092	12,145
52.30	5,101	12,196
52.31	5,111	12,247
52.32	5,120	12,298
52.33	5,130	12,349
52.34	5,139	12,401
52.35	5,149	12,452
52.36	5,158	12,504
52.37	5,168	12,555
52.38	5,177	12,607
52.39	5,187	12,659
52.40	5,196	12,711
52.41	5,206	12,763
52.42	5,215	12,815
52.43	5,225	12,867
52.44	5,234	12,920
52.45	5,244	12,972
52.46	5,253	13,024
52.47	5,263	13,077
52.48	5,272	13,130
52.49	5,282	13,182
52.50	5,292	13,235
52.51	5,301	13,288
52.52	5,311	13,341
52.53	5,320	13,394
52.54	5,330	13,448
52.55	5,339	13,501
52.56	5,349	13,555
52.57	5,358	13,608
52.58	5,368	13,662
52.59	5,377	13,715

Ewqv (excluding volume below filter course

Stage-Area-Storage for Pond RG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
52.60	5,387	13,769	53.12	5,889	16,699
52.61	5,396	13,823	53.13	5,899	16,758
52.62	5,406	13,877	53.14	5,910	16,817
52.63	5,415	13,931	53.15	5,920	16,876
52.64	5,425	13,985	53.16	5,930	16,936
52.65	5,434	14,040	53.17	5,940	16,995
52.66	5,444	14,094	53.18	5,950	17,054
52.67	5,453	14,149	53.19	5,961	17,114
52.68	5,463	14,203	53.20	5,971	17,174
52.69	5,472	14,258	53.21	5,981	17,233
52.70	5,482	14,313	53.22	5,991	17,293
52.71	5,491	14,367	53.23	6,001	17,353
52.72	5,501	14,422	53.24	6,012	17,413
52.73	5,510	14,478	53.25	6,022	17,474
52.74	5,520	14,533	53.26	6,032	17,534
52.75	5,529	14,588	53.27	6,042	17,594
52.76	5,539	14,643	53.28	6,052	17,655
52.77	5,548	14,699	53.29	6,063	17,715
52.78	5,558	14,754	53.30	6,073	17,776
52.79	5,567	14,810	53.31	6,083	17,837
52.80	5,577	14,866	53.32	6,093	17,898
52.81	5,586	14,921	53.33	6,103	17,959
52.82	5,596	14,977	53.34	6,113	18,020
52.83	5,605	15,033	53.35	6,124	18,081
52.84	5,615	15,089	53.36	6,134	18,142
52.85	5,624	15,146	53.37	6,144	18,203
52.86	5,634	15,202	53.38	6,154	18,265
52.87	5,643	15,258	53.39	6,164	18,327
52.88	5,653	15,315	53.40	6,175	18,388
52.89	5,662	15,371	53.41	6,185	18,450
52.90	5,672	15,428	53.42	6,195	18,512
52.91	5,681	15,485	53.43	6,205	18,574
52.92	5,691	15,542	53.44	6,215	18,636
52.93	5,700	15,599	53.45	6,226	18,698
52.94	5,710	15,656	53.46	6,236	18,761
52.95	5,719	15,713	53.47	6,246	18,823
52.96	5,729	15,770	53.48	6,256	18,885
52.97	5,738	15,827	53.49	6,266	18,948
52.98	5,748	15,885	53.50	6,277	19,011
52.99	5,757	15,942	53.51	6,287	19,074
First Outlet 53.00	5,767	16,000	53.52	6,297	19,137
53.01	5,777	16,058	53.53	6,307	19,200
53.02	5,787	16,115	53.54	6,317	19,263
53.03	5,798	16,173	53.55	6,327	19,326
53.04	5,808	16,231	53.56	6,338	19,389
53.05	5,818	16,290	53.57	6,348	19,453
53.06	5,828	16,348	53.58	6,358	19,516
53.07	5,838	16,406	53.59	6,368	19,580
53.08	5,849	16,465	53.60	6,378	19,644
53.09	5,859	16,523	53.61	6,389	19,707
53.10	5,869	16,582	53.62	6,399	19,771
53.11	5,879	16,640	53.63	6,409	19,835

Stage-Area-Storage for Pond RG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
53.64	6,419	19,900
53.65	6,429	19,964
53.66	6,440	20,028
53.67	6,450	20,093
53.68	6,460	20,157
53.69	6,470	20,222
53.70	6,480	20,286
53.71	6,490	20,351
53.72	6,501	20,416
53.73	6,511	20,481
53.74	6,521	20,547
53.75	6,531	20,612
53.76	6,541	20,677
53.77	6,552	20,743
53.78	6,562	20,808
53.79	6,572	20,874
53.80	6,582	20,940
53.81	6,592	21,005
53.82	6,603	21,071
53.83	6,613	21,138
53.84	6,623	21,204
53.85	6,633	21,270
53.86	6,643	21,336
53.87	6,654	21,403
53.88	6,664	21,469
53.89	6,674	21,536
53.90	6,684	21,603
53.91	6,694	21,670
53.92	6,704	21,737
53.93	6,715	21,804
53.94	6,725	21,871
53.95	6,735	21,938
53.96	6,745	22,006
53.97	6,755	22,073
53.98	6,766	22,141
53.99	6,776	22,209
54.00	6,786	22,276
54.01	6,797	22,344
54.02	6,808	22,412
54.03	6,818	22,480
54.04	6,829	22,549
54.05	6,840	22,617
54.06	6,851	22,686
54.07	6,862	22,754
54.08	6,872	22,823
54.09	6,883	22,892
54.10	6,894	22,960
54.11	6,905	23,029
54.12	6,916	23,099
54.13	6,926	23,168
54.14	6,937	23,237
54.15	6,948	23,306
54.16	6,959	23,376
54.17	6,970	23,446
54.18	6,980	23,515
54.19	6,991	23,585
54.20	7,002	23,655
54.21	7,013	23,725
54.22	7,024	23,795
54.23	7,034	23,866
54.24	7,045	23,936
54.25	7,056	24,007
54.26	7,067	24,077
54.27	7,078	24,148
54.28	7,088	24,219
54.29	7,099	24,290
54.30	7,110	24,361
54.31	7,121	24,432
54.32	7,132	24,503
54.33	7,142	24,575
54.34	7,153	24,646
54.35	7,164	24,718
54.36	7,175	24,789
54.37	7,186	24,861
54.38	7,196	24,933
54.39	7,207	25,005
54.40	7,218	25,077
54.41	7,229	25,149
54.42	7,240	25,222
54.43	7,250	25,294
54.44	7,261	25,367
54.45	7,272	25,439
54.46	7,283	25,512
54.47	7,294	25,585
54.48	7,304	25,658
54.49	7,315	25,731
54.50	7,326	25,804
54.51	7,337	25,878
54.52	7,348	25,951
54.53	7,358	26,025
54.54	7,369	26,098
54.55	7,380	26,172
54.56	7,391	26,246
54.57	7,402	26,320
54.58	7,412	26,394
54.59	7,423	26,468
54.60	7,434	26,542
54.61	7,445	26,617
54.62	7,456	26,691
54.63	7,466	26,766
54.64	7,477	26,841
54.65	7,488	26,915
54.66	7,499	26,990
54.67	7,510	27,065

Stage-Area-Storage for Pond RG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
54.68	7,520	27,141
54.69	7,531	27,216
54.70	7,542	27,291
54.71	7,553	27,367
54.72	7,564	27,442
54.73	7,574	27,518
54.74	7,585	27,594
54.75	7,596	27,670
54.76	7,607	27,746
54.77	7,618	27,822
54.78	7,628	27,898
54.79	7,639	27,974
54.80	7,650	28,051
54.81	7,661	28,127
54.82	7,672	28,204
54.83	7,682	28,281
54.84	7,693	28,358
54.85	7,704	28,435
54.86	7,715	28,512
54.87	7,726	28,589
54.88	7,736	28,666
54.89	7,747	28,744
54.90	7,758	28,821
54.91	7,769	28,899
54.92	7,780	28,977
54.93	7,790	29,054
54.94	7,801	29,132
54.95	7,812	29,210
54.96	7,823	29,289
54.97	7,834	29,367
54.98	7,844	29,445
54.99	7,855	29,524
55.00	**7,866**	**29,602**

Stage-Discharge for Pond RG-1: (continued)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
51.56	2.90	52.08	3.12	52.60	3.35	53.12	4.11
51.57	2.90	52.09	3.13	52.61	3.35	53.13	4.19
51.58	2.90	52.10	3.13	52.62	3.36	53.14	4.26
51.59	2.91	52.11	3.14	52.63	3.36	53.15	4.34
51.60	2.91	52.12	3.14	52.64	3.37	53.16	4.42
51.61	2.92	52.13	3.14	52.65	3.37	53.17	4.51
51.62	2.92	52.14	3.15	52.66	3.38	53.18	4.59
51.63	2.93	52.15	3.15	52.67	3.38	53.19	4.68
51.64	2.93	52.16	3.16	52.68	3.38	53.20	4.77
51.65	2.93	52.17	3.16	52.69	3.39	53.21	4.86
51.66	2.94	52.18	3.17	52.70	3.39	53.22	4.95
51.67	2.94	52.19	3.17	52.71	3.40	53.23	5.05
51.68	2.95	52.20	3.18	52.72	3.40	53.24	5.15
51.69	2.95	52.21	3.18	52.73	3.41	53.25	5.25
51.70	2.96	52.22	3.18	52.74	3.41	53.26	5.35
51.71	2.96	52.23	3.19	52.75	3.41	53.27	5.45
51.72	2.97	52.24	3.19	52.76	3.42	53.28	5.56
51.73	2.97	52.25	3.20	52.77	3.42	53.29	5.66
51.74	2.97	52.26	3.20	52.78	3.43	53.30	5.77
51.75	2.98	52.27	3.21	52.79	3.43	53.31	5.88
51.76	2.98	52.28	3.21	52.80	3.44	53.32	5.99
51.77	2.99	52.29	3.22	52.81	3.44	53.33	6.10
51.78	2.99	52.30	3.22	52.82	3.44	53.34	6.22
51.79	3.00	52.31	3.22	52.83	3.45	53.35	6.34
51.80	3.00	52.32	3.23	52.84	3.45	53.36	6.45
51.81	3.00	52.33	3.23	52.85	3.46	53.37	6.57
51.82	3.01	52.34	3.24	52.86	3.46	53.38	6.69
51.83	3.01	52.35	3.24	52.87	3.47	53.39	6.82
51.84	3.02	52.36	3.25	52.88	3.47	53.40	6.94
51.85	3.02	52.37	3.25	52.89	3.47	53.41	7.06
51.86	3.03	52.38	3.25	52.90	3.48	53.42	7.19
51.87	3.03	52.39	3.26	52.91	3.48	53.43	7.32
51.88	3.03	52.40	3.26	52.92	3.49	53.44	7.45
51.89	3.04	52.41	3.27	52.93	3.49	53.45	7.58
51.90	3.04	52.42	3.27	52.94	3.50	53.46	7.71
51.91	3.05	52.43	3.28	52.95	3.50	53.47	7.84
51.92	3.05	52.44	3.28	52.96	3.50	53.48	7.98
51.93	3.06	52.45	3.29	52.97	3.51	53.49	8.11
51.94	3.06	52.46	3.29	52.98	3.51	53.50	8.25
51.95	3.07	52.47	3.29	52.99	3.52	53.51	8.39
51.96	3.07	52.48	3.30	53.00	3.52	53.52	8.53
51.97	3.07	52.49	3.30	53.01	3.54	53.53	8.67
51.98	3.08	52.50	3.31	53.02	3.57	53.54	8.81
51.99	3.08	52.51	3.31	53.03	3.60	53.55	8.95
52.00	3.09	52.52	3.32	53.04	3.64	53.56	9.09
52.01	3.09	52.53	3.32	53.05	3.69	53.57	9.24
52.02	3.10	52.54	3.32	53.06	3.74	53.58	9.38
52.03	3.10	52.55	3.33	53.07	3.79	53.59	9.53
52.04	3.10	52.56	3.33	53.08	3.85	53.60	9.68
52.05	3.11	52.57	3.34	53.09	3.91	53.61	9.83
52.06	3.11	52.58	3.34	53.10	3.98	53.62	9.98
52.07	3.12	52.59	3.35	53.11	4.04	53.63	10.13

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Type/Node Name: **RG-2**

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).	
0.67	ac	A = Area draining to the practice	
0.43	ac	A_I = Impervious area draining to the practice	
0.64	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.63	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.42	ac-in	WQV= 1" x Rv x A	
1,526	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
382	cf	25% x WQV (check calc for sediment forebay volume)	
1,145	cf	75% x WQV (check calc for surface sand filter volume)	
Rain Guardian Turret		Method of Pretreatment? (not required for clean or roof runoff)	
N/A	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	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/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:			
60.15	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
2.18	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
0.39	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
57.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
56.40	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)	
1.10	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
#VALUE!	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
#VALUE!	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
60.36	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
61.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
2,263	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	: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.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Limited test pit information available due to existing site test pit access and location constraints. Rain Garden proposed to be underdrained by 6" perforated PVC, and no infiltration has been assumed or carried in the drainage design or model.

Stage-Area-Storage for Pond RG-2:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
56.40	560	0	56.92	560	116
56.41	560	2	56.93	560	119
56.42	560	4	56.94	560	121
56.43	560	7	56.95	560	123
56.44	560	9	56.96	560	125
56.45	560	11	56.97	560	128
56.46	560	13	56.98	560	130
56.47	560	16	56.99	560	132
56.48	560	18	57.00	560	134
56.49	560	20	57.01	560	137
56.50	560	22	57.02	560	139
56.51	560	25	57.03	560	141
56.52	560	27	57.04	560	143
56.53	560	29	57.05	560	146
56.54	560	31	57.06	560	148
56.55	560	34	57.07	560	150
56.56	560	36	57.08	560	152
56.57	560	38	57.09	560	155
56.58	560	40	57.10	560	157
56.59	560	43	57.11	560	159
56.60	560	45	57.12	560	161
56.61	560	47	57.13	560	164
56.62	560	49	57.14	560	166
56.63	560	52	57.15	560	168
56.64	560	54	57.16	560	170
56.65	560	56	57.17	560	172
56.66	560	58	57.18	560	175
56.67	560	60	57.19	560	177
56.68	560	63	57.20	560	179
56.69	560	65	57.21	560	181
56.70	560	67	57.22	560	184
56.71	560	69	57.23	560	186
56.72	560	72	57.24	560	188
56.73	560	74	57.25	560	190
56.74	560	76	57.26	560	193
56.75	560	78	57.27	560	195
56.76	560	81	57.28	560	197
56.77	560	83	57.29	560	199
56.78	560	85	57.30	560	202
56.79	560	87	57.31	560	204
56.80	560	90	57.32	560	206
56.81	560	92	57.33	560	208
56.82	560	94	57.34	560	211
56.83	560	96	57.35	560	213
56.84	560	99	57.36	560	215
56.85	560	101	57.37	560	217
56.86	560	103	57.38	560	220
56.87	560	105	57.39	560	222
56.88	560	108	57.40	560	224
56.89	560	110	57.41	560	226
56.90	560	112	57.42	560	228
56.91	560	114	57.43	560	231

Stage-Area-Storage for Pond RG-2: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
57.44	560	233	57.96	560	324
57.45	560	235	57.97	560	325
57.46	560	237	57.98	560	327
57.47	560	240	57.99	560	329
57.48	560	242	58.00	560	330
57.49	560	244	58.01	560	332
57.50	560	246	58.02	560	334
57.51	560	248	58.03	560	335
57.52	560	250	58.04	560	337
57.53	560	251	58.05	560	339
57.54	560	253	58.06	560	340
57.55	560	255	58.07	560	342
57.56	560	256	58.08	560	344
57.57	560	258	58.09	560	346
57.58	560	260	58.10	560	347
57.59	560	262	58.11	560	349
57.60	560	263	58.12	560	351
57.61	560	265	58.13	560	352
57.62	560	267	58.14	560	354
57.63	560	268	58.15	560	356
57.64	560	270	58.16	560	357
57.65	560	272	58.17	560	359
57.66	560	273	58.18	560	361
57.67	560	275	58.19	560	362
57.68	560	277	58.20	560	364
57.69	560	278	58.21	560	366
57.70	560	280	58.22	560	367
57.71	560	282	58.23	560	369
57.72	560	283	58.24	560	371
57.73	560	285	58.25	560	372
57.74	560	287	58.26	560	374
57.75	560	288	58.27	560	376
57.76	560	290	58.28	560	377
57.77	560	292	58.29	560	379
57.78	560	293	58.30	560	381
57.79	560	295	58.31	560	382
57.80	560	297	58.32	560	384
57.81	560	298	58.33	560	386
57.82	560	300	58.34	560	388
57.83	560	302	58.35	560	389
57.84	560	304	58.36	560	391
57.85	560	305	58.37	560	393
57.86	560	307	58.38	560	394
57.87	560	309	58.39	560	396
57.88	560	310	58.40	560	398
57.89	560	312	58.41	560	399
57.90	560	314	58.42	560	401
57.91	560	315	58.43	560	403
57.92	560	317	58.44	560	404
57.93	560	319	58.45	560	406
57.94	560	320	58.46	560	408
57.95	560	322	58.47	560	409

Bottom of Filter Course

Stage-Area-Storage for Pond RG-2: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
58.48	560	411	59.00	560	498
58.49	560	413	59.01	570	504
58.50	560	414	59.02	580	510
58.51	560	416	59.03	590	516
58.52	560	418	59.04	599	522
58.53	560	419	59.05	609	528
58.54	560	421	59.06	619	534
58.55	560	423	59.07	629	540
58.56	560	424	59.08	639	546
58.57	560	426	59.09	649	553
58.58	560	428	59.10	659	559
58.59	560	430	59.11	668	566
58.60	560	431	59.12	678	573
58.61	560	433	59.13	688	580
58.62	560	435	59.14	698	586
58.63	560	436	59.15	708	593
58.64	560	438	59.16	718	601
58.65	560	440	59.17	727	608
58.66	560	441	59.18	737	615
58.67	560	443	59.19	747	623
58.68	560	445	59.20	757	630
58.69	560	446	59.21	767	638
58.70	560	448	59.22	777	645
58.71	560	450	59.23	787	653
58.72	560	451	59.24	796	661
58.73	560	453	59.25	806	669
58.74	560	455	59.26	816	677
58.75	560	456	59.27	826	686
58.76	560	458	59.28	836	694
58.77	560	460	59.29	846	702
58.78	560	461	59.30	855	711
58.79	560	463	59.31	865	719
58.80	560	465	59.32	875	728
58.81	560	466	59.33	885	737
58.82	560	468	59.34	895	746
58.83	560	470	59.35	905	755
58.84	560	472	59.36	915	764
58.85	560	473	59.37	924	773
58.86	560	475	59.38	934	782
58.87	560	477	59.39	944	792
58.88	560	478	59.40	954	801
58.89	560	480	59.41	964	811
58.90	560	482	59.42	974	820
58.91	560	483	59.43	984	830
58.92	560	485	59.44	993	840
58.93	560	487	59.45	1,003	850
58.94	560	488	59.46	1,013	860
58.95	560	490	59.47	1,023	870
58.96	560	492	59.48	1,033	881
58.97	560	493	59.49	1,043	891
58.98	560	495	59.50	1,053	902
58.99	560	497	59.51	1,062	912

Stage-Area-Storage for Pond RG-2: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
59.52	1,072	923
59.53	1,082	934
59.54	1,092	944
59.55	1,102	955
59.56	1,112	966
59.57	1,121	978
59.58	1,131	989
59.59	1,141	1,000
59.60	1,151	1,012
59.61	1,161	1,023
59.62	1,171	1,035
59.63	1,181	1,047
59.64	1,190	1,059
59.65	1,200	1,070
59.66	1,210	1,083
59.67	1,220	1,095
59.68	1,230	1,107
59.69	1,240	1,119
59.70	1,249	1,132
59.71	1,259	1,144
59.72	1,269	1,157
59.73	1,279	1,170
59.74	1,289	1,182
59.75	1,299	1,195
59.76	1,309	1,208
59.77	1,318	1,222
59.78	1,328	1,235
59.79	1,338	1,248
59.80	1,348	1,262
59.81	1,358	1,275
59.82	1,368	1,289
59.83	1,378	1,302
59.84	1,387	1,316
59.85	1,397	1,330
59.86	1,407	1,344
59.87	1,417	1,358
59.88	1,427	1,373
59.89	1,437	1,387
59.90	1,446	1,401
59.91	1,456	1,416
59.92	1,466	1,430
59.93	1,476	1,445
59.94	1,486	1,460
59.95	1,496	1,475
59.96	1,506	1,490
59.97	1,515	1,505
59.98	1,525	1,520
59.99	1,535	1,535
60.00	1,545	1,551
60.01	1,560	1,566
60.02	1,575	1,582
60.03	1,589	1,598
60.04	1,604	1,614
60.05	1,619	1,630
60.06	1,634	1,646
60.07	1,649	1,663
60.08	1,663	1,679
60.09	1,678	1,696
60.10	1,693	1,713
60.11	1,708	1,730
60.12	1,723	1,747
60.13	1,738	1,764
60.14	1,752	1,782
60.15	1,767	1,799
60.16	1,782	1,817
60.17	1,797	1,835
60.18	1,812	1,853
60.19	1,826	1,871
60.20	1,841	1,890
60.21	1,856	1,908
60.22	1,871	1,927
60.23	1,886	1,945
60.24	1,900	1,964
60.25	1,915	1,983
60.26	1,930	2,003
60.27	1,945	2,022
60.28	1,960	2,042
60.29	1,974	2,061
60.30	1,989	2,081
60.31	2,004	2,101
60.32	2,019	2,121
60.33	2,034	2,141
60.34	2,049	2,162
60.35	2,063	2,182
60.36	2,078	2,203
60.37	2,093	2,224
60.38	2,108	2,245
60.39	2,123	2,266
60.40	2,137	2,287
60.41	2,152	2,309
60.42	2,167	2,330
60.43	2,182	2,352
60.44	2,197	2,374
60.45	2,211	2,396
60.46	2,226	2,418
60.47	2,241	2,441
60.48	2,256	2,463
60.49	2,271	2,486
60.50	2,286	2,509
60.51	2,300	2,531
60.52	2,315	2,555
60.53	2,330	2,578
60.54	2,345	2,601
60.55	2,360	2,625

Ewqv (excluding volume below filter course

First Outlet

Stage-Area-Storage for Pond RG-2: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
60.56	2,374	2,648
60.57	2,389	2,672
60.58	2,404	2,696
60.59	2,419	2,720
60.60	2,434	2,744
60.61	2,448	2,769
60.62	2,463	2,793
60.63	2,478	2,818
60.64	2,493	2,843
60.65	2,508	2,868
60.66	2,522	2,893
60.67	2,537	2,918
60.68	2,552	2,944
60.69	2,567	2,970
60.70	2,582	2,995
60.71	2,597	3,021
60.72	2,611	3,047
60.73	2,626	3,073
60.74	2,641	3,100
60.75	2,656	3,126
60.76	2,671	3,153
60.77	2,685	3,180
60.78	2,700	3,207
60.79	2,715	3,234
60.80	2,730	3,261
60.81	2,745	3,288
60.82	2,759	3,316
60.83	2,774	3,343
60.84	2,789	3,371
60.85	2,804	3,399
60.86	2,819	3,427
60.87	2,833	3,456
60.88	2,848	3,484
60.89	2,863	3,513
60.90	2,878	3,541
60.91	2,893	3,570
60.92	2,908	3,599
60.93	2,922	3,628
60.94	2,937	3,658
60.95	2,952	3,687
60.96	2,967	3,717
60.97	2,982	3,746
60.98	2,996	3,776
60.99	3,011	3,806
61.00	**3,026**	**3,836**

Stage-Discharge for Pond RG-2: (continued)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
58.48	1.41	59.00	1.58	59.52	1.85	60.04	2.11
58.49	1.41	59.01	1.58	59.53	1.85	60.05	2.12
58.50	1.42	59.02	1.59	59.54	1.86	60.06	2.12
58.51	1.42	59.03	1.59	59.55	1.87	60.07	2.13
58.52	1.42	59.04	1.60	59.56	1.87	60.08	2.14
58.53	1.43	59.05	1.61	59.57	1.88	60.09	2.14
58.54	1.43	59.06	1.61	59.58	1.88	60.10	2.15
58.55	1.43	59.07	1.62	59.59	1.89	60.11	2.15
58.56	1.44	59.08	1.62	59.60	1.89	60.12	2.16
58.57	1.44	59.09	1.63	59.61	1.90	60.13	2.17
58.58	1.44	59.10	1.63	59.62	1.90	60.14	2.17
58.59	1.45	59.11	1.64	59.63	1.91	60.15	2.18
58.60	1.45	59.12	1.64	59.64	1.91	60.16	2.18
58.61	1.45	59.13	1.65	59.65	1.92	60.17	2.19
58.62	1.46	59.14	1.65	59.66	1.92	60.18	2.20
58.63	1.46	59.15	1.66	59.67	1.93	60.19	2.20
58.64	1.46	59.16	1.66	59.68	1.93	60.20	2.21
58.65	1.47	59.17	1.67	59.69	1.94	60.21	2.21
58.66	1.47	59.18	1.67	59.70	1.94	60.22	2.22
58.67	1.47	59.19	1.68	59.71	1.95	60.23	2.23
58.68	1.48	59.20	1.68	59.72	1.95	60.24	2.23
58.69	1.48	59.21	1.69	59.73	1.96	60.25	2.24
58.70	1.48	59.22	1.70	59.74	1.96	60.26	2.24
58.71	1.49	59.23	1.70	59.75	1.97	60.27	2.25
58.72	1.49	59.24	1.71	59.76	1.97	60.28	2.25
58.73	1.49	59.25	1.71	59.77	1.98	60.29	2.26
58.74	1.50	59.26	1.72	59.78	1.98	60.30	2.27
58.75	1.50	59.27	1.72	59.79	1.99	60.31	2.27
58.76	1.50	59.28	1.73	59.80	1.99	60.32	2.28
58.77	1.51	59.29	1.73	59.81	1.99	60.33	2.28
58.78	1.51	59.30	1.74	59.82	2.00	60.34	2.29
58.79	1.51	59.31	1.74	59.83	2.00	60.35	2.30
58.80	1.52	59.32	1.75	59.84	2.01	60.36	2.30
58.81	1.52	59.33	1.75	59.85	2.01	60.37	2.31
58.82	1.52	59.34	1.76	59.86	2.02	60.38	2.31
58.83	1.53	59.35	1.76	59.87	2.02	60.39	2.32
58.84	1.53	59.36	1.77	59.88	2.03	60.40	2.33
58.85	1.53	59.37	1.77	59.89	2.03	60.41	2.33
58.86	1.54	59.38	1.78	59.90	2.04	60.42	2.34
58.87	1.54	59.39	1.78	59.91	2.04	60.43	2.34
58.88	1.54	59.40	1.79	59.92	2.05	60.44	2.35
58.89	1.54	59.41	1.79	59.93	2.05	60.45	2.35
58.90	1.55	59.42	1.80	59.94	2.06	60.46	2.36
58.91	1.55	59.43	1.80	59.95	2.06	60.47	2.37
58.92	1.55	59.44	1.81	59.96	2.07	60.48	2.37
58.93	1.56	59.45	1.81	59.97	2.07	60.49	2.38
58.94	1.56	59.46	1.82	59.98	2.08	60.50	2.38
58.95	1.56	59.47	1.82	59.99	2.08	60.51	2.51
58.96	1.57	59.48	1.83	60.00	2.09	60.52	2.75
58.97	1.57	59.49	1.83	60.01	2.09	60.53	3.05
58.98	1.57	59.50	1.84	60.02	2.10	60.54	3.17
58.99	1.58	59.51	1.84	60.03	2.11	60.55	3.27

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Type/Node Name: **RG-3**

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).	
1.71	ac	A = Area draining to the practice	
0.97	ac	A_I = Impervious area draining to the practice	
0.57	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.56	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.96	ac-in	WQV= 1" x Rv x A	
3,479	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
870	cf	25% x WQV (check calc for sediment forebay volume)	
2,610	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
1,179	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	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/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:			
60.38	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
2.48	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
0.78	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
56.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
55.40	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)	
1.10	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
#VALUE!	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
#VALUE!	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
61.61	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
62.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
3,702	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	: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.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Limited test pit information available due to existing site test pit access and location constraints. Rain Garden proposed to be underdrained by 6" perforated PVC, and no infiltration has been assumed or carried in the drainage design or model.

Stage-Area-Storage for Pond RG-3:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
55.40	818	0	55.92	818	170
55.41	818	3	55.93	818	173
55.42	818	7	55.94	818	177
55.43	818	10	55.95	818	180
55.44	818	13	55.96	818	183
55.45	818	16	55.97	818	187
55.46	818	20	55.98	818	190
55.47	818	23	55.99	818	193
55.48	818	26	56.00	818	196
55.49	818	29	56.01	818	200
55.50	818	33	56.02	818	203
55.51	818	36	56.03	818	206
55.52	818	39	56.04	818	209
55.53	818	43	56.05	818	213
55.54	818	46	56.06	818	216
55.55	818	49	56.07	818	219
55.56	818	52	56.08	818	222
55.57	818	56	56.09	818	226
55.58	818	59	56.10	818	229
55.59	818	62	56.11	818	232
55.60	818	65	56.12	818	236
55.61	818	69	56.13	818	239
55.62	818	72	56.14	818	242
55.63	818	75	56.15	818	245
55.64	818	79	56.16	818	249
55.65	818	82	56.17	818	252
55.66	818	85	56.18	818	255
55.67	818	88	56.19	818	258
55.68	818	92	56.20	818	262
55.69	818	95	56.21	818	265
55.70	818	98	56.22	818	268
55.71	818	101	56.23	818	272
55.72	818	105	56.24	818	275
55.73	818	108	56.25	818	278
55.74	818	111	56.26	818	281
55.75	818	115	56.27	818	285
55.76	818	118	56.28	818	288
55.77	818	121	56.29	818	291
55.78	818	124	56.30	818	294
55.79	818	128	56.31	818	298
55.80	818	131	56.32	818	301
55.81	818	134	56.33	818	304
55.82	818	137	56.34	818	308
55.83	818	141	56.35	818	311
55.84	818	144	56.36	818	314
55.85	818	147	56.37	818	317
55.86	818	151	56.38	818	321
55.87	818	154	56.39	818	324
55.88	818	157	56.40	818	327
55.89	818	160	56.41	818	330
55.90	818	164	56.42	818	334
55.91	818	167	56.43	818	337

Stage-Area-Storage for Pond RG-3: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
56.44	818	340	56.96	818	473
56.45	818	344	56.97	818	475
56.46	818	347	56.98	818	478
56.47	818	350	56.99	818	480
56.48	818	353	57.00	818	483
56.49	818	357	57.01	818	485
56.50	818	360	57.02	818	488
56.51	818	362	57.03	818	490
56.52	818	365	57.04	818	492
56.53	818	367	57.05	818	495
56.54	818	370	57.06	818	497
56.55	818	372	57.07	818	500
56.56	818	375	57.08	818	502
56.57	818	377	57.09	818	505
56.58	818	380	57.10	818	507
56.59	818	382	57.11	818	510
56.60	818	384	57.12	818	512
56.61	818	387	57.13	818	515
56.62	818	389	57.14	818	517
56.63	818	392	57.15	818	519
56.64	818	394	57.16	818	522
56.65	818	397	57.17	818	524
56.66	818	399	57.18	818	527
56.67	818	402	57.19	818	529
56.68	818	404	57.20	818	532
56.69	818	407	57.21	818	534
56.70	818	409	57.22	818	537
56.71	818	411	57.23	818	539
56.72	818	414	57.24	818	542
56.73	818	416	57.25	818	544
56.74	818	419	57.26	818	546
56.75	818	421	57.27	818	549
56.76	818	424	57.28	818	551
56.77	818	426	57.29	818	554
56.78	818	429	57.30	818	556
56.79	818	431	57.31	818	559
56.80	818	434	57.32	818	561
56.81	818	436	57.33	818	564
56.82	818	438	57.34	818	566
56.83	818	441	57.35	818	569
56.84	818	443	57.36	818	571
56.85	818	446	57.37	818	573
56.86	818	448	57.38	818	576
56.87	818	451	57.39	818	578
56.88	818	453	57.40	818	581
56.89	818	456	57.41	818	583
56.90	818	458	57.42	818	586
56.91	818	461	57.43	818	588
56.92	818	463	57.44	818	591
56.93	818	465	57.45	818	593
56.94	818	468	57.46	818	596
56.95	818	470	57.47	818	598

Bottom of Filter Course

Stage-Area-Storage for Pond RG-3: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
57.48	818	600
57.49	818	603
57.50	818	605
57.51	818	608
57.52	818	610
57.53	818	613
57.54	818	615
57.55	818	618
57.56	818	620
57.57	818	622
57.58	818	625
57.59	818	627
57.60	818	630
57.61	818	632
57.62	818	635
57.63	818	637
57.64	818	640
57.65	818	642
57.66	818	645
57.67	818	647
57.68	818	649
57.69	818	652
57.70	818	654
57.71	818	657
57.72	818	659
57.73	818	662
57.74	818	664
57.75	818	667
57.76	818	669
57.77	818	672
57.78	818	674
57.79	818	676
57.80	818	679
57.81	818	681
57.82	818	684
57.83	818	686
57.84	818	689
57.85	818	691
57.86	818	694
57.87	818	696
57.88	818	699
57.89	818	701
57.90	818	703
57.91	818	706
57.92	818	708
57.93	818	711
57.94	818	713
57.95	818	716
57.96	818	718
57.97	818	721
57.98	818	723
57.99	818	726
58.00	818	728
58.01	822	736
58.02	826	744
58.03	830	753
58.04	834	761
58.05	838	769
58.06	843	778
58.07	847	786
58.08	851	795
58.09	855	803
58.10	859	812
58.11	863	820
58.12	867	829
58.13	871	838
58.14	875	847
58.15	879	855
58.16	884	864
58.17	888	873
58.18	892	882
58.19	896	891
58.20	900	900
58.21	904	909
58.22	908	918
58.23	912	927
58.24	916	936
58.25	920	945
58.26	924	955
58.27	929	964
58.28	933	973
58.29	937	982
58.30	941	992
58.31	945	1,001
58.32	949	1,011
58.33	953	1,020
58.34	957	1,030
58.35	961	1,039
58.36	965	1,049
58.37	970	1,059
58.38	974	1,068
58.39	978	1,078
58.40	982	1,088
58.41	986	1,098
58.42	990	1,108
58.43	994	1,118
58.44	998	1,128
58.45	1,002	1,138
58.46	1,006	1,148
58.47	1,010	1,158
58.48	1,015	1,168
58.49	1,019	1,178
58.50	1,023	1,188
58.51	1,027	1,198

Stage-Area-Storage for Pond RG-3: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
58.52	1,031	1,209	59.04	1,244	1,800
58.53	1,035	1,219	59.05	1,248	1,813
58.54	1,039	1,229	59.06	1,252	1,825
58.55	1,043	1,240	59.07	1,256	1,838
58.56	1,047	1,250	59.08	1,260	1,850
58.57	1,051	1,261	59.09	1,264	1,863
58.58	1,056	1,271	59.10	1,268	1,876
58.59	1,060	1,282	59.11	1,273	1,888
58.60	1,064	1,293	59.12	1,277	1,901
58.61	1,068	1,303	59.13	1,281	1,914
58.62	1,072	1,314	59.14	1,285	1,927
58.63	1,076	1,325	59.15	1,289	1,940
58.64	1,080	1,335	59.16	1,293	1,952
58.65	1,084	1,346	59.17	1,297	1,965
58.66	1,088	1,357	59.18	1,301	1,978
58.67	1,092	1,368	59.19	1,305	1,991
58.68	1,096	1,379	59.20	1,309	2,004
58.69	1,101	1,390	59.21	1,313	2,018
58.70	1,105	1,401	59.22	1,318	2,031
58.71	1,109	1,412	59.23	1,322	2,044
58.72	1,113	1,423	59.24	1,326	2,057
58.73	1,117	1,434	59.25	1,330	2,070
58.74	1,121	1,445	59.26	1,334	2,084
58.75	1,125	1,457	59.27	1,338	2,097
58.76	1,129	1,468	59.28	1,342	2,111
58.77	1,133	1,479	59.29	1,346	2,124
58.78	1,137	1,491	59.30	1,350	2,137
58.79	1,142	1,502	59.31	1,354	2,151
58.80	1,146	1,513	59.32	1,359	2,165
58.81	1,150	1,525	59.33	1,363	2,178
58.82	1,154	1,536	59.34	1,367	2,192
58.83	1,158	1,548	59.35	1,371	2,205
58.84	1,162	1,560	59.36	1,375	2,219
58.85	1,166	1,571	59.37	1,379	2,233
58.86	1,170	1,583	59.38	1,383	2,247
58.87	1,174	1,595	59.39	1,387	2,261
58.88	1,178	1,606	59.40	1,391	2,275
58.89	1,182	1,618	59.41	1,395	2,288
58.90	1,187	1,630	59.42	1,399	2,302
58.91	1,191	1,642	59.43	1,404	2,316
58.92	1,195	1,654	59.44	1,408	2,331
58.93	1,199	1,666	59.45	1,412	2,345
58.94	1,203	1,678	59.46	1,416	2,359
58.95	1,207	1,690	59.47	1,420	2,373
58.96	1,211	1,702	59.48	1,424	2,387
58.97	1,215	1,714	59.49	1,428	2,401
58.98	1,219	1,726	59.50	1,432	2,416
58.99	1,223	1,739	59.51	1,436	2,430
59.00	1,228	1,751	59.52	1,440	2,444
59.01	1,232	1,763	59.53	1,445	2,459
59.02	1,236	1,775	59.54	1,449	2,473
59.03	1,240	1,788	59.55	1,453	2,488

Stage-Area-Storage for Pond RG-3: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
59.56	1,457	2,502
59.57	1,461	2,517
59.58	1,465	2,532
59.59	1,469	2,546
59.60	1,473	2,561
59.61	1,477	2,576
59.62	1,481	2,591
59.63	1,485	2,605
59.64	1,490	2,620
59.65	1,494	2,635
59.66	1,498	2,650
59.67	1,502	2,665
59.68	1,506	2,680
59.69	1,510	2,695
59.70	1,514	2,710
59.71	1,518	2,726
59.72	1,522	2,741
59.73	1,526	2,756
59.74	1,531	2,771
59.75	1,535	2,787
59.76	1,539	2,802
59.77	1,543	2,817
59.78	1,547	2,833
59.79	1,551	2,848
59.80	1,555	2,864
59.81	1,559	2,879
59.82	1,563	2,895
59.83	1,567	2,911
59.84	1,571	2,926
59.85	1,576	2,942
59.86	1,580	2,958
59.87	1,584	2,974
59.88	1,588	2,990
59.89	1,592	3,005
59.90	1,596	3,021
59.91	1,600	3,037
59.92	1,604	3,053
59.93	1,608	3,069
59.94	1,612	3,086
59.95	1,617	3,102
59.96	1,621	3,118
59.97	1,625	3,134
59.98	1,629	3,150
59.99	1,633	3,167
60.00	1,637	3,183
60.01	1,642	3,199
60.02	1,647	3,216
60.03	1,651	3,232
60.04	1,656	3,249
60.05	1,661	3,265
60.06	1,666	3,282
60.07	1,671	3,299
60.08	1,675	3,316
60.09	1,680	3,332
60.10	1,685	3,349
60.11	1,690	3,366
60.12	1,695	3,383
60.13	1,699	3,400
60.14	1,704	3,417
60.15	1,709	3,434
60.16	1,714	3,451
60.17	1,719	3,468
60.18	1,723	3,485
60.19	1,728	3,503
60.20	1,733	3,520
60.21	1,738	3,537
60.22	1,743	3,555
60.23	1,747	3,572
60.24	1,752	3,590
60.25	1,757	3,607
60.26	1,762	3,625
60.27	1,767	3,643
60.28	1,771	3,660
60.29	1,776	3,678
60.30	1,781	3,696
60.31	1,786	3,714
60.32	1,791	3,731
60.33	1,795	3,749
60.34	1,800	3,767
60.35	1,805	3,785
60.36	1,810	3,803
60.37	1,815	3,822
60.38	1,819	3,840
60.39	1,824	3,858
60.40	1,829	3,876
60.41	1,834	3,895
60.42	1,839	3,913
60.43	1,843	3,931
60.44	1,848	3,950
60.45	1,853	3,968
60.46	1,858	3,987
60.47	1,863	4,005
60.48	1,867	4,024
60.49	1,872	4,043
60.50	1,877	4,062
60.51	1,882	4,080
60.52	1,887	4,099
60.53	1,891	4,118
60.54	1,896	4,137
60.55	1,901	4,156
60.56	1,906	4,175
60.57	1,911	4,194
60.58	1,915	4,213
60.59	1,920	4,232

Ewqv (excluding volume below filter course

First Outlet

Stage-Area-Storage for Pond RG-3: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
60.60	1,925	4,252	61.12	2,175	5,318
60.61	1,930	4,271	61.13	2,179	5,339
60.62	1,935	4,290	61.14	2,184	5,361
60.63	1,939	4,310	61.15	2,189	5,383
60.64	1,944	4,329	61.16	2,194	5,405
60.65	1,949	4,348	61.17	2,199	5,427
60.66	1,954	4,368	61.18	2,203	5,449
60.67	1,959	4,388	61.19	2,208	5,471
60.68	1,963	4,407	61.20	2,213	5,493
60.69	1,968	4,427	61.21	2,218	5,515
60.70	1,973	4,447	61.22	2,223	5,537
60.71	1,978	4,466	61.23	2,227	5,560
60.72	1,983	4,486	61.24	2,232	5,582
60.73	1,987	4,506	61.25	2,237	5,604
60.74	1,992	4,526	61.26	2,242	5,627
60.75	1,997	4,546	61.27	2,247	5,649
60.76	2,002	4,566	61.28	2,251	5,672
60.77	2,007	4,586	61.29	2,256	5,694
60.78	2,011	4,606	61.30	2,261	5,717
60.79	2,016	4,626	61.31	2,266	5,739
60.80	2,021	4,646	61.32	2,271	5,762
60.81	2,026	4,666	61.33	2,275	5,785
60.82	2,031	4,687	61.34	2,280	5,808
60.83	2,035	4,707	61.35	2,285	5,830
60.84	2,040	4,727	61.36	2,290	5,853
60.85	2,045	4,748	61.37	2,295	5,876
60.86	2,050	4,768	61.38	2,299	5,899
60.87	2,055	4,789	61.39	2,304	5,922
60.88	2,059	4,809	61.40	2,309	5,945
60.89	2,064	4,830	61.41	2,314	5,968
60.90	2,069	4,851	61.42	2,319	5,991
60.91	2,074	4,871	61.43	2,323	6,015
60.92	2,079	4,892	61.44	2,328	6,038
60.93	2,083	4,913	61.45	2,333	6,061
60.94	2,088	4,934	61.46	2,338	6,085
60.95	2,093	4,955	61.47	2,343	6,108
60.96	2,098	4,976	61.48	2,347	6,131
60.97	2,103	4,997	61.49	2,352	6,155
60.98	2,107	5,018	61.50	2,357	6,179
60.99	2,112	5,039	61.51	2,362	6,202
61.00	2,117	5,060	61.52	2,367	6,226
61.01	2,122	5,081	61.53	2,371	6,249
61.02	2,127	5,102	61.54	2,376	6,273
61.03	2,131	5,124	61.55	2,381	6,297
61.04	2,136	5,145	61.56	2,386	6,321
61.05	2,141	5,166	61.57	2,391	6,345
61.06	2,146	5,188	61.58	2,395	6,369
61.07	2,151	5,209	61.59	2,400	6,393
61.08	2,155	5,231	61.60	2,405	6,417
61.09	2,160	5,252	61.61	2,410	6,441
61.10	2,165	5,274	61.62	2,415	6,465
61.11	2,170	5,296	61.63	2,419	6,489

Stage-Area-Storage for Pond RG-3: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
61.64	2,424	6,513
61.65	2,429	6,537
61.66	2,434	6,562
61.67	2,439	6,586
61.68	2,443	6,611
61.69	2,448	6,635
61.70	2,453	6,660
61.71	2,458	6,684
61.72	2,463	6,709
61.73	2,467	6,733
61.74	2,472	6,758
61.75	2,477	6,783
61.76	2,482	6,808
61.77	2,487	6,832
61.78	2,491	6,857
61.79	2,496	6,882
61.80	2,501	6,907
61.81	2,506	6,932
61.82	2,511	6,957
61.83	2,515	6,982
61.84	2,520	7,008
61.85	2,525	7,033
61.86	2,530	7,058
61.87	2,535	7,083
61.88	2,539	7,109
61.89	2,544	7,134
61.90	2,549	7,160
61.91	2,554	7,185
61.92	2,559	7,211
61.93	2,563	7,236
61.94	2,568	7,262
61.95	2,573	7,288
61.96	2,578	7,314
61.97	2,583	7,339
61.98	2,587	7,365
61.99	2,592	7,391
62.00	**2,597**	**7,417**

Stage-Discharge for Pond RG-3: (continued)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
59.56	2.21	60.08	2.38	60.60	3.75	61.12	5.72
59.57	2.21	60.09	2.38	60.61	3.82	61.13	5.74
59.58	2.21	60.10	2.38	60.62	3.88	61.14	5.77
59.59	2.22	60.11	2.39	60.63	3.93	61.15	5.80
59.60	2.22	60.12	2.39	60.64	3.99	61.16	5.82
59.61	2.22	60.13	2.39	60.65	4.04	61.17	5.85
59.62	2.23	60.14	2.40	60.66	4.09	61.18	5.88
59.63	2.23	60.15	2.40	60.67	4.14	61.19	5.90
59.64	2.23	60.16	2.40	60.68	4.19	61.20	5.93
59.65	2.24	60.17	2.41	60.69	4.24	61.21	5.95
59.66	2.24	60.18	2.41	60.70	4.29	61.22	5.98
59.67	2.24	60.19	2.41	60.71	4.33	61.23	6.01
59.68	2.25	60.20	2.42	60.72	4.38	61.24	6.03
59.69	2.25	60.21	2.42	60.73	4.42	61.25	6.06
59.70	2.25	60.22	2.42	60.74	4.46	61.26	6.08
59.71	2.26	60.23	2.43	60.75	4.50	61.27	6.11
59.72	2.26	60.24	2.43	60.76	4.54	61.28	6.13
59.73	2.26	60.25	2.43	60.77	4.58	61.29	6.16
59.74	2.27	60.26	2.44	60.78	4.62	61.30	6.18
59.75	2.27	60.27	2.44	60.79	4.66	61.31	6.20
59.76	2.27	60.28	2.44	60.80	4.70	61.32	6.23
59.77	2.28	60.29	2.45	60.81	4.74	61.33	6.25
59.78	2.28	60.30	2.45	60.82	4.78	61.34	6.28
59.79	2.28	60.31	2.45	60.83	4.81	61.35	6.30
59.80	2.29	60.32	2.46	60.84	4.85	61.36	6.32
59.81	2.29	60.33	2.46	60.85	4.88	61.37	6.35
59.82	2.29	60.34	2.46	60.86	4.92	61.38	6.37
59.83	2.30	60.35	2.47	60.87	4.95	61.39	6.39
59.84	2.30	60.36	2.47	60.88	4.99	61.40	6.42
59.85	2.30	60.37	2.47	60.89	5.02	61.41	6.44
59.86	2.31	60.38	2.48	60.90	5.06	61.42	6.46
59.87	2.31	60.39	2.48	60.91	5.09	61.43	6.49
59.88	2.31	60.40	2.48	60.92	5.12	61.44	6.51
59.89	2.32	60.41	2.49	60.93	5.15	61.45	6.53
59.90	2.32	60.42	2.49	60.94	5.19	61.46	6.55
59.91	2.32	60.43	2.49	60.95	5.22	61.47	6.58
59.92	2.32	60.44	2.50	60.96	5.25	61.48	6.60
59.93	2.33	60.45	2.50	60.97	5.28	61.49	6.62
59.94	2.33	60.46	2.50	60.98	5.31	61.50	6.64
59.95	2.33	60.47	2.51	60.99	5.34	61.51	6.67
59.96	2.34	60.48	2.51	61.00	5.37	61.52	6.69
59.97	2.34	60.49	2.51	61.01	5.40	61.53	6.71
59.98	2.34	60.50	2.52	61.02	5.43	61.54	6.73
59.99	2.35	60.51	2.64	61.03	5.46	61.55	6.75
60.00	2.35	60.52	2.87	61.04	5.49	61.56	6.78
60.01	2.35	60.53	3.17	61.05	5.52	61.57	6.80
60.02	2.36	60.54	3.29	61.06	5.55	61.58	6.82
60.03	2.36	60.55	3.39	61.07	5.58	61.59	6.84
60.04	2.36	60.56	3.47	61.08	5.61	61.60	6.86
60.05	2.37	60.57	3.55	61.09	5.63	61.61	6.88
60.06	2.37	60.58	3.62	61.10	5.66	61.62	6.90
60.07	2.37	60.59	3.69	61.11	5.69	61.63	6.92

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)

2.80	ac	A = Area draining to the practice
2.07	ac	A_I = Impervious area draining to the practice
0.74	decimal	I = Percent impervious area draining to the practice, in decimal form
0.72	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
2.00	ac-in	WQV= 1" x Rv x A
7,271	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".
0.72	inches	Q = Water quality depth. Q = WQV/A
97	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.3	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.059	inches	Ia = Initial abstraction. Ia = 0.2S
5.6	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.
2.003	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 1.0 WATERSHED

JFF-1 and CDS-1

Proprietary Pretreatment device located upstream of underground detention.

Pretreatment Device - Contech CDS Model 3020-6 (designed to treat maximum 2.0 cfs)

Treatment Device - Contech Jellyfish Filter Model JFPD080810-3 (designed to treat maximum 2.05 cfs)

Upstream bypass pipe invert set based on elevation of WQF (refer to stage-storage table)

Stage-Discharge for Pond PDHM19: PDMH19

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
58.65	0.00	0.00	0.00
58.75	0.03	0.03	0.00
58.85	0.14	0.14	0.00
58.95	0.30	0.30	0.00
59.05	0.51	0.51	0.00
59.15	0.77	0.77	0.00
59.25	1.08	1.08	0.00
59.35	1.42	1.42	0.00
59.45	1.80	1.80	0.00
59.55	2.20	2.20	0.00
59.65	2.62	2.62	0.00
59.75	3.06	3.06	0.00
59.85	3.50	3.50	0.00
59.95	3.94	3.94	0.00
60.05	4.37	4.36	0.02
60.15	4.88	4.74	0.14
60.25	5.45	5.06	0.39
60.35	6.11	5.36	0.74
60.45	7.08	5.87	1.21
60.55	8.11	6.34	1.76
60.65	9.12	6.78	2.34
60.75	10.15	7.18	2.97
60.85	11.07	7.42	3.66
60.95	12.04	7.65	4.40
61.05	13.05	7.87	5.18
61.15	14.10	8.09	6.01
61.25	15.17	8.30	6.87
61.35	16.27	8.51	7.76
61.45	17.40	8.71	8.69
61.55	18.54	8.91	9.63
61.65	19.70	9.11	10.59
61.75	20.86	9.30	11.56
61.85	22.02	9.48	12.54
61.95	23.17	9.66	13.50
62.05	24.30	9.84	14.46
62.15	25.41	10.02	15.39
62.25	26.48	10.19	16.29
62.35	27.50	10.36	17.14
62.45	28.44	10.53	17.91
62.55	29.28	10.69	18.58
62.65	29.92	10.86	19.06
62.75	30.95	11.01	19.93
62.85	31.75	11.17	20.57
62.95	32.45	11.33	21.12
63.05	33.14	11.48	21.66
63.15	33.81	11.63	22.18
63.25	34.47	11.78	22.69
63.35	35.12	11.93	23.19
63.45	35.75	12.07	23.68
63.55	36.37	12.22	24.16
63.65	36.98	12.36	24.62
63.75	37.58	12.50	25.08
63.85	38.18	12.64	25.54
63.95	38.76	12.78	25.98
64.05	39.33	12.91	26.42
64.15	39.89	13.05	26.85
64.25	40.45	13.18	27.27
64.35	41.00	13.31	27.69
64.45	41.54	13.44	28.10
64.55	42.07	13.57	28.50
64.65	42.60	13.70	28.90
64.75	43.12	13.83	29.29
64.85	43.63	13.95	29.68
64.95	44.14	14.08	30.06
65.05	44.64	14.20	30.44
65.15	45.14	14.32	30.82
65.25	45.63	14.44	31.18
65.35	46.11	14.56	31.55
65.45	46.59	14.68	31.91
65.55	**47.07**	**14.80**	**32.27**

60.00 elevation of bypass

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)

3.65	ac	A = Area draining to the practice
2.75	ac	A_I = Impervious area draining to the practice
0.75	decimal	I = Percent impervious area draining to the practice, in decimal form
0.73	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
2.66	ac-in	WQV= 1" x Rv x A
9,647	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".
0.73	inches	Q = Water quality depth. Q = WQV/A
97	unitless	CN = Unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.3	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.056	inches	Ia = Initial abstraction. Ia = 0.2S
8.8	minutes	T_c = Time of Concentration
620.0	$cfs/mi^2/in$	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
2.574	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$.

Designer's Notes: POST 3.0 WATERSHED + POST 3.10 WATERSHED
PJFF-2 AND PCDS-2

Pretreatment Device - Contech CDS Model 3030-6 (designed to treat maximum 3.0 cfs)

Treatment Device - Contech Jellyfish Filter Model JFPD0808-13-3 (designed to treat maximum 2.58 cfs)
Upstream bypass pipe invert set based on elevation of WQF (refer to stage-storage table)

**NOTE: POST 3.10 Watershed represents an abutting lot (the Hampton Inn).
Pre-development, the drainage from this watershed connects to a shared water quality unit
on the subject property. That water quality unit does not provide sufficient treatment to contemporary
standards. Post-development, the drainage from this abutter is proposed to reconnect to the revised
and upgraded stormwater system for sufficient treatment. However, the watershed area of POST 3.10
has been reduced to 30% of the total (for the sake of calculating applicable WQF only)
as it represents an existing off-site area that meets the general "redevelopment"
criteria listed under sections Env-Wq 1502.53 and Env-Wq 1507.03 (i)(1).

Stage-Discharge for Pond PDMH3: PDMH3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
59.35	0.00	0.00	0.00
59.45	0.03	0.03	0.00
59.55	0.13	0.13	0.00
59.65	0.29	0.29	0.00
59.75	0.50	0.50	0.00
59.85	0.76	0.76	0.00
59.95	1.07	1.07	0.00
60.05	1.41	1.41	0.00
60.15	1.78	1.78	0.00
60.25	2.18	2.18	0.00
60.35	2.61	2.61	0.00
60.45	3.12	3.04	0.08
60.55	3.79	3.48	0.31
60.65	4.60	3.91	0.69
60.75	5.52	4.33	1.19
60.85	6.47	4.72	1.75
60.95	7.44	5.03	2.41
61.05	8.48	5.33	3.15
61.15	9.81	5.83	3.97
61.25	11.17	6.30	4.87
61.35	12.58	6.74	5.85
61.45	14.04	7.14	6.89
61.55	15.43	7.42	8.01
61.65	16.84	7.65	9.19
61.75	18.31	7.87	10.43
61.85	19.83	8.09	11.74
61.95	21.40	8.30	13.09
62.05	23.01	8.51	14.50
62.15	24.68	8.71	15.96
62.25	26.38	8.91	17.47
62.35	28.12	9.11	19.01
62.45	29.89	9.30	20.59
62.55	31.69	9.48	22.21
62.65	33.52	9.66	23.86
62.75	35.37	9.84	25.53
62.85	37.24	10.02	27.22
62.95	39.11	10.19	28.92
63.05	41.00	10.36	30.64
63.15	42.89	10.53	32.36
63.25	44.77	10.69	34.07
63.35	46.64	10.86	35.78
63.45	48.49	11.01	37.47
63.55	50.31	11.17	39.14
63.65	52.10	11.33	40.78
63.75	53.85	11.48	42.37
63.85	55.53	11.63	43.90
63.95	57.14	11.78	45.36
64.05	58.65	11.93	46.73
64.15	60.04	12.07	47.97
64.25	61.26	12.22	49.05
64.35	62.14	12.36	49.78
64.45	64.31	12.50	51.81
64.55	66.41	12.64	53.77
64.65	68.43	12.78	55.66
64.75	70.40	12.91	57.48
64.85	72.00	13.05	58.95
64.95	73.10	13.18	59.92
65.05	74.20	13.31	60.88
65.15	75.27	13.44	61.83
65.25	76.33	13.57	62.76
65.35	77.37	13.70	63.67
65.45	**78.40**	**13.83**	**64.58**

Elevation of bypass

Section 7
Groundwater Recharge Volume Calculations

As described in the following Groundwater Recharge Volume (GRV) worksheet, additional GRV is not required for this site per Env-Wq 1504.12 as impervious surfaces are reduced within a common hydrologic soil group (HSG). However, soil infiltration testing (included under Appendix B) within the areas proximate to each proposed rain garden shows that soils may allow for some level of infiltration. To remain conservative in the site design, infiltration was not claimed in the drainage model.

GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

-	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
-	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
-	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
-	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
-	inches	Rd = Weighted groundwater recharge depth	
-	ac-in	GRV = AI * Rd	
-	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

There is an overall net reduction in impervious area in the post-development condition compared to the pre-development condition (Ai <0), and all disturbances to site occur within one hydrologic soil group, therefore no additional groundwater recharge volume is required.

APPENDIX A

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

April 4, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

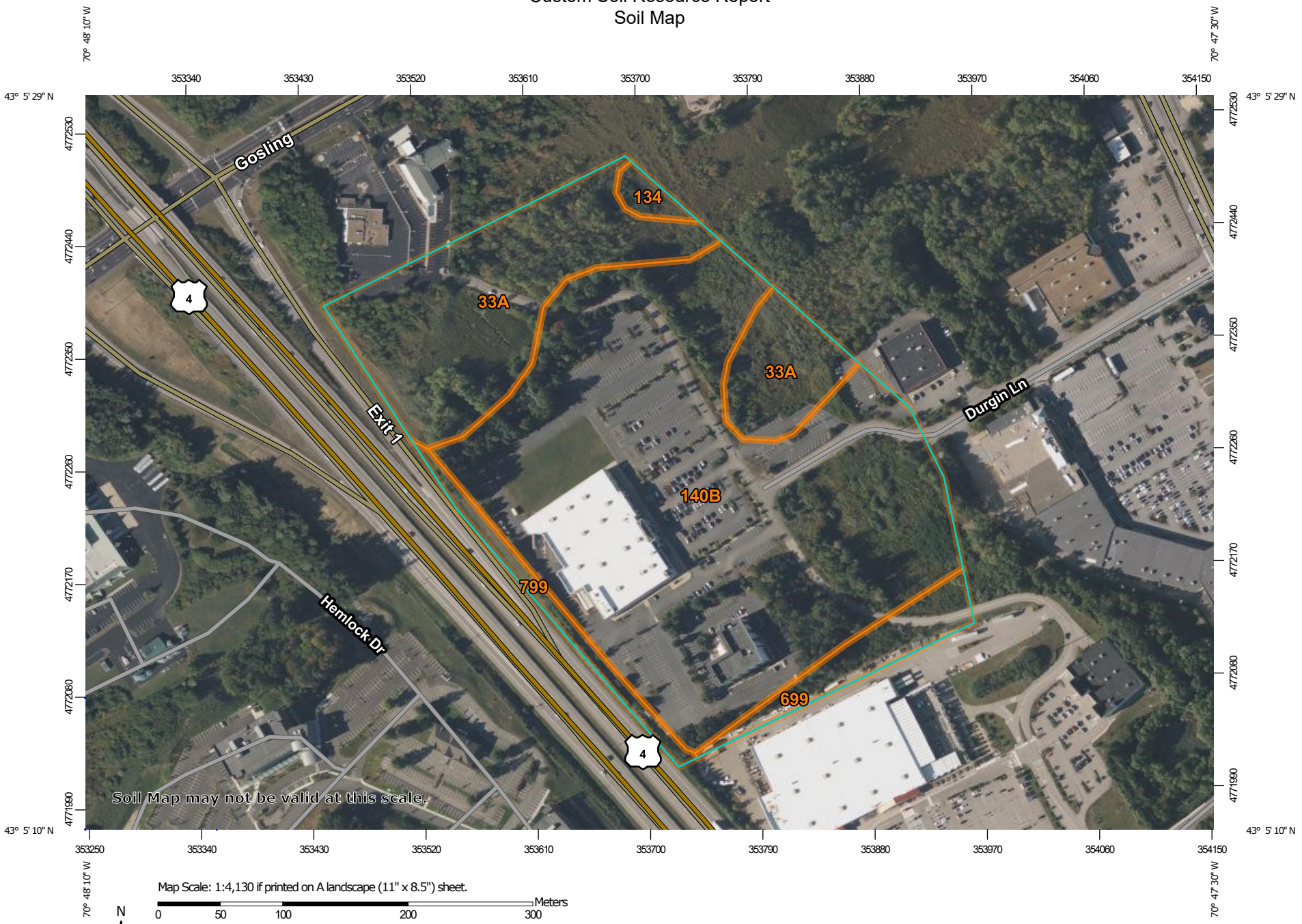
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,130 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
33A	Scitico silt loam, 0 to 5 percent slopes	8.9	25.6%
134	Maybid silt loam	0.4	1.1%
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	23.0	66.0%
699	Urban land	1.6	4.5%
799	Urban land-Canton complex, 3 to 15 percent slopes	1.0	2.9%
Totals for Area of Interest		**34.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

33A—Scitico silt loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9cn6
Elevation: 0 to 180 feet
Mean annual precipitation: 47 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Farmland of local importance

Map Unit Composition

Scitico and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scitico

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 12 inches: silty clay loam
H3 - 12 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Maybid

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces

Hydric soil rating: Yes

Boxford

Percent of map unit: 5 percent
Hydric soil rating: No

134—Maybid silt loam

Map Unit Setting

National map unit symbol: 9cmg
Elevation: 0 to 180 feet
Mean annual precipitation: 47 to 50 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Maybid and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maybid

Setting

Landform: Marine terraces
Parent material: Silty and clayey marine deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 26 inches: silty clay loam
H3 - 26 to 63 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Ecological site: F144AY020MA - Very Wet Coastal Lake Plain
Hydric soil rating: Yes

Minor Components

Ossipee
Percent of map unit: 10 percent
Landform: Swamps
Hydric soil rating: Yes

Scitico
Percent of map unit: 10 percent
Landform: Marine terraces
Hydric soil rating: Yes

Not named wet
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

Map Unit Setting
National map unit symbol: 2w82m
Elevation: 380 to 1,070 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Chatfield, very stony, and similar soils: 35 percent
Canton, very stony, and similar soils: 25 percent
Hollis, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting
Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile
Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Freetown

Percent of map unit: 5 percent
Landform: Swamps, kettles, bogs, depressions, marshes
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent
Landform: Moraines, hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope

Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Walpole, very stony

Percent of map unit: 3 percent
Landform: Outwash terraces, depressions, outwash plains, depressions, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Hills, ridges
Hydric soil rating: Unranked

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

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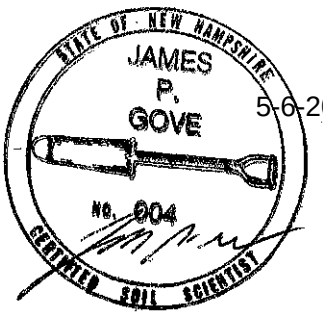
APPENDIX B

GOVE ENVIRONMENTAL SERVICES, INC

SITE-SPECIFIC SOIL SURVEY REPORT
For
100 Durgin Lane, Portsmouth, NH
By
GES, Inc.
Project # 2023156
Date:



5-6-2024

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 7.0, July, 2021.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. The soil map was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. This report accompanies the soil map.

The site-specific soil map (SSSM) was produced 05-06-24; prepared by JP Gove, CSS #004, GES, Inc.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Map symbols, based upon SSSNNE Special Publication 1, December 2017, were added to the Soil Legend.

Scale of soil map: Approximately 1" = 40'.

Contours Interval: 2 feet

2. LANDFORMS & EXISTING CONDITIONS:

The site is located on a flat commercial site covered with buildings and pavement, or previous surfaces are fill with the exception of the wetlands and one glacial till hill. The purpose of this soil survey is to characterize the soil conditions that lay below the pavement or buildings. A combination of test pits and borings were used to prepare the subsurface soil map.

3. DATE SOIL MAP PRODUCED

Date(s) of on-site field work: 3-22-24 and 4-30-24

Date(s) of test pits: 4-30-24 (test pits) and November-December of 2023 (borings)

Test pits recorded by: Test pits recorded by James Gove and boring by S. W. Cole Engineering, Inc.

4. GEOGRAPHIC LOCATION AND SIZE OF SITE

City or town where soil mapping was conducted: Portsmouth

Location: 100 Durgin Lane

Size of area: Approximately 23 acres

Was the map for the entire lot? No

If no, where was the mapping conducted on the parcel: The area of proposed redevelopment

5. PURPOSE OF THE SOIL MAP

Was the map prepared to meet the requirement of Alteration of Terrain? Yes

If no, what was the purpose of the map? N/A

Who was the map prepared for? Tighe & Bond

6. SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group
42	Canton fine sandy loam	221	B
33	Scitico silt loam	353	C
299caabb	Udorthents, smoothed	261	B
	c=well drained, a=no natural soil within 60", a=no restrictive layer, b=moderate Ksat, b=Group B		
500dcabb	Udorthents, loamy	361	B
	d=moderately well drained, c=glacial till, a=no restrictive layer, b=moderate Ksat, b=Group B		

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%-50%	E	50%+	F		

7. NARRATIVE MAP UNIT DESCRIPTIONS

SITE-SPECIFIC MAP UNIT: 42

CORRELATED SOIL SERIES: Canton fine sandy loam

LANDSCAPE SETTING: Glacial till hill

CHARACTERISTIC SURFACE FEATURES: Forested and gently sloping

DRAINAGE CLASS: Well drained

PARENT MATERIAL: Loose glacial till

NATURE OF DISSIMILAR INCLUSIONS: Moderately well drained and grading.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

A, 0-10", fine sandy loam, 10YR3/2, granular, friable, 10% gravel.

B, 10-36", fine sandy loam, 10YR4/6, granular, friable, 10% gravel.

C, 36-48", loamy sand, 2.5Y5/4, massive, friable, 10% gravel. No observed ESHWT, no observed OBSWT, kind of water table not determined, no lithic contact.

SITE-SPECIFIC MAP UNIT: 299caabb

CORRELATED SOIL SERIES: Udorthents, smoothed

LANDSCAPE SETTING: Under pavement or buildings

CHARACTERISTIC SURFACE FEATURES: Flat impervious or pervious graded edges

DRAINAGE CLASS: Well drained

PARENT MATERIAL: No natural soils in 60", but material is glacial till

NATURE OF DISSIMILAR INCLUSIONS: Sloping areas, bedrock, and created basins

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 10%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Fill, 0-48, gravelly loamy sand, 10YR4/6, massive, friable, 20% gravel and stones, no ESHWT and no OBSWT, no kind of water table determined, no lithic.

SITE-SPECIFIC MAP UNIT: 500dcabb

CORRELATED SOIL SERIES: Udorthents, loamy

LANDSCAPE SETTING: Transition from pavement to wetlands.

CHARACTERISTIC SURFACE FEATURES: Forested or fields, and gently sloping

DRAINAGE CLASS: Moderately well drained

PARENT MATERIAL: Glacial till, graded and filled

NATURE OF DISSIMILAR INCLUSIONS: Well drained and natural.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Fill 1, 0-36", gravelly loamy sand, 10YR4/6, massive, friable, 20% gravel.

Fill 2, 36-48", gravelly loamy sand, 10YR4/6, 2.5Y5/3 redox, massive, friable, 20% gravel. 36" ESHWT, no OBSWT, kind of water table is perched, no lithic contact.

8. RESPONSIBLE SOIL SCIENTIST

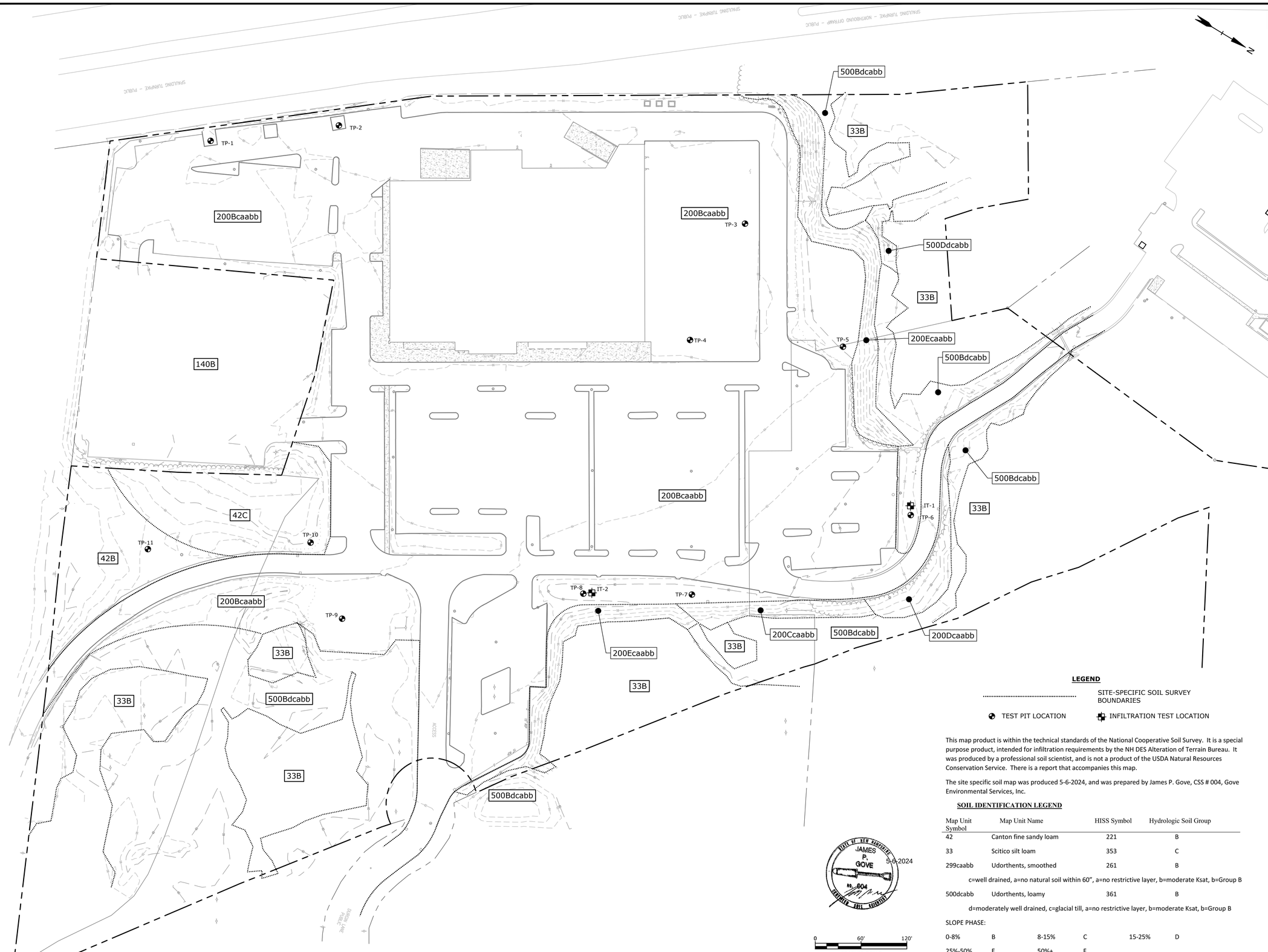
Name: James Gove

Certified Soil Scientist Number: 004

9. OTHER DISTINGUISHING FEATURES OF SITE

Is the site in a natural condition? Virtually none

If no, what is the nature of the disturbance? Filled, leveled, graded and paved.



LEGEND

SITE-SPECIFIC SOIL SURVEY BOUNDARIES

TEST PIT LOCATION

INFILTRATION TEST LOCATION

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. It was produced by a professional soil scientist, and is not a product of the USDA Natural Resources Conservation Service. There is a report that accompanies this map.

The site specific soil map was produced 5-6-2024, and was prepared by James P. Gove, CSS # 004, Gove Environmental Services, Inc.

SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group
42	Canton fine sandy loam	221	B
33	Scitico silt loam	353	C
299caabb	Udorthents, smoothed	261	B
	c=well drained, a=no natural soil within 60", a=no restrictive layer, b=moderate Ksat, b=Group B		
500dcabb	Udorthents, loamy	361	B
	d=moderately well drained, c=glacial till, a=no restrictive layer, b=moderate Ksat, b=Group B		

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%-50%	E	50%+	F		

STATE OF NEW HAMPSHIRE
JAMES P. GOVE
No. 004
CERTIFIED SOIL SCIENTIST
5-6-2024

0 60' 120'
GRAPHIC SCALE

Tighe&Bond

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

PROJECT NO:	E5071-001
DATE:	5/6/2024
FILE:	E5071-001-HYDRO.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

SITE-SPECIFIC SOIL SURVEY PLAN

SCALE: AS SHOWN

1 OF 1

Last Saved: 6/13/2024
Printed: Jun 14, 2024 - 2:34pm By: BCurcio
Tighe & Bond: \\tighebond.com\data\Data\Projects\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-HYDRO.dwg

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project 100 Durgin Lane, Portsmouth, NH
Client Eastern
GES Project No. 2023156
MM/DD/YY Staff 04-30-2024 James Gove, CSS#004

Test Pit No.	**1**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	40”	Slope:	Flat
Refusal:	40”	Parent Material:	Rocky fill
Obs. Water:	None	Hydrologic Soil Group:	B

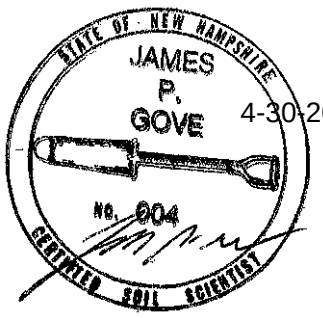
Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F 0-40”	10YR4/4	rocky loamy sand	massive-friable-none

Dark shale bedrock at 40”. Would be similar to the Chatfield soil series.

Test Pit No.	**2**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	45”	Slope:	Flat
Refusal:	45”	Parent Material:	Rocky fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F 0-45”	10YR4/3	rocky loamy sand	massive-friable-none

Shale bedrock at 45”. White pipe was exposed but no broken. Would be similar to thee Chatfield soil series.



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Test pit #2

Test Pit No.	**3**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	48”	Slope:	Flat
Refusal:	None	Parent Material:	Rocky fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F 0-48”	10YR4/6	rocky loamy sand	massive-friable-none

Typical staging area of all fill from the rest of the site. Compacted surface. Buried construction debris. Rocks were angular, as if blasted during bedrock removal. Similar to the soil series Canton.

Test pit # 3.

Test Pit No.	**4**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	48”	Slope:	Flat
Refusal:	None	Parent Material:	Rocky fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F1 0-24”	10YR4/6	rocky loamy sand	massive-friable-none
F2 24-48”	2.5Y5/4	gravelly sand	massive- friable- none

Typical staging area. Bricks and pipe buried in profile. Similar to a Canton soil series.

Test Pit No.	**5**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	48”	Slope:	Flat
Refusal:	None	Parent Material:	Rocky fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F1 0-16”	10YR3/2	rocky loamy sand	massive-friable-none
F2 16-48”	10YR4/6	rocky sandy loam	massive-friable-none

Many angular rocks, as if blasted during bedrock removal. Some boulders. Would be similar to the Canton soil series.

Test pit #6 was not accessible. Too close to guard rail and fire hydrant.

Test Pit No.	**7**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	30”	Slope:	Flat
Refusal:	None	Parent Material:	Sandy fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F 0-6”	10YR3/2	gravelly loamy sand	massive-friable-none
F2 6-18”	10YR5/6	gravelly loamy sand	massive-friable-none
F3 18-30”	10YR5/6	gravelly sand	massive-friable-none

In created detention basin/gravel wetland. Stopped at fabric that was covering drainpipe. Drainpipe was perforated and surrounded by gravelly sand.

Test pit # 7

Test Pit No.	**8**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	36”	Slope:	Flat
Refusal:	None	Parent Material:	Sandy fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F 0-4”	10YR3/2	sandy loam	massive-friable-none
F2 4-24”	10YR5/6	gravelly loamy sand	massive- friable- none
F3 24-36”	10YR4/6	gravelly sand	massive-friable-none

Detention basin/gravel wetland. Stopped at perforated drainpipe.

Test Pit No.	**9**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	48”	Slope:	Flat
Refusal:	None	Parent Material:	Rocky and sandy fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F 0-6”	10YR3/3	gravelly sand	massive-friable-none
F2 6-24”	10YR5/6	sand	massive-friable- none
F3 24-48”	10YR4/4	rocky loamy sand	massive-friable-none

Sandy rock-free fill placed over very rocky loamy sand fill.

Test Pit No.	**10**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Commercial site
Termination @	48”	Slope:	Flat
Refusal:	None	Parent Material:	Rocky fill
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
F 0-48”	10YR4/4	rocky loamy sand	massive-friable-none

Dark shale angular rocks throughout. Buried pavement. Would be similar to the Canton soil series.

Test Pit No.	**11**	Soils Series:	Canton
ESHWT::	None	Landscape:	Forested area
Termination @	48”	Slope:	Gently sloping
Refusal:	None	Parent Material:	Glacial till
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0-10”	10YR3/2	fine sandy loam	granular-friable-none
B 10-36”	10YR5/6	fine sandy loam	granular-fraible- none
C 36-48”	2.5Y5/4	gravelly loamy sand	massive-friable- none

Only natural soil recorded.

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project Durgin Lane, Portsmouth, NH
Client Eastern Location: Proposed western detention area.
GES Project No. 2023156
MM/DD/YY Staff 05-22024 James Gove, CSS#004

Test Pit No.	**Detention 1**	Soils Series:	Udorthents (made land)
ESHWT::	None	Landscape:	Slope off pavement
Termination @	67”	Slope:	D
Refusal:	no	Parent Material:	Fill over glacial till
Obs. Water:	None	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
^A 0-48”	10YR4/2	sandy loam	massive-friable-none
C 48-67”	10YR4/6	channery sandy loam	massive-friable-none

C soil layer is from the Pennichuck soil series. Topsoil and subsoil was removed and replaced with fill (^A). Pennichuck is derived from a schist glacial till.

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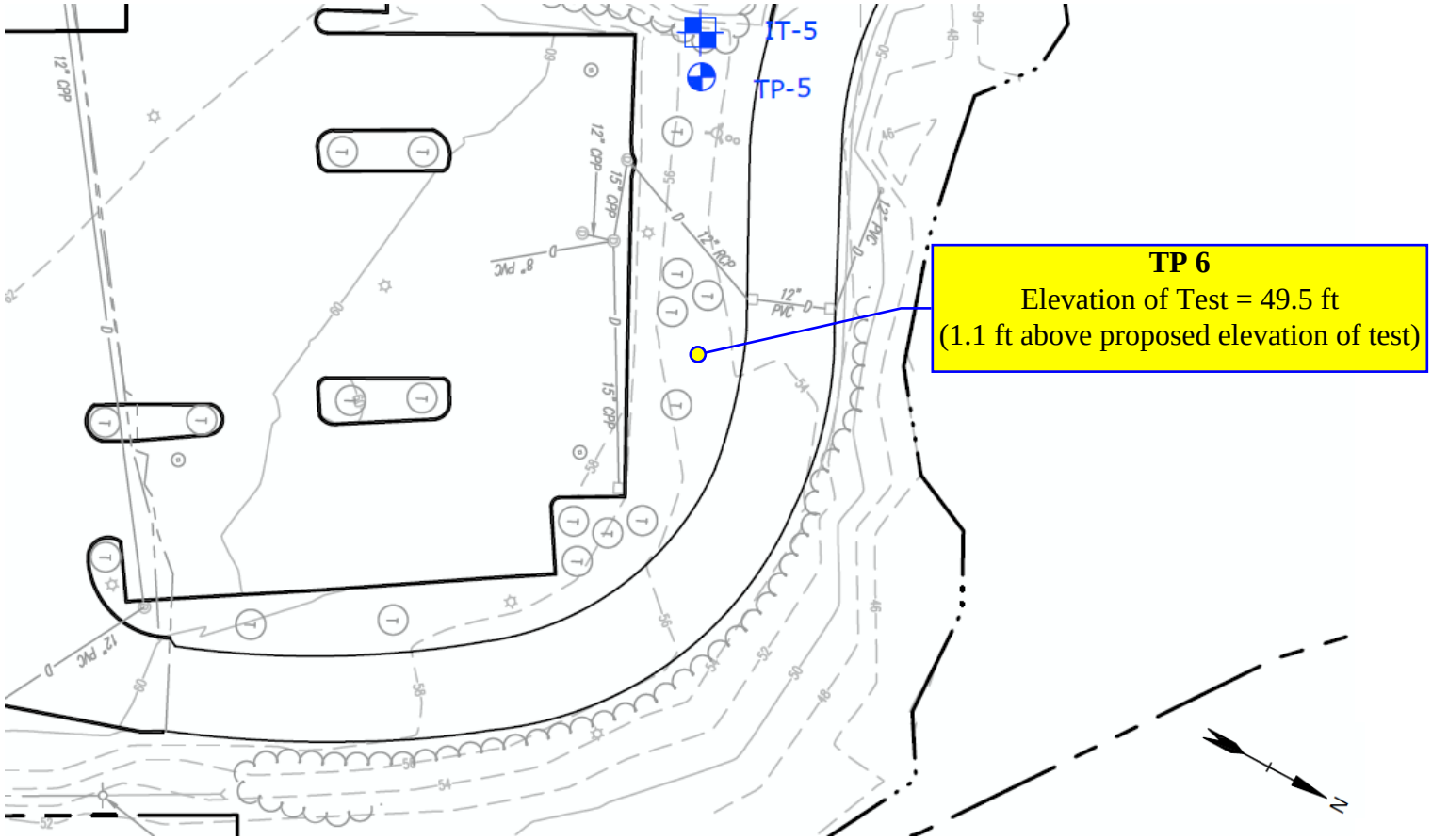
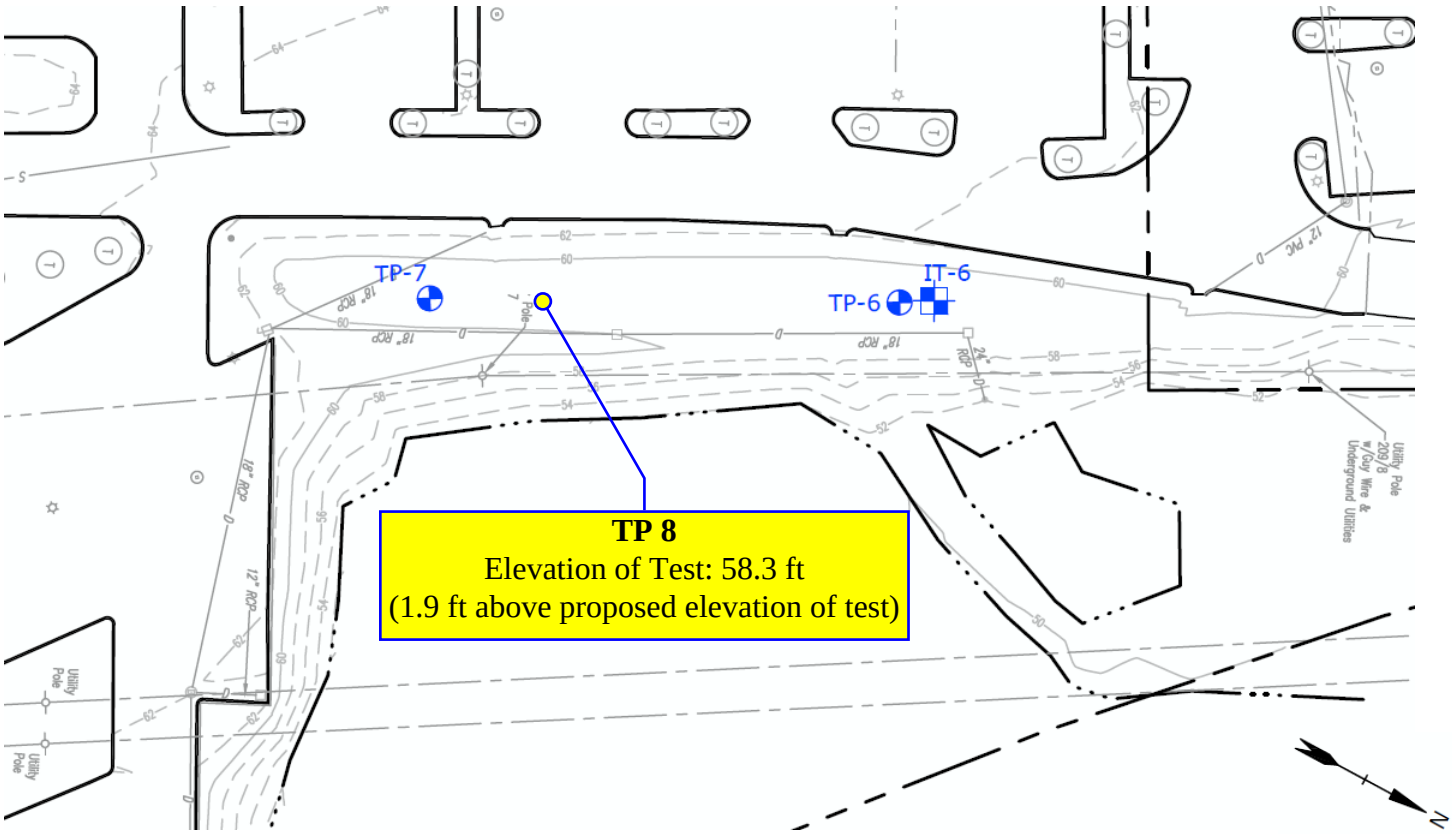


Notes: TP 6 tests were completed 1.1 ft above the proposed depth due to large stones/ fragmented fill and could not auger the proper hole needed to complete the test at the proposed depth.



Notes: TP 8 tests were completed **ABOVE** the crushed gravel. Could not go any deeper as there was crushed gravel at 24-36in. Below the gravel was large stones/fragmented fill and could not auger the proper hole needed to complete the test at the proposed depth.

INFILTRATION TEST LOCATIONS

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: 100 Durgan Lane Portsmouth

Air Temp: 74°F

Project #: 2023156

Water Source: tap water

Date: 5/29/24

Soil Moisture Content %:

Water Depth in Hole (cm)

Preformed By: BG/MM

Initial: 15 cm

Horizon: Fill

Final: 11 cm

Soil Series: Udorthents (made land)

* 15cm @ 4min

Test Location: TP 6-1

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

6-1
1 min

TP 6-1								
Time Elapsed (min)	**Water Leval Change (cm)**	**Chamber Volume (cm3)**	**min/hr**	**Q**	**H (cm)**	**A**	**Ksat (cm/hr)**	**Ksat (in/hr)**
1	1.6	105	0.0166667	10080	15	0.001056	10.64448	4.19074
2	2.5	105	0.0166667	15750	15	0.001056	16.632	6.548031
3	2.4	105	0.0166667	15120	15	0.001056	15.96672	6.28611
4	2.1	105	0.0166667	13230	15	0.001056	13.97088	5.500346
5	3.2	105	0.0166667	20160	15	0.001056	21.28896	8.38148
						Mean Ksat	15.70061	6.181342
						Std Deviation	3.896292	1.533973

Notes: Between minute 4 and 5: water in hole washes out between rocks and drops out

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: 100 Durgan Lane Portsmouth

Air Temp: 74°F

Project #: 2023156

Water Source: tap water

Date: 5/29/24

Soil Moisture Content %:

Water Depth in Hole (cm)

Preformed By: BQ/MM

Initial: 15.0 cm

Horizon: Fill

Final: 15.0 cm

Soil Series: Udorthents (middle land)

Test Location: TP 6-2

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

6-2
1min

TP 6-2								
Time Elapsed (min)	**Water Leval Change (cm)**	**Chamber Volume (cm3)**	**min/hr**	**Q**	**H (cm)**	**A**	**Ksat (cm/hr)**	**Ksat (in/hr)**
1	0.7	105	0.0166667	4410	15	0.001056	4.65696	1.833449
2	0.7	105	0.0166667	4410	15	0.001056	4.65696	1.833449
3	0.7	105	0.0166667	4410	15	0.001056	4.65696	1.833449
4	0.7	105	0.0166667	4410	15	0.001056	4.65696	1.833449
5	0.7	105	0.0166667	4410	15	0.001056	4.65696	1.833449
						Mean Ksat	4.65696	1.833449
						Std Deviation	0	2.48E-16

Notes:

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: 100 Durgan Lane Portsmouth

Air Temp: 74°F

Project #: 2023156

Water Source: tap water

Date: 5/29/24

Soil Moisture Content %:

Water Depth in Hole (cm)

Preformed By: BQ/MM

Initial: 15 cm

Horizon: Fill

Final: 16 cm

Soil Series: Udorthents (made land)

Test Location: TP 6-3

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

TP 6-3								
Time Elapsed (min)	**Water Leval Change (cm)**	**Chamber Volume (cm3)**	**min/hr**	**Q**	**H (cm)**	**A**	**Ksat (cm/hr)**	**Ksat (in/hr)**
1	0.4	105	0.0166667	2520	15	0.001056	2.66112	1.047685
2	0.3	105	0.0166667	1890	15	0.001056	1.99584	0.785764
3	0.3	105	0.0166667	1890	15	0.001056	1.99584	0.785764
4	0.3	105	0.0166667	1890	15	0.001056	1.99584	0.785764
5	0.3	105	0.0166667	1890	15	0.001056	1.99584	0.785764
6	0.3	105	0.0166667	1890	15	0.001056	1.99584	0.785764
7	0.4	105	0.0166667	2520	16	0.000961	2.42172	0.953433
						Mean Ksat	2.10672	0.829417
						Std Deviation	0.271599	0.106929

Notes:

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: 100 Durgan Lane Portsmouth

Air Temp: 66 °F

Project #: 2023156

Water Source: tap water

Date: 5/31/24

Soil Moisture Content %:

Water Depth in Hole (cm)

Preformed By: BQ/MM

Initial: 15.0 cm

Horizon: Fill

Final: 15.0 cm

Soil Series: Udorthents (made land)

Test Location: TP 8-1

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

TP 8-1								
Time Elapsed (min)	**Water Leval Change (cm)**	**Chamber Volume (cm3)**	**min/hr**	**Q**	**H (cm)**	**A**	**Ksat (cm/hr)**	**Ksat (in/hr)**
1	1	105	0.0166667	6300	15	0.001056	6.6528	2.6192
2	1.1	105	0.0166667	6930	15	0.001056	7.3181	2.8811
3	0.9	105	0.0166667	5670	15	0.001056	5.9875	2.3573
4	1	105	0.0166667	6300	15	0.001056	6.6528	2.6192
5	0.9	105	0.0166667	5670	15	0.001056	5.9875	2.3573
						Mean Ksat	6.5197	2.5668
						Std Deviation	0.5566	0.2191

Notes:

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: 100 Durgan Lane Portsmouth

Air Temp: 66 °F

Project #: 2023156

Water Source: tap water

Date: 5/31/24

Soil Moisture Content %:

Water Depth in Hole (cm)

Preformed By: BQ/MM

Initial: 15.0 cm

Horizon: Fill

Final: 15.0 cm

Soil Series: Udorthents (made land)

Test Location: TP 8-2

Outflow Chamber(s): Small (1on) ___ (20.0cm^2) Both (2on) X (105.0cm^2)

8-2
1 min

TP 8-2								
Time Elapsed (min)	**Water Leval Change (cm)**	**Chamber Volume (cm3)**	**min/hr**	**Q**	**H (cm)**	**A**	**Ksat (cm/hr)**	**Ksat (in/hr)**
1	1.4	105	0.0166667	8820	15	0.001056	9.3139	3.6669
2	1.4	105	0.0166667	8820	15	0.001056	9.3139	3.6669
3	1.4	105	0.0166667	8820	15	0.001056	9.3139	3.6669
4	1.4	105	0.0166667	8820	15	0.001056	9.3139	3.6669
5	1.3	105	0.0166667	8190	15	0.001056	8.6486	3.4050
						Mean Ksat	9.1809	3.614513
						Std Deviation	0.2975	0.1171

Notes:

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: 100 Durgan Lane Portsmouth

Air Temp: 66°F

Project #: 2023156

Water Source: tap water

Date: 5/31/24

Soil Moisture Content %:

Water Depth in Hole (cm)

Preformed By: BQ / MM

Initial: 15.0 cm

Horizon: Fill

Final: 15.2 cm

Soil Series: Udorthents (made land)

Test Location: TP 8-3

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

TP 8-3								
Time Elapsed (min)	**Water Leval Change (cm)**	**Chamber Volume (cm3)**	**min/hr**	**Q**	**H (cm)**	**A**	**Ksat (cm/hr)**	**Ksat (in/hr)**
1	2.2	105	0.0166667	13860	15	0.001056	14.6362	5.7623
2	2.5	105	0.0166667	15750	15	0.001056	16.6320	6.5480
3	2.2	105	0.0166667	13860	15	0.001056	14.6362	5.7623
4	2.2	105	0.0166667	13860	15	0.001056	14.6362	5.7623
5	2.3	105	0.0166667	14490	15.2	0.001056	15.3014	6.0242
						Mean Ksat	15.1684	5.9718
						Std Deviation	0.8674	0.3415

Notes:

APPENDIX C

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point	
Smoothing	Yes
State	New Hampshire
Location	Rockingham County, New Hampshire, United States
Latitude	43.088 degrees North
Longitude	70.798 degrees West
Elevation	10 feet
Date/Time	Tue Mar 05 2024 16:41:17 GMT-0500 (Eastern Standard Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.02	2.65	2.91	**1yr**	2.35	2.80
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.51	1.93	2.48	3.20	3.55	**2yr**	2.83	3.42
5yr	0.37	0.58	0.73	0.97	1.24	1.60	**5yr**	1.07	1.46	1.88	2.42	3.13	4.05	4.56	**5yr**	3.59	4.38
10yr	0.41	0.64	0.81	1.11	1.44	1.88	**10yr**	1.24	1.72	2.22	2.88	3.73	4.85	5.50	**10yr**	4.29	5.29
25yr	0.47	0.75	0.96	1.32	1.76	2.32	**25yr**	1.52	2.13	2.75	3.61	4.71	6.15	7.07	**25yr**	5.44	6.80
50yr	0.53	0.85	1.09	1.52	2.05	2.73	**50yr**	1.77	2.51	3.26	4.29	5.63	7.36	8.54	**50yr**	6.52	8.22
100yr	0.59	0.95	1.23	1.75	2.39	3.22	**100yr**	2.06	2.95	3.86	5.11	6.73	8.82	10.33	**100yr**	7.80	9.94
200yr	0.66	1.08	1.40	2.01	2.78	3.78	**200yr**	2.40	3.48	4.56	6.07	8.03	10.57	12.50	**200yr**	9.35	12.02
500yr	0.78	1.29	1.68	2.44	3.42	4.69	**500yr**	2.95	4.33	5.68	7.62	10.14	13.43	16.08	**500yr**	11.88	15.46

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day
1yr	0.23	0.36	0.44	0.59	0.73	0.89	**1yr**	0.63	0.87	0.92	1.32	1.66	2.22	2.49	**1yr**	1.97	2.40
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	3.44	**2yr**	2.70	3.31
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.13	2.74	3.78	4.18	**5yr**	3.34	4.02
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.81	2.40	3.07	4.36	4.85	**10yr**	3.86	4.67
25yr	0.44	0.67	0.83	1.18	1.56	1.90	**25yr**	1.34	1.86	2.10	2.78	3.56	4.68	5.89	**25yr**	4.14	5.66
50yr	0.48	0.73	0.91	1.31	1.76	2.17	**50yr**	1.52	2.12	2.35	3.10	3.97	5.29	6.80	**50yr**	4.68	6.54
100yr	0.53	0.81	1.01	1.46	2.01	2.47	**100yr**	1.73	2.42	2.63	3.45	4.40	5.94	7.86	**100yr**	5.25	7.56
200yr	0.59	0.89	1.13	1.63	2.27	2.82	**200yr**	1.96	2.75	2.93	3.84	4.86	6.65	9.08	**200yr**	5.88	8.73
500yr	0.68	1.02	1.31	1.90	2.71	3.37	**500yr**	2.34	3.29	3.40	4.40	5.56	7.72	10.98	**500yr**	6.83	10.55

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.76	1.06	1.25	1.75	2.21	2.99	3.14	**1yr**	2.64	3.02
2yr	0.33	0.52	0.64	0.86	1.06	1.26	**2yr**	0.92	1.24	1.48	1.96	2.51	3.42	3.68	**2yr**	3.02	3.54
5yr	0.40	0.61	0.76	1.04	1.33	1.61	**5yr**	1.15	1.58	1.88	2.53	3.24	4.32	4.93	**5yr**	3.82	4.74
10yr	0.46	0.71	0.88	1.24	1.60	1.96	**10yr**	1.38	1.92	2.27	3.10	3.93	5.32	6.16	**10yr**	4.71	5.92
25yr	0.57	0.87	1.08	1.54	2.02	2.55	**25yr**	1.75	2.49	2.94	4.05	5.11	7.75	8.27	**25yr**	6.86	7.95
50yr	0.66	1.01	1.26	1.80	2.43	3.09	**50yr**	2.10	3.02	3.57	4.97	6.25	9.70	10.36	**50yr**	8.58	9.96
100yr	0.78	1.17	1.47	2.13	2.91	3.76	**100yr**	2.52	3.67	4.34	6.11	7.66	12.13	12.98	**100yr**	10.74	12.48
200yr	0.91	1.37	1.73	2.50	3.49	4.58	**200yr**	3.01	4.48	5.29	7.51	9.38	15.21	16.28	**200yr**	13.46	15.65
500yr	1.12	1.67	2.15	3.12	4.44	5.93	**500yr**	3.83	5.80	6.86	9.91	12.30	20.54	21.96	**500yr**	18.18	21.11

Powered by ACIS Northeast Regional Climate Center

APPENDIX D

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	4.85	5.58
25 Year	6.15	7.07
50 Year	7.36	8.46
100 Year	8.82	10.14

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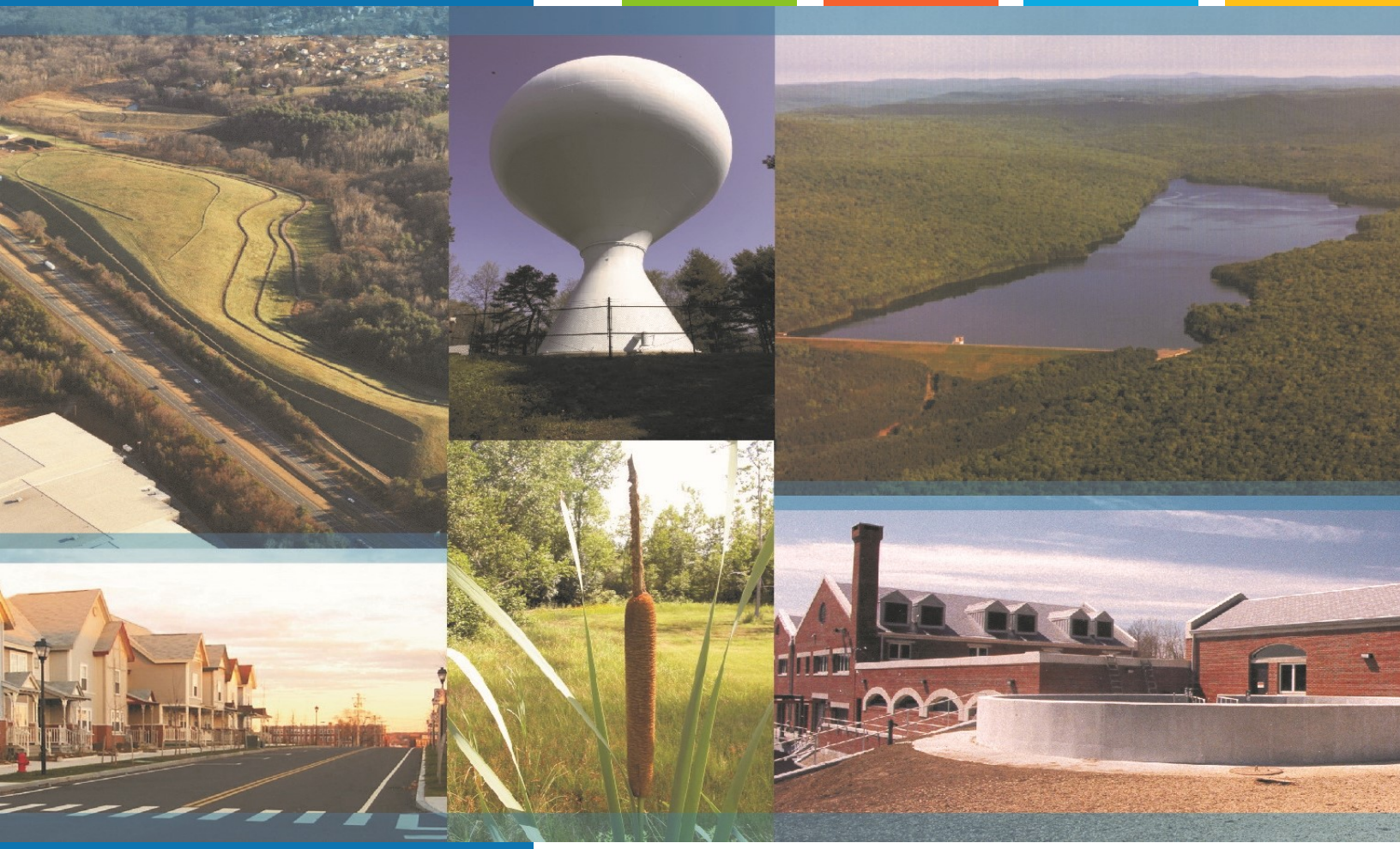

Proposed Multi-Family Development
100 Durgin Lane
Portsmouth, NH

Long-Term Operation & Maintenance Plan

100 Durgin Lane Owner, LLC

June 17, 2024

Tighe&Bond

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Table of Contents

Tighe&Bond

Section 1
Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

100 Durgin Lane Owner, LLC
1 Marina Park Drive, Suite 1500
Boston, MA 02210

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Rain Gardens
- Contech Jellyfish Filtration System
- Contech CDS Units
- Rip Rap Outlets

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Annually
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually
Rain Gardens - Trash and debris to be removed. - Any required maintenance shall be addressed.	Two (2) times annually After any rainfall event exceeding 2.5" in a 24-hr period
Contech Jelly Fish Units	In accordance with Manufacturer's Recommendations
Contech CDS Units®	In accordance with Manufacturer's Recommendations

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Rain Garden Maintenance Requirements

Rain Garden Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor to ensure that Rain Gardens function effectively after storms	Two (2) times annually and after any rainfall event exceeding 2.5" in a 24-hr period	- Trash and debris to be removed - Any required maintenance shall be addressed
Inspect Vegetation	Annually	- Inspect the condition of all Rain Garden vegetation - Prune back overgrowth - Replace dead vegetation - Remove any invasive species
Inspect Drawdown Time - The system shall drawdown within 48-hours following a rainfall event.	Annually	- Assess the condition of the facility to determine measures required to restore the filtration function, including but not limited to removal of accumulated sediments or reconstruction of the filter.

1.5 Contech Jellyfish Filter System Maintenance Requirements

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

1.6 Contech CDS Unit Maintenance Requirements

Contech Cascade Separator® Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Visual Inspection	Twice per year at a minimum (spring and fall)	-Visually inspect for blockages or obstruction in the inlet chamber, flumes or outlet channel - Sediment removal once 50% of maximum storage has been reached

1.7 Rip Rap Maintenance Requirements

Rip Rap Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Visual Inspection	Annually	- Visually inspect for damage and deterioration - Repair damages immediately

1.8 Snow & Ice Management for Standard Asphalt and Walkways

Snow storage areas shall be located such that no direct untreated discharges are possible to receiving waters from the storage site (snow storage areas have been shown on the Site Plan). Salt 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,).

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

Section 2
Chloride Management Plan

Winter Operational Guidelines

The following Chloride Management Plan is for the 100 Durgin Lane - Multifamily 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 Chloride Management Plan will be reviewed annually, in advance of the winter season, to reflect the current management standards.

2.1 Background Information

The 100 Durgin Lane - Multifamily Development located within the Upper Hodgson Brook Watershed in Newington and Portsmouth, New Hampshire. The Upper Hodgson Brook is identified as a chloride-impaired waterbody.

2.2 Operational Guidelines – Chloride Management

All 100 Durgin Lane Owner LLC private contractors engaged at the 100 Durgin Lane premises for the purposes of winter operational snow removal and surface maintenance, are responsible for assisting in meeting compliance for the following protocols. 100 Durgin Lane Owner LLC private contractors are expected to minimize the effects of the use of de-icing, anti-icing and pretreatment materials by adhering to the strict guidelines outlined below.

The 100 Durgin Lane Owner LLC winter operational de-icing, anti-icing and pretreatment materials will adhere to the following protocols:

2.2.1 Winter Operator Certification Requirements

All private contractors engaged at the 100 Durgin Lane 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 100 Durgin Lane premises for the purpose of winter operational snow removal and surface maintenance shall provide to 100 Durgin Lane Owner LLC management two copies of the annual UNHT2 Green SnowPro certificate or equivalent for each operator utilized on the 100 Durgin Lane premises. The annual UNHT2 Green SnowPro certificate or equivalent for each operator will be available on file in the 100 Durgin Lane Facilities Management office and be present in the vehicle/carrier at all times.

2.2.2 Improved Weather Monitoring

100 Durgin Lane Owner LLC will coordinate weather information for use by winter maintenance contractors. This information in conjunction with site specific air/ground surface temperature monitoring will ensure that private contractors engaged at the 100 Durgin Lane premises for the purpose of winter operational snow removal and surface maintenance will make more informed decisions as to when and to what extent de-icing, anti-icing and pretreatment materials are applied to private roadways, sidewalks, and parking lots.

2.2.3 Equipment Calibration Requirements

All equipment utilized on the 100 Durgin Lane premises for the purpose of winter operational snow removal and surface maintenance will conform to the following calibration requirements.

2.2.3.1 Annual Calibration Requirements

All private contractors engaged at the 100 Durgin Lane 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 100 Durgin Lane 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 100 Durgin Lane 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 100 Durgin Lane Owner LLC Management Team in order to accurately dispense material. All private contractors engaged at the 100 Durgin Lane premises for the purpose of winter operational snow removal and surface maintenance will be subject to spot inspections by members of the 100 Durgin Lane Owner LLC Management Team to ensure that each vehicle/carrier is operating in a manner consistent with the guidelines set herein or State and Municipal regulations. All units will be recalibrated, and the updated calibration reports will be provided each time repairs or maintenance procedures affect the hydraulic system of the vehicle/carrier.

2.2.4 Increased Mechanical Removal Capabilities

All private contractors engaged at the 100 Durgin Lane 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 100 Durgin Lane Owner LLC management team will be responsible for having the streets swept to recapture un-melted de-icing materials, when practical.

2.3 Salt Usage Evaluation and Monitoring

All private contractors engaged at the 100 Durgin Lane 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 100 Durgin Lane premises. 100 Durgin Lane Owner LLC will maintain copies of Summary Documents, including copies of the Storm Reports, operator certifications, equipment used for roadway and sidewalk winter maintenance, calibration reports and amount of de-icing materials used.

2.4 Summary

The above-described methodologies are incorporated into the 100 Durgin Lane Operational Manual and are to be used to qualify and retain all private contractors engaged at the 100 Durgin Lane 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 100 Durgin Lane Owner LLC 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 100 Durgin Lane Owner LLC employees directly involved with winter operational activities, and all private contractors engaged at the 100 Durgin Lane premises for the purposes of winter operational snow removal and surface maintenance, must be current UNHT2 Green SnowPro Certified operators or equivalent and undergo the necessary requirements to maintain this certification annually.

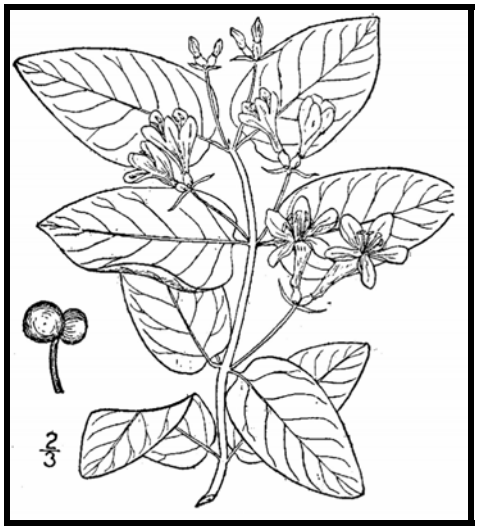
Section 3
Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

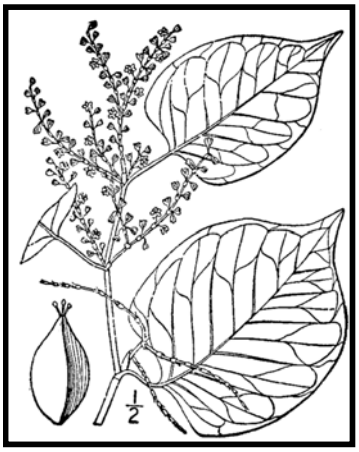
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

Non-Woody Plants	Method of Reproducing	Methods of Disposal
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)*	**Fruits and Seeds** 	**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. **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.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**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.	**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.

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.

Section 4
Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

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

Stormwater Management Report						
Multifamily Development		**100 Durgin Lane**				
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			
Jellyfish Filter 1			❑Yes ❑No			
Jellyfish Filter 2			❑Yes ❑No			
CDS Unit 1			❑Yes ❑No			
CDS Unit 2			❑Yes ❑No			
Rain Garden 1			❑Yes ❑No			
Rain Garden 2			❑Yes ❑No			
Rain Garden 3			❑Yes ❑No			

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter
Owner's Manual

Jellyfish® Filter

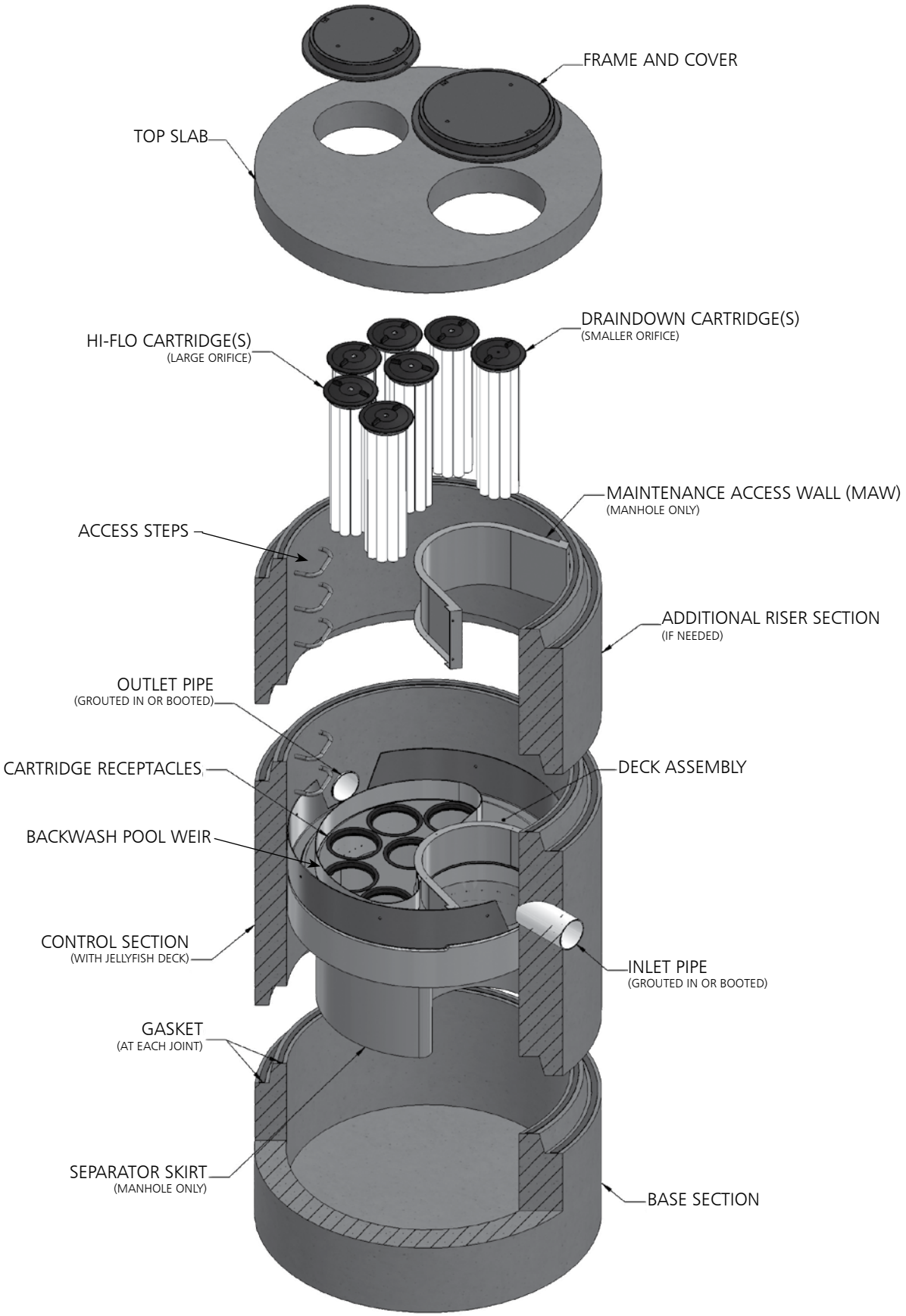
Table of Contents

THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

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

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

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


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

WARNINGS / CAUTION

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

Safety Notice

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

Confined Space Entry

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

Personal Safety Equipment

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

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

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

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

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

Notes:

_____

_____

_____

_____

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

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

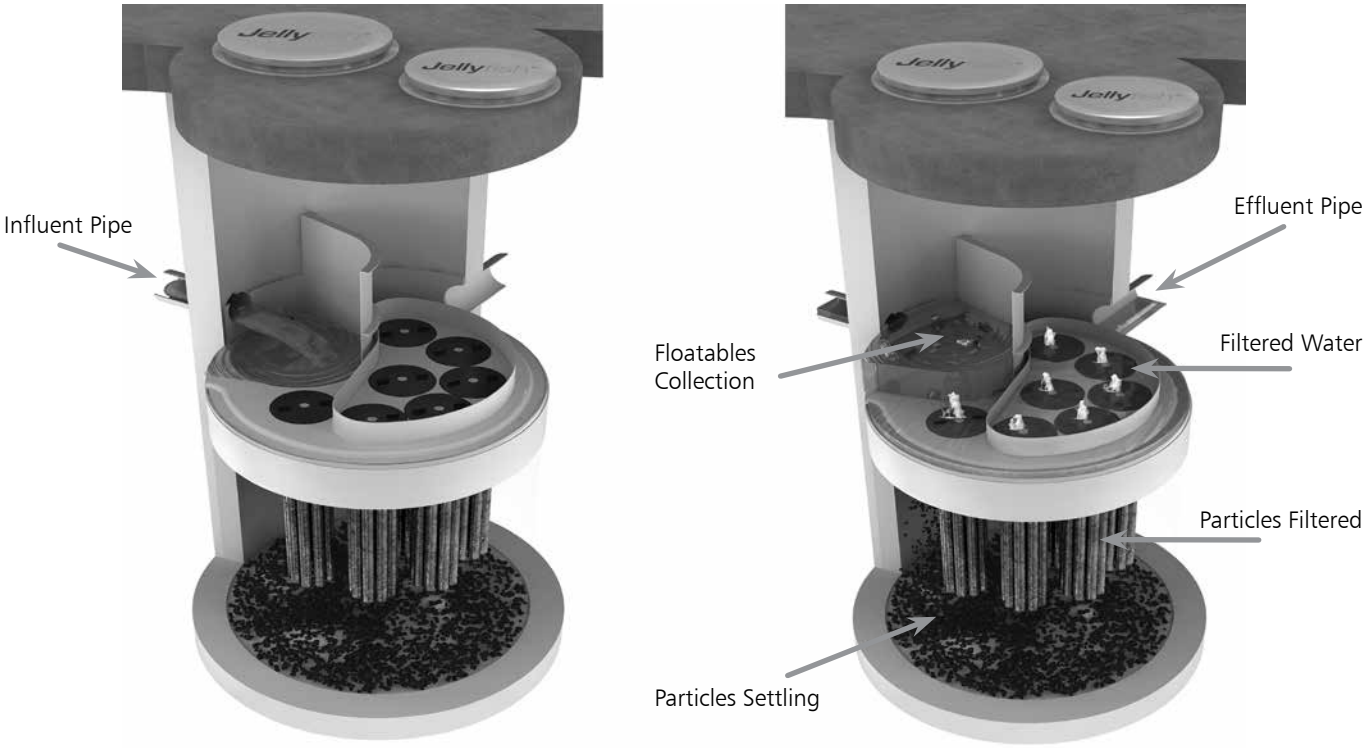
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



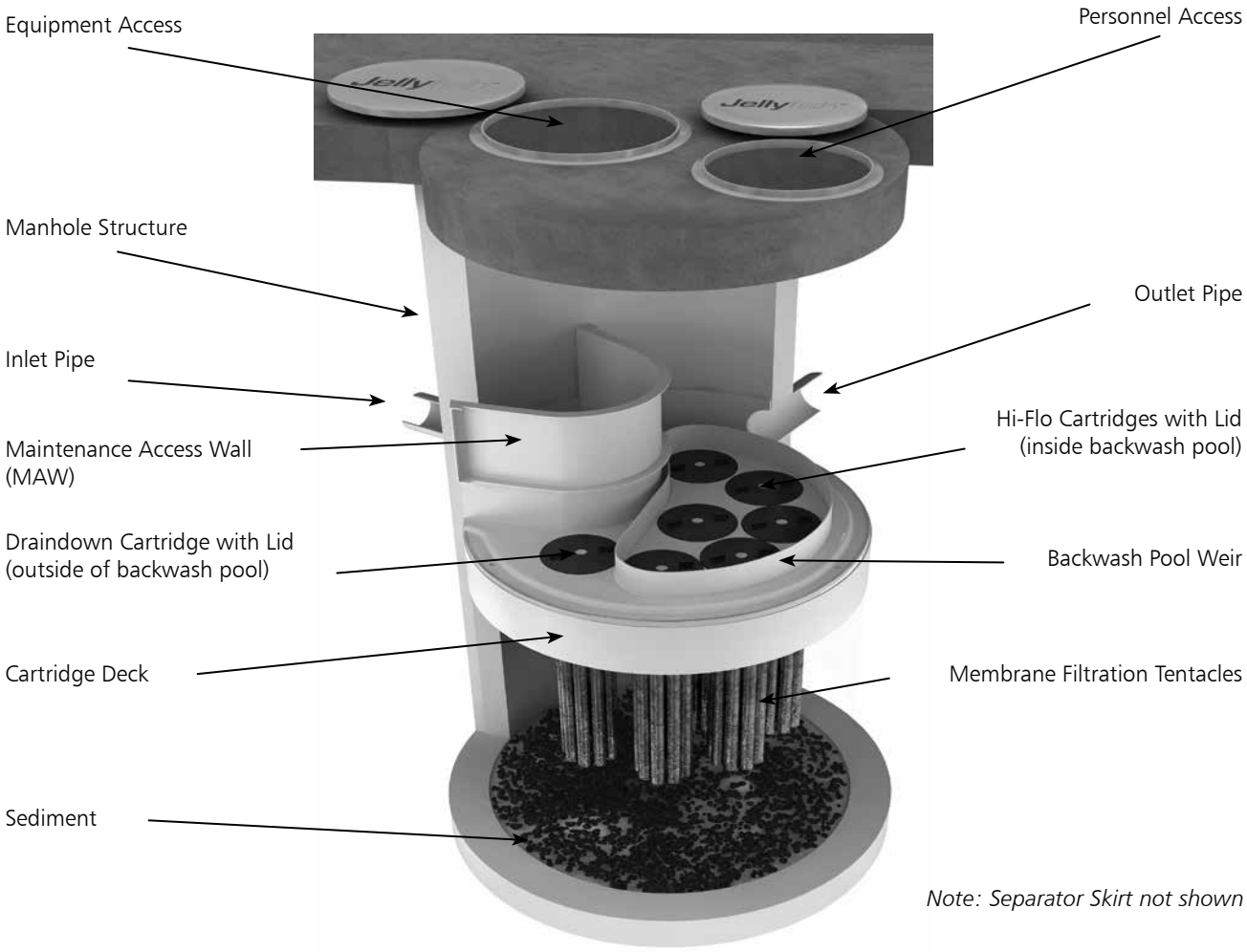
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

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

2.1 – Components and Cartridges

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

FIGURE 2 **Jellyfish Filter Components**



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

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

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

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

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

2.3 – Jellyfish Membrane Filtration Cartridge Installation

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

Cartridge Assembly

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

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

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.
Inspection activities are typically conducted from surface observations and include:

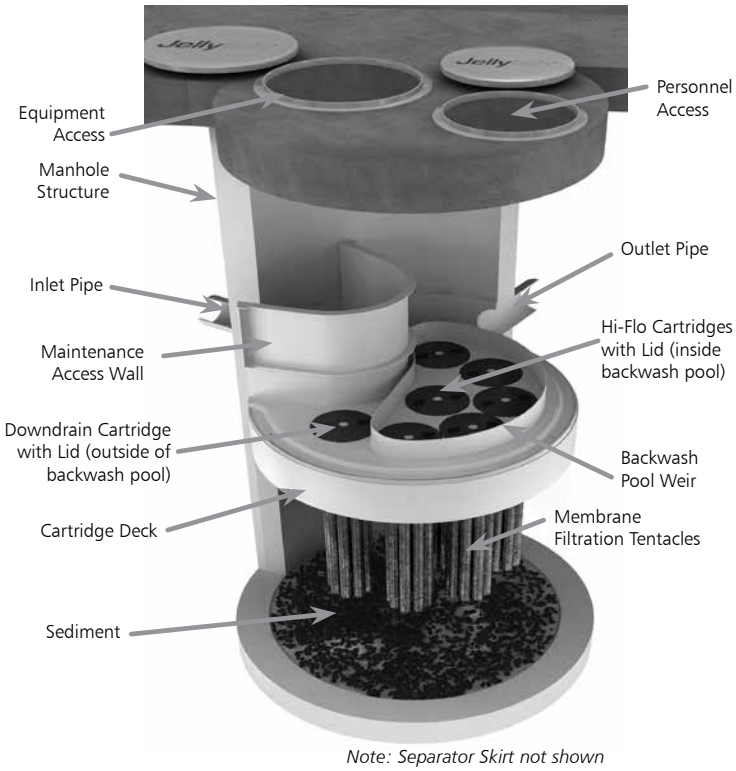
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.



Note: Separator Skirt not shown

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

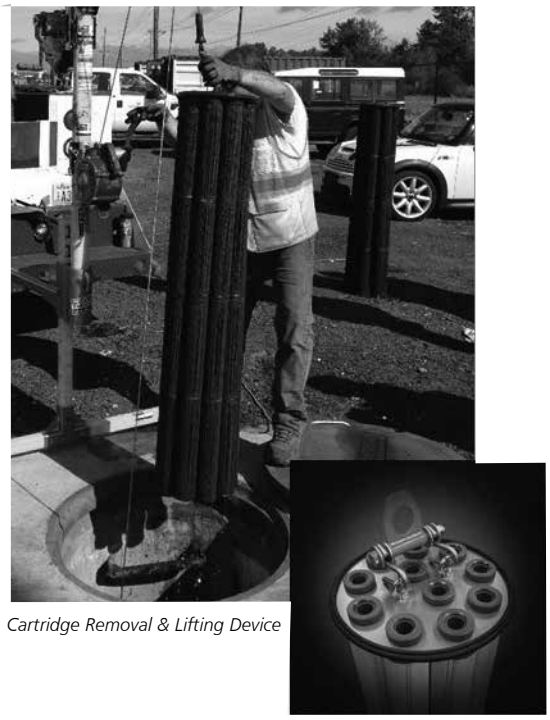
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs*.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.
2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.



Cartridge Removal & Lifting Device

3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.
4. Collected rinse water is typically removed by vacuum hose.

5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.
3. Pressure wash cartridge deck and receptacles to remove all

Rinsing Cartridge with Contech Rinse Tool

sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.
6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some

Vacuuming Sump Through MAW

vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. *Caution: Do not force the cartridge downward; damage may occur.*
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

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

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

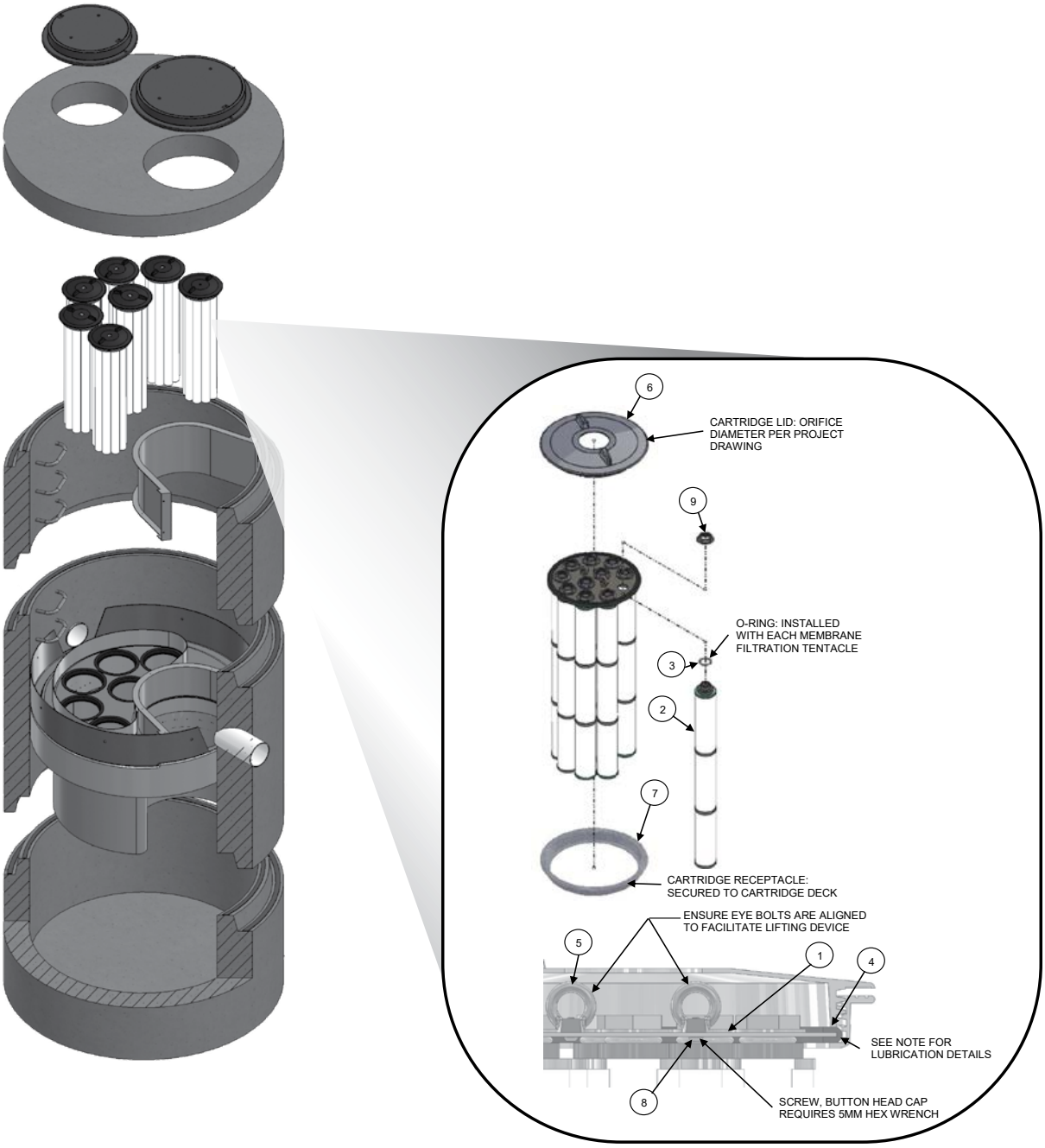


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.:_____

Location: _____ GPS Coordinates: _____

Land Use: Commercial:_____ Industrial: _____ Service Station:_____

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

Date/Time:					
Inspector:					
Maintenance Contractor:					
Visible Oil Present: (Y/N)					
Oil Quantity Removed					
Floatable Debris Present: (Y/N)					
Floatable Debris removed: (Y/N)					
Water Depth in Backwash Pool					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on Cartridges: (Y/N)					
Sediment Depth Measured: (Y/N)					
Sediment Depth (inches or mm):					
Sediment Removed: (Y/N)					
Cartridge Lids intact: (Y/N)					
Observed Damage:					
Comments:					

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CDS® Inspection and Maintenance Guide

CDS TECHNOLOGIES

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.3	3.0	0.9	1.3	1.0
CDS2020	5	1.3	3.5	1.1	1.3	1.0
CDS2025	5	1.3	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treament products. For information, visit www.ContechES.com or call 800.338.1122

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CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

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WETLAND DELINEATION REPORT

100 Durgin Lane
Portsmouth, NH
May 8, 2024

As requested, I am pleased to provide the following report documenting the wetland delineation performed by Gove Environmental Services, Inc. in connection with the above referenced property. This is an update to my February 28th report which includs a functional assessment of the identified wetland areas. The work was conducted on three lots, referenced on the City of Portsmouth assessors' maps as lots 239-13-2, 239-16, and 239-18 which together total approximately 26.15 acres (the Site). The resource areas discussed in this report are depicted on the enclosed sketch.

WETLAND DELINEATION

The delineation work was performed on November 11, 2023 by Brendan Quigley utilizing the following standards:

1. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region,* (Version 2.0) January 2012, U.S. Army Corps of Engineers.
2. *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils*, Version 8.2. United States Department of Agriculture (2018).
3. *New England Hydric Soils Technical Committee. 2019 Version 4, Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.
4. *U.S. Army Corps of Engineers National Wetland Plant List, version 3.5*. (2020)

The central part of the Site is a developed commercial property consisting of a large retail building, associated parking areas, and a connector road running between Gosling Road and Arthur Brady Drive. The developed portions of the Site are generally well defined from the surrounding vegetated areas which are a mix of forest, dense early successional shrub growth, and emergent wetland. Wetlands were identified in three main areas east and north of the developed portion of the Site. These were demarcated with seven (7) series of consecutively numbered pink "WETLAND DELINEATION" flagging as shown on the attached sketch. The following table provides a description of each wetland area.

Table 1—Wetland Descriptions

Wetland ID	Cowardin Class[1]	Description/Notes
A and C	PSS1B	These two wetlands occupy the area under the power lines in the southeast corner of the Site. They are scrub shrub wetlands with a saturated hydrology, dominated by silky dogwood, willow, and glossy buckthorn. The wetlands are isolated from one another and surrounded by development or roadway. At the time of the delineation timber mats and stabilized access had been installed in and adjacent to the wetlands for power line maintenance activities.
B	PSS1Kh	This small wetland occupies a portion of a constructed stormwater basin. It is otherwise similar to Wetlands A and C.
#1-62	PSS1E/PFO1E PEM1/5E	This wetland lies on the west side of the connector road north of the existing development. Much of the wetland lies off-site and is predominantly a cattail/phragmites marsh. The edges of this emergent wetland that lie on the Site are a mix of scrub shrub and forested wetland dominated by speckled alder, common and glossy buckthorn, and red maple. Hydrology of the wetland is seasonally flooded /saturated. The wetland also contains a shallow pond and an old weir structure that appear to be components of legacy drainage system, now nearly indistinguishable from the larger wetland. The wetland drains into Wetland E via a culvert under the connector road.
D & E	PSS1E/PFO1E PEM1/5E	These two series of flags define two on-site portions of a larger wetland situated under the power lines and extending off-site to the north and east. Like the wetland defined by flags #1-62, to which this area is connected, this is predominantly a cattail and Phragmites marsh with a limited forested and scrub shrub edge.
F	PEM1/5B	This small wetland is essentially the same as D&E but appears to have been purposely separated from the main wetland by construction of a dyke and weir like the one contained in the #1-62 wetland. Though its intended function is not clear this is also likely part of a legacy drainage system.

[1] *Classification of Wetlands and Deepwater Habitats of the United States*. USFW Manual FWS/OBS–79/31 (1979)

OTHER REGULATED WETLAND RESOURCES

The NHDES' web-based Wetlands Permit and Planning Tool (WPPT) was used to identify the presence of other regulated wetland resources such as protected shoreland, prime wetland, and other Priority Resource Areas as defined by NH Administrative Rule Env-Wt 103.66. The planning tool indicates that no such areas are present on the property. A copy of the WPPT map is attached.

The field work for the delineation was conducted in late fall so no formal vernal pool survey was conducted. The large cattail and phragmites marsh wetland (D, E, F, 1-62) that constitutes most of the wetlands on the site is not typically suitable vernal pool habitat. The smaller scrub-shrub wetland (A, B, & C) do not appear to have the topography to maintain a pool. Furthermore, all the wetland on the site exist in a highly developed area with very minimal supporting upland habitat necessary to support vernal pool species. It is therefore very unlikely that any of the wetlands identified on the Site contain vernal pools. This should be verified during the vernal pool breeding season.

PORTSMOUTH WETLAND PROTECTION ORDINANCE

Section 10.1010 of the Portsmouth Zoning Ordinance regulates wetland resource areas including vegetated wetlands, vernal pools, tidal areas, streams, other surface water, and specific buffers to these resources. The Site only contains inland freshwater wetlands which are regulated under the Ordinance if they are 10,000 square feet in size or greater[2]. Wetlands B and F are 4,594 square feet and 2,442 square feet respectively, so these two small wetlands are not regulated under the Ordinance. Note, however, that these areas are still jurisdictional wetlands subject to state and federal regulation. All other wetlands identified on the Site, and a 100-foot buffer from these areas, are regulated under the Ordinance.

WETLAND FUNCTION & VALUE ASSESSMENT

A wetland function and value assessment was conducted using the US Army Corps Highway Methodology guidelines. Functions are self-sustaining properties of wetlands, which exist in the absence of human involvement. Values refers to the benefits gained by society from a given wetland or ecosystem and their inherent functions. Functions and values identified as "primary" have been determined to be significant features of the wetland being evaluated. An important distinction is that the primary functions and values of a particular wetland does not necessarily indicate the wetland supports them at a significant *level* in comparison to other wetlands in the region or even near the site.

[2] Section 10.1013.10

The Highway Methodology considers 13 functions and values:

1. **Groundwater recharge/discharge:** This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where ground water can be discharged to the surface.
2. **Floodflow Alteration:** This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
3. **Fish and Shellfish Habitat:** This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shellfish habitat.
4. **Sediment/Toxicant/Pathogen Retention:** This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens.
5. **Nutrient Removal/Retention/Transformation:** This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.
6. **Production Export:** This function relates to the effectiveness of the wetland to produce food or usable products for human, or other living organisms.
7. **Sediment/Shoreline Stabilization:** This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
8. **Wildlife Habitat:** This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and or migrating species must be considered.
9. **Recreation:** This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals or other resources that are intrinsic to the wetland, whereas non-consumptive opportunities do not.
10. **Educational/Scientific Value:** This value considers the effectiveness of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.
11. **Uniqueness/Heritage:** This value relates to the effectiveness of the wetland or its associated water bodies to produce certain special values. Special values may include such things as archeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geological features.
12. **Visual Quality/Aesthetics:** This value relates to the visual and aesthetic qualities of the wetland.
13. **Threatened or Endangered Species Habitat:** This value relates to the effectiveness of the wetland or associated water bodies to support threatened or endangered species.

The collection of individually flagged wetlands on the Site were evaluated in two groups based on their proximity to one another, type, and connectivity. The A and C series wetlands located in the southeast corner of the site were evaluated as one since they lie directly adjacent to one another and share the same characteristics. The D and E series were grouped together with the wetland numbered 1-65 since these three areas are part of a larger wetland extending off-site to the east and separated only by an access driveway. Wetlands B and F are stormwater management features which are too small to be regulated under the Portsmouth Wetlands Protection Ordinance and were not evaluated.

Due to the character of the wetlands and the densely developed setting, several of the functions and values listed above are clearly not supported or are supported to a very limited extent. The lack of permanent or any significant surface water is the most obvious limiting factor. Functions such as fish habitat and shoreline stabilization, which require close association with surface water are not supported in these wetlands. Wetland supported recreation is also strongly linked with surface water for activities such as boating and fishing. Recreational value of this type is not supported but other more passive forms of recreation may be supported to a limited degree depending on how broadly recreation is defined. Aesthetic value is even more subjective, as is value for scientific or educational pursuits. These are traditionally associated with more diverse, unique, and accessible wetlands than those present in this area. In the context of the densely developed area, however, these wetlands provide notable value by providing readily viewable green space amongst developed areas. They may also offer unique educational or scientific opportunities for the study of wetlands in a developed landscape. These values have therefore been considered secondary values supported by all the wetlands on the Site.

The densely developed setting also highlights the importance of certain wetland functions and strongly influences the *Principal Functions* of the wetlands. The most important function of the larger interconnected wetland system (#1-62/D/E) is protection of water quality. This area receives significant runoff from the surrounding developed areas and drains through dense emergent wetlands and restricted outlets. This arrangement provides both sediment trapping, retention, and nutrient transformation function. This is also likely to provide an important flood attenuation function, not as a floodplain, but by intercepting and storing runoff. The smaller wetland areas (A/C) supports these functions to a much lesser degree or not at all due to their limited connectivity.

The long-term effects of performing these water quality functions and overall fragmentation of the wetland in this area does degrade their ecological integrity and suitability for functions as wildlife habitat. However, considering the limited habitat in this developed landscape and the fact that some of the wetlands are quite large, they function as important habitat islands. These areas are likely to be used by numerous avian species and small mammals with limited habitat requirements. The wetter areas in the larger wetlands (#1-62/D/E) may also provide habitat for amphibian and retile species but this is limited by general lack of permanent water.

The table below summarizes all the identified principle and secondary functions of the two groups of wetlands evaluated. The Highway Methodology data forms are attached.

Table 2—Wetland Function & Value Summary

Wetland ID	Principle Functions/Values	Secondary Functions/Values	Justification/Discussion
A & C	Export/Production Wildlife Habitat	Sediment Retention Nutrient Removal Educational/Scientific Aesthetic	Principle Function is that of a habitat island in the context of a developed landscape. Production for wildlife food sources is enhanced by the dense cover of berry producing shrubs and nectar producing herbaceous vegetation. Water quality has been considered secondary due to lack of connectivity and lack of emergent wetland. Limited Educational/Scientific and Aesthetic value supported in the context of densely developed area.
	Wildlife Habitat Sediment Retention Nutrient Removal Floodflow Alteration	Groundwater Educational/Scientific Aesthetic	Principal water quality function is based on significant urban runoff and diffuse and constricted flow through dense mostly emergent vegetation. Floodflow attenuation by way of storage is derived in a similar way. Principal Wildlife habitat functions is as a habitat island in context of developed landscape. Production for wildlife food sources is considered secondary due to significant areas of invasive or uniform vegetation (Phragmites and Cattail). Limited groundwater interaction in wettest areas but not located in aquafer area. Limited Educational/Scientific and Aesthetic value supported in the context of densely developed area.

SEE SHEET C-101 FOR DEMOLITION PLAN NOTES & LEGEND

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Plotted On: Apr 19, 2024 - 12:02pm By: BCurcio
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Tighe&Bond

STATE OF NEW HAMPSHIRE
PATRICK CUMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
4/22/24

STATE OF NEW HAMPSHIRE
NEIL A HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
04/22/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	E5071-001
DATE:	4/22/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DEMOLITION PLAN

SCALE: AS SHOWN

C-202

BEGIN SILT SOCK

GUARDRAIL TO REMAIN

APPROXIMATE LIMITS OF SAWCUT (TYP.)

EXISTING PAVEMENT TO BE REMOVED (TYP.)

END SILT SOCK

APPROXIMATE LOCATION OF EXISTING SEWER FORCE MAIN TO REMAIN (VERIFY LOCATION IN FIELD)

LIMIT OF SEWER FORCE MAIN TO BE REMOVED (VERIFY LOCATION IN FIELD)

LIMIT OF GUARDRAIL TO BE REMOVED

DRAINAGE STRUCTURES TO REMAIN

MAP 239 LOT 13

PROPERTY LINE (TYP.)

APPROXIMATE LOCATION OF EXISTING WATER LINE TO REMAIN (VERIFY LOCATION IN FIELD)

LIMIT OF EXISTING WATER LINE TO BE REMOVED (VERIFY LOCATION AND SIZE IN FIELD)

MAP 239 LOT 8

MAP 239 LOT 13-2
6.33 ACRES
275,630 SF

25' VEGETATED BUFFER

APPROXIMATE LIMIT OF WORK (TYP.)

50' LIMITED CUT BUFFER

APPROXIMATE LIMITS OF CLEARING

PROPOSED SILT SOCK (TYP.)

50' LIMITED CUT BUFFER

100' WETLAND BUFFER

BEGIN SILT SOCK

EXISTING PAVEMENT TO BE REMOVED (TYP.)

MAP 239 LOT 7

100' WETLAND BUFFER

ALL EXISTING DRAINAGE STRUCTURES, PIPES, AND UTILITIES WITHIN THE LIMITS OF WORK SHALL BE REMOVED UNLESS SPECIFICALLY IDENTIFIED TO REMAIN (TYP.)

MAP 239 LOT 18
16.74 ACRES
729,279 SF

50' VEGETATED BUFFER

MATCH LINE
MATCH LINE

ELECTRICAL UTILITY POLES TO REMAIN

BEGIN REMOVAL OF DRAIN LINE AND DOWNSTREAM STRUCTURES

DRAINAGE TO REMAIN

SEE SHEET C-101 FOR DEMOLITION PLAN NOTES & LEGEND

0 40' 80'
GRAPHIC SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
4/22/24

STATE OF NEW HAMPSHIRE
NEIL A HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
04/22/2024

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION
A	4/22/2024	TAC SUBMISSION

PROJECT NO:	ES071-001
DATE:	4/22/2024
FILE:	ES071-001-C-DSGN.dwg
DRAWN BY:	BKC/NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DEMOLITION PLAN

SCALE: AS SHOWN

C-201

Last Saved: 4/19/2024
Plotted On: Apr 19, 2024 - 12:01pm By: BCurrie
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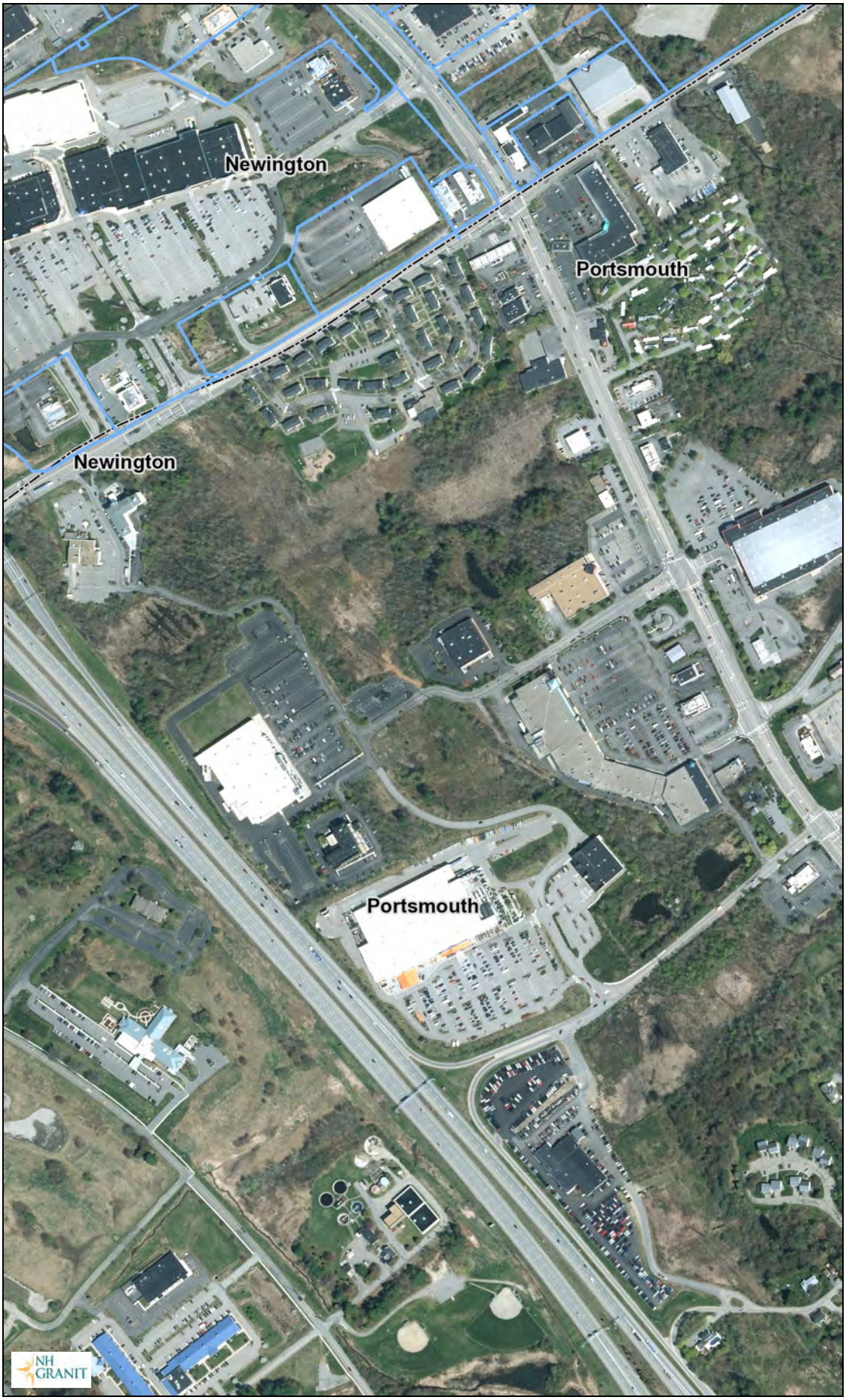
Burgin Lane
WPPT



Legend

- Additional Lines
- City/Town
- Prime Wetlands
- Prime Wetlands with 100
- Peatland
- Flood Plain Wetlands Adja
- Marsh-Scrub / Shrub Wet
- Dunes
  - backdune
  - foredune
  - interdune
  - other

Map Scale

1: 6,494

Map Generated: 2/29/2024

Notes

Wetland Function-Value Evaluation Form

Total area of wetland ~1.1 ac Human made? No Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Commercial Development, Elec. Transmission Distance to nearest roadway or other development >100 ft

Dominant wetland systems present PSS1B Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? isolated Wildlife & vegetation diversity/abundance (see wetland report)

Wetland I.D. A & C

Latitude see report Longitude

Prepared by: BJQ Date 5/2/24

Wetland Impact:
Type Buffer Area see plans

Evaluation based on:
Office Yes Field Yes

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			wetland is characteristic of perched GW
Floodflow Alteration	N			isolated
Fish and Shellfish Habitat	N	N/A		No permanent surface water
Sediment/Toxicant Retention	Y	1,2,5		potential sources but limited connectivity, minimal function
Nutrient Removal	Y	3,4,8,9		potential sources but limited connectivity, minimal function
Production Export	Y	1,7,12	X	wildlife food sources in dense berry bearing shrubs and nectar prod. species
Sediment/Shoreline Stabilization	N			not associated with surface water
Wildlife Habitat	Y	8,19,21	X	limited habitat island for songbirds and small mammal
Recreation	N			Common wetland, subject to transmission line maintenance; low diversity
Educational/Scientific Value	Y			limited potential for study of fragmentation and development
Uniqueness/Heritage	N			Common wetland, subject to transmission line maintenance; low diversity
Visual Quality/Aesthetics	Y			minimal, open space in context of developed landscape
ES Endangered Species Habitat	N			None identified
Other		N/A		N/A

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland ~20 ac Human made? No Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Commercial Development, Elec. Transmission Distance to nearest roadway or other development >100 ft

Dominant wetland systems present PEM1/5E/PSS1E Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? LOW

How many tributaries contribute to the wetland? UNK Wildlife & vegetation diversity/abundance (see wetland report)

Wetland I.D. #1-62/E/D

Latitude see report Longitude

Prepared by: BJQ Date 5/2/24

Wetland Impact:
Type none Area see plans

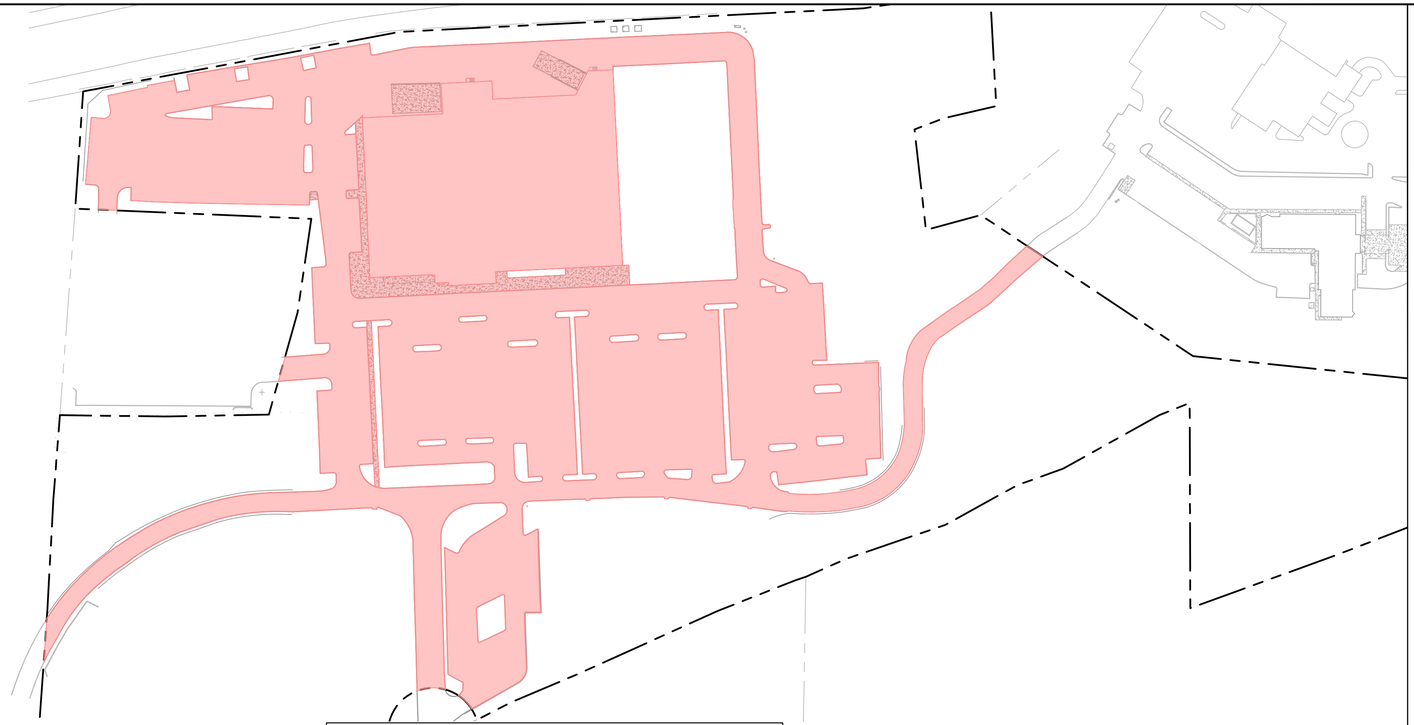
Evaluation based on:
Office Yes Field Yes

Corps manual wetland delineation completed? Y X N

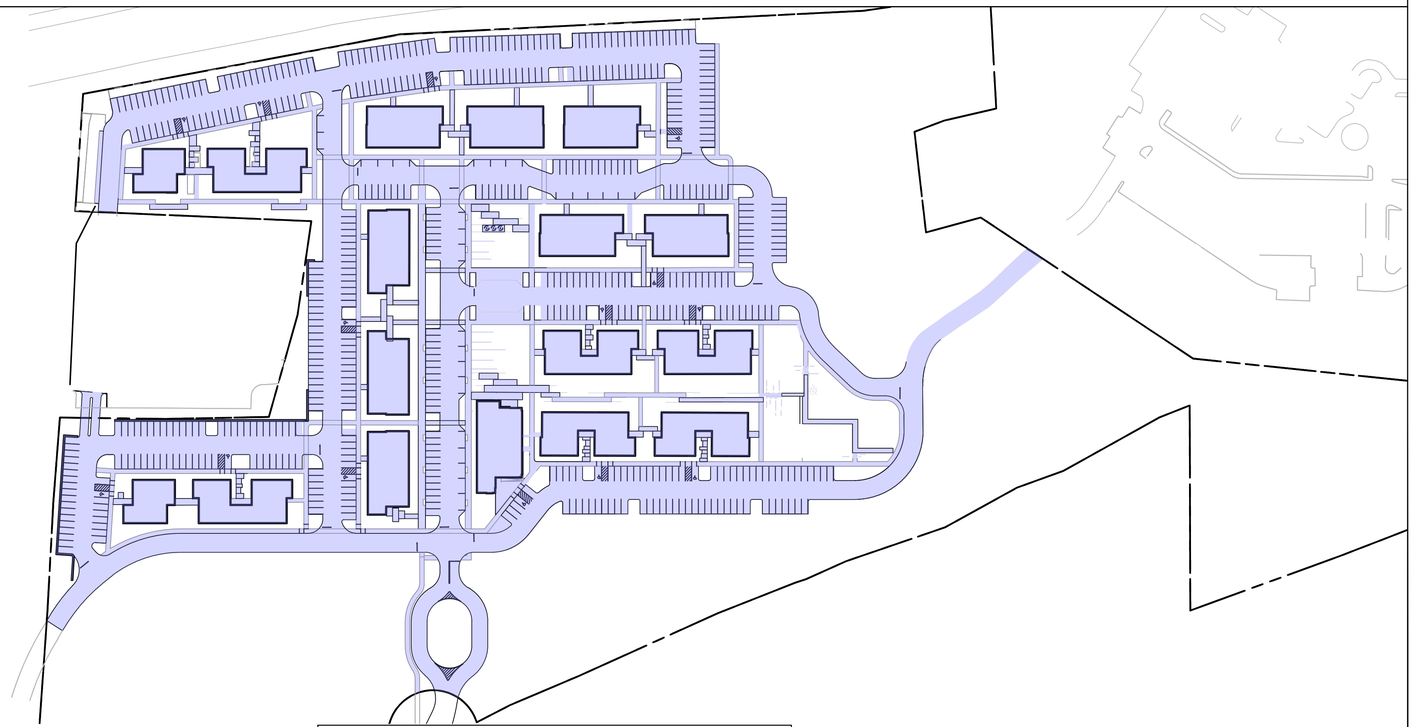
Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y			some potential in very poorly drained areas
Floodflow Alteration	Y	4,5,6,7,15	X	significant urban runoff, constricted outlet, large area of storage relative to its watershed
Fish and Shellfish Habitat	N	N/A		No permanent surface water
Sediment/Toxicant Retention	Y	1,2,3,4,5,10,12,14,16	X	Significant sources, diffuse flow though dense vegetation
Nutrient Removal	Y	1,3,5,6,7,8,9,11,13,14,15	X	Significant sources, diffuse flow, long retention time, dense emergent vegetation
Production Export	Y	1,2,7,12,14		high production but limited export, berry and nectar wildlife food sources, low divertsity
Sediment/Shoreline Stabilization	N			not associated with surface water
Wildlife Habitat	Y	8,19,21	X	part of a larger habitat island for songbirds and small sp. tolerant of proximate devel.
Recreation	N			disturbed wetland, densely developed area
Educational/Scientific Value	Y			limited potential for study of fragmentation and development
Uniqueness/Heritage	N			disturbed wetland, densely developed area
Visual Quality/Aesthetics	Y			minimal, open space in context of developed landscape
ES Endangered Species Habitat	N			None identified
Other		N/A		N/A

Notes:

* Refer to backup list of numbered considerations.



EXISTING IMPERVIOUS SURFACES
SCALE 1" = 100'



PROPOSED IMPERVIOUS SURFACES
SCALE 1" = 100'

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

IMPERVIOUS SURFACE REDUCTION EXHIBIT

Impervious Surface Within Site	
Existing Conditions	434,787 sf
Proposed Development	400,503 sf
Net Impervious Cover	-34,284 sf

N

0 100' 200'
GRAPHIC SCALE

Tighe&Bond

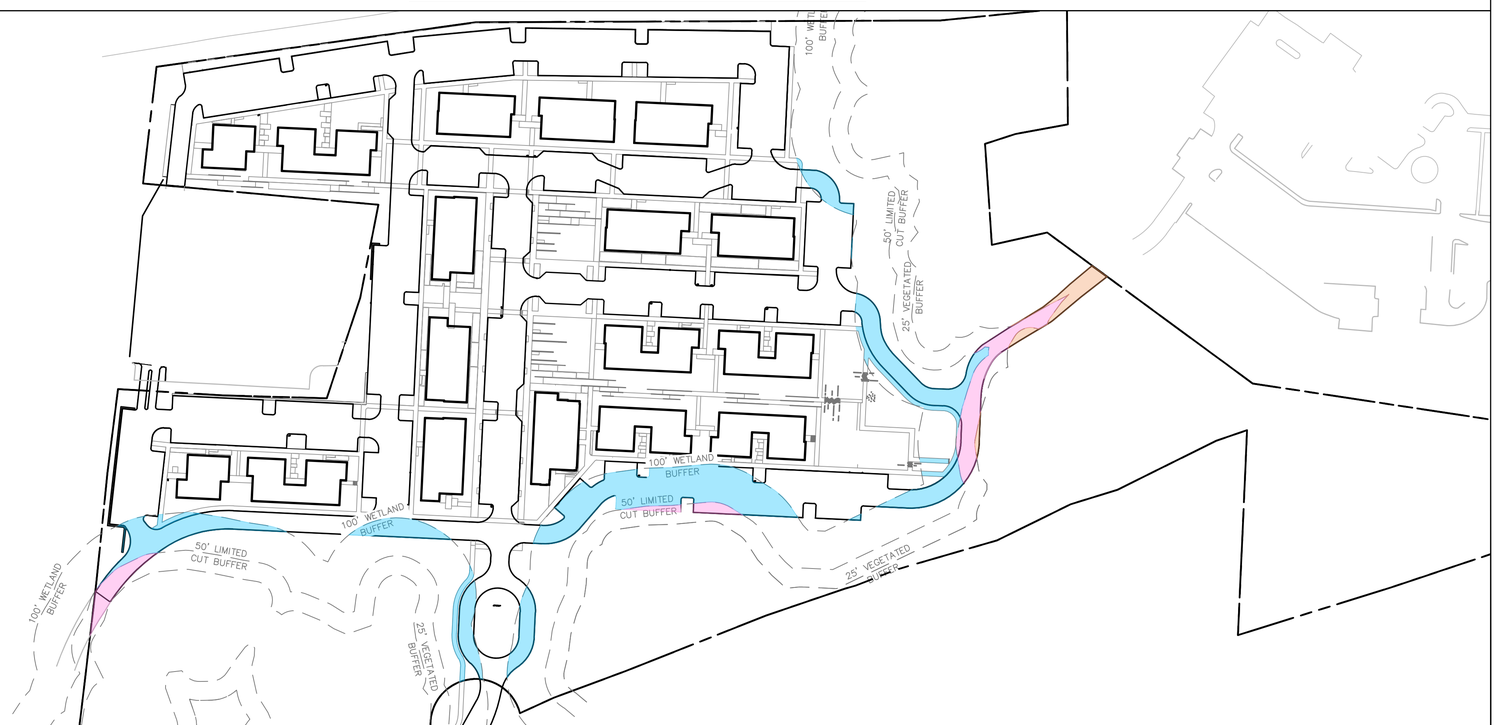
JUNE 17, 2024
E5071-001-FIGS.dwg

Last Save Date: June 13, 2024 10:02 PM By: NWILCOX
Plot Date: Thursday, June 13, 2024 Plotted By: Noah Wilcox
TXB File Location: C:\Users\NWilcox\Desktop\WORKING\Durgin\Sheet\E5071-001-FIGS.dwg Layout Tab: IMPERV-COMP

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

WETLAND BUFFER IMPERVIOUS SURFACE EXHIBIT

EXISTING WETLAND BUFFER IMPERVIOUS SURFACE
SCALE 1" = 100'



PROPOSED WETLAND BUFFER IMPERVIOUS SURFACE
SCALE 1" = 100'

Impervious Surface Within Buffer Area		
Local Wetland Buffer Setback	Impervious Surface	
	Existing Condition	Proposed Development
0 - 25 FT	3,114 SF	2,467 SF
25 - 50 FT	12,156 SF	8,762 SF
50 - 100 FT	45,975 SF	39,945 SF
Total Impervious Surface	**61,245 SF**	**51,174 SF**
Net Impervious Surface	**-10,071 SF**	

N

0 100' 200'
GRAPHIC SCALE

Tighe&Bond

JUNE 17, 2024
E5071-001-FIGS.dwg

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

WETLAND BUFFER IMPERVIOUS COMPARISON EXHIBIT

Wetland Buffer Impervious Surface Comparsion	
Impervious Surface Removed	26,299 SF
Impervious Surface Added	16,228 SF
Net Impervious Surface	-10,071 SF

N

0 60' 120'
GRAPHIC SCALE

Tighe&Bond

JUNE 17, 2024
E5071-001-FIGS.dwg

ACETO LANDSCAPE ARCHITECTS
207.221.3390 | ACETOLA.COM

SEAL

PROJECT TITLE:

100 Durgin Ln

PREPARED FOR:

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS	DATE

ISSUE DATE:

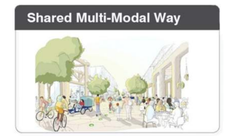
June 17, 2024

SHEET TITLE:

RENDERED PLAN

SHEET INFORMATION

POTENTIAL COMMUNITY SPACE



PROPOSED COMMUNITY SPACE

POTENTIAL RESIDENT SOCIAL SPACES

POTENTIAL COMMUNITY SPACE

TOTAL DEVELOPMENT LOT
1,139,156 SF (26.15 ACRES)

	REQUIRED	PROVIDED
	113,915 SF (10%) (2.62 ACRES)	139,311 SF (12.2%) (3.20 ACRES)

COMMUNITY SPACE CONNECTOR

0 30 60 120

ACETO LANDSCAPE ARCHITECTS
207.221.3390 | ACETOLA.COM

SEAL

PROJECT TITLE:

100 Durgin Ln

PREPARED FOR:

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS DATE:

ISSUE DATE:

June 17, 2024

SHEET TITLE:

COMMUNITY SPACE EXHIBIT

SHEET INFORMATION

ACETO LANDSCAPE ARCHITECTS
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SEAL

PROJECT TITLE:

100 Durgin Ln

PREPARED FOR:

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NH

REVISIONS | DATE

ISSUE DATE:

June 17, 2024

SHEET TITLE:

PLANTING IRRIGATION / HYDROZONE DIAGRAM

SHEET INFORMATION

AUTHORIZATION
100 Durgin Lane, Portsmouth
Map 239, Lots 13, 16 & 18

The undersigned owner and applicant of the above referenced property hereby authorize representatives of Bosen & Associates, PLLC, and Tighe & Bond Civil Engineering to represent their interests before the Portsmouth land use boards and to submit any and all applications and materials related thereto on their behalf solely in connection with the multifamily development thereof.

Oak Street Investment Grade Net Lease Fund Series 2021-2, LLC

Date: April 23, 2024

By: _____
Name: Ryan Phelan
Title: Managing Director - Delegatee

100 Durgin Lane Owner, LLC

Date: 4/24/24

By: _____
Name: ANDREW HAHEJ
Title: AUTHORIZED SIGNER